LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 10

2022

Bate Stamp Numbers
01088678 – 01090678

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976–2022

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 10

2022

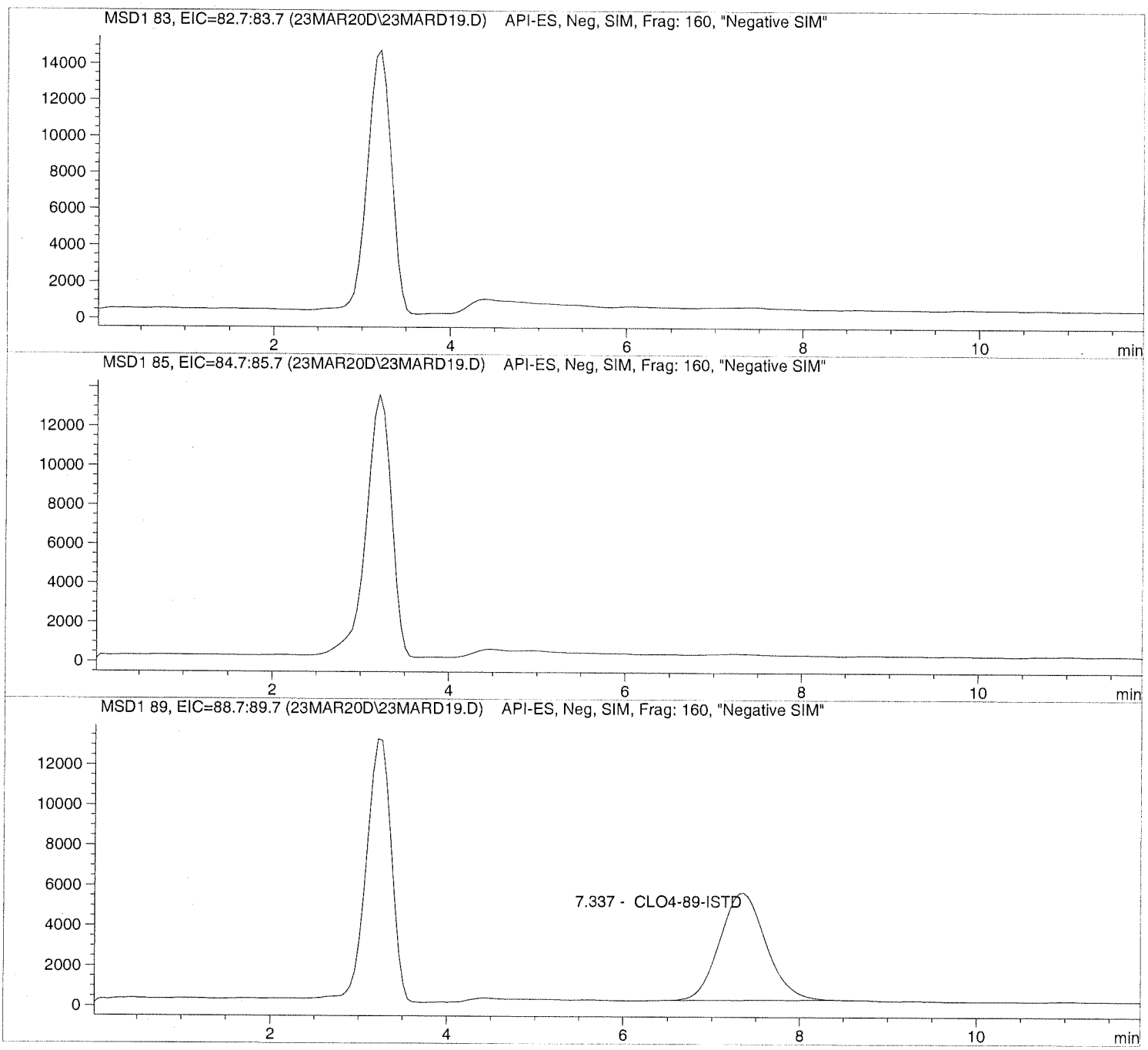
A.	Title:	(Cont'd) Report – Appendix D to Final First Annual Remediation Action Operation Report, LHAAP-16 Landfill, Longhorn Army Ammunition Plant, Karnack, Texas, April 2022
	Author(s):	Department of the Army
	Recipient:	U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	April 19, 2022
	Bate Stamp:	01088678 – 01090678

Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD19.D Sample Name: 2007910012

Injection Date:	3/23/2020 12:33:07	Seq Line:	19
Sample Name:	2007910012	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD19.D Sample Name: 2007910012

Injection Date:	3/23/2020 12:33:07	Seq Line:	19
Sample Name:	2007910012	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.337	BBA	195970.8	5.0000	CLO4-89-ISTD

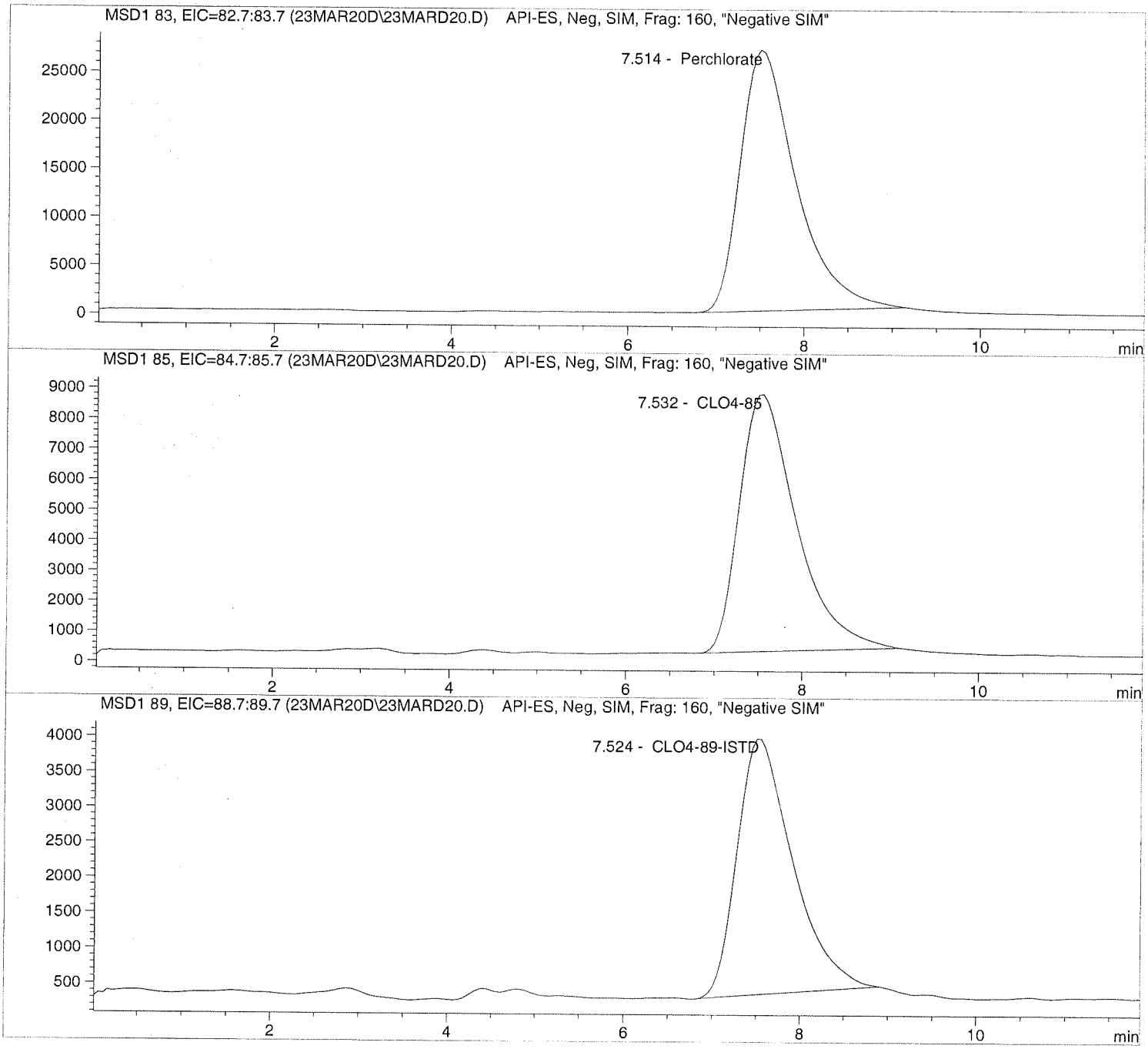
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD20.D Sample Name: 700534 CCV@25

Injection Date:	3/23/2020 12:47:39	Seq Line:	20
Sample Name:	700534 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD20.D Sample Name: 700534 CCV@25

Injection Date:	3/23/2020 12:47:39	Seq Line:	20
Sample Name:	700534 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.514	PBA	1185898.6	25.3979	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.532	PBA	381580.9	26.6763	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.524	PBA	159283.8	5.0000	CLO4-89-ISTD

*** End of Report ***



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

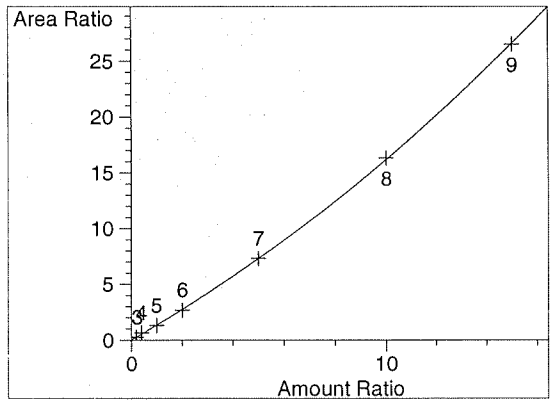
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

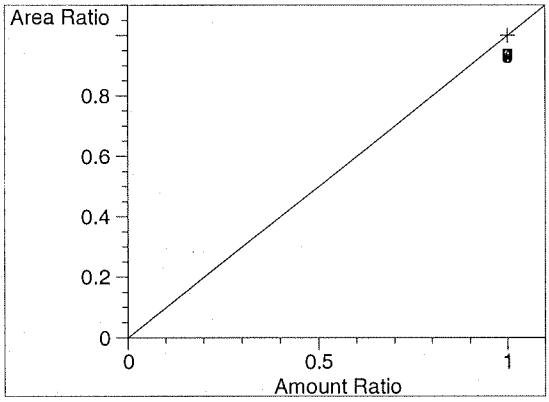
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Calibration Curves

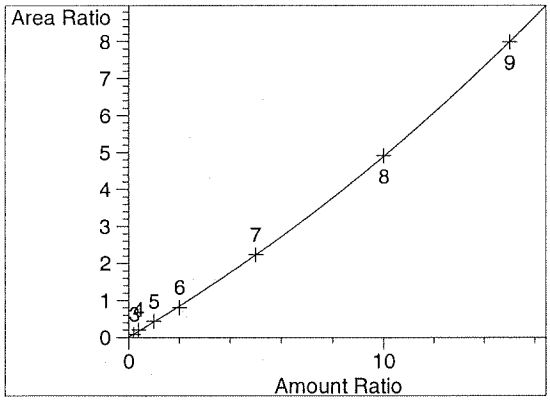
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Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

==========

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

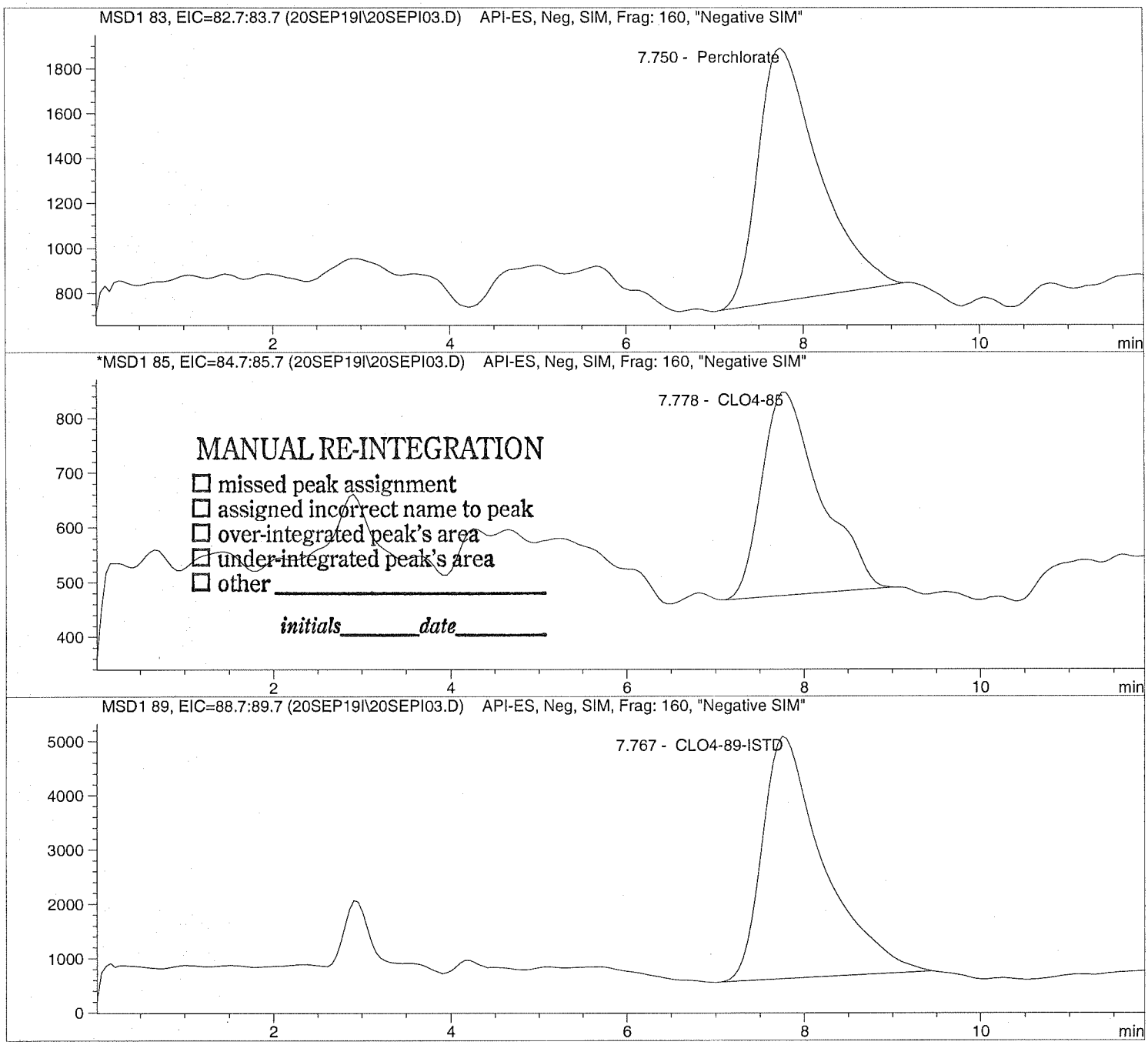
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

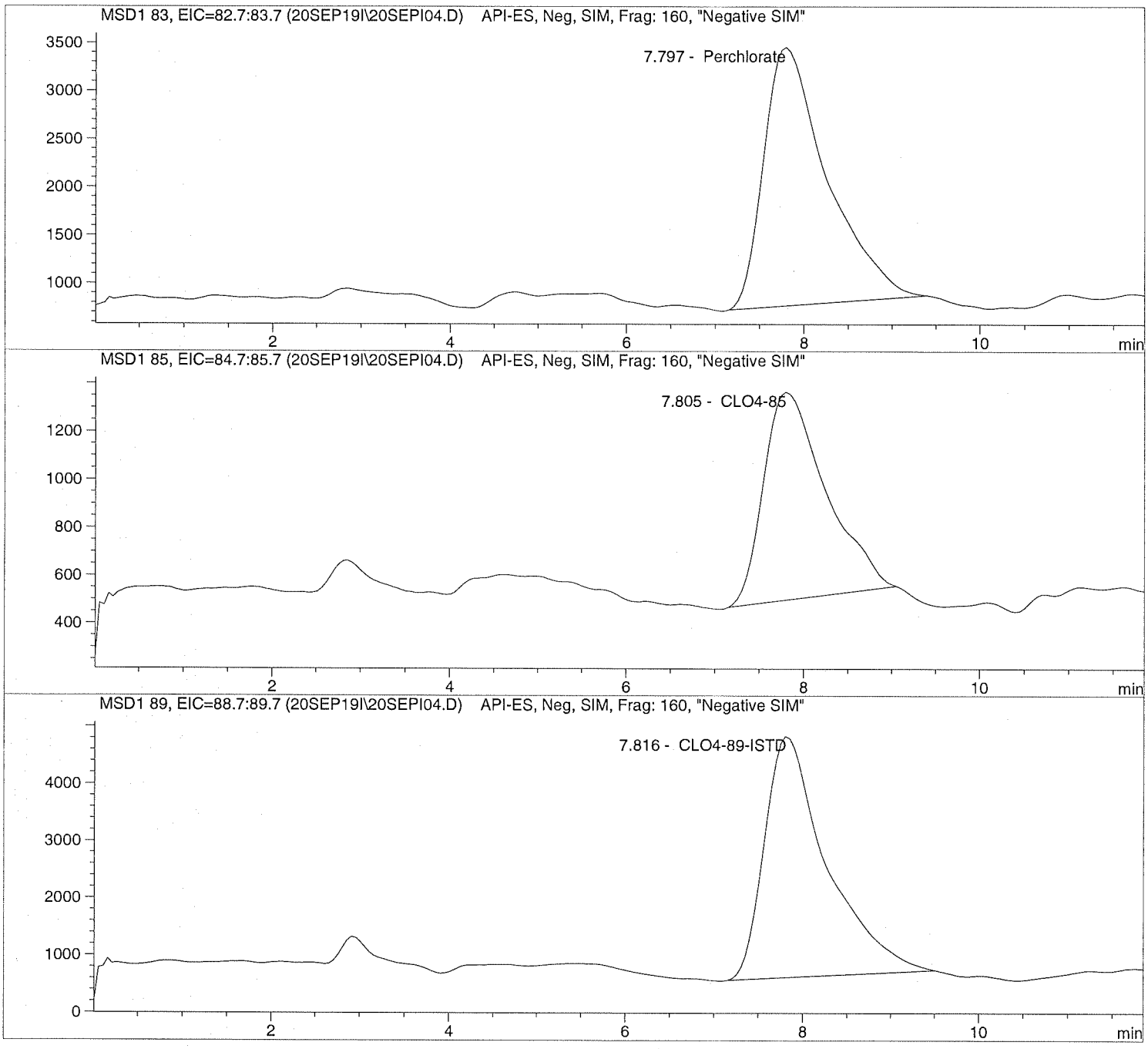
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

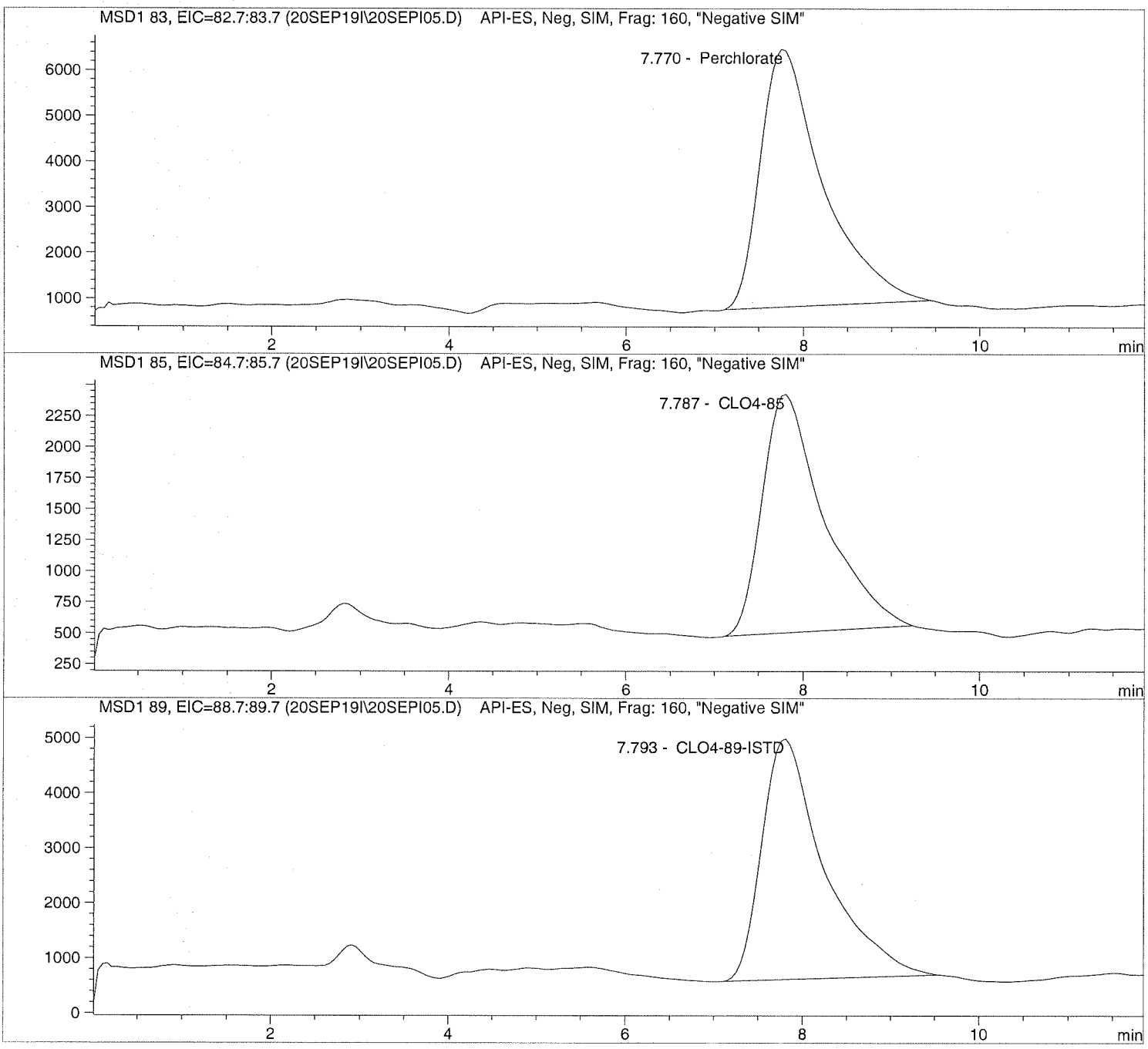
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

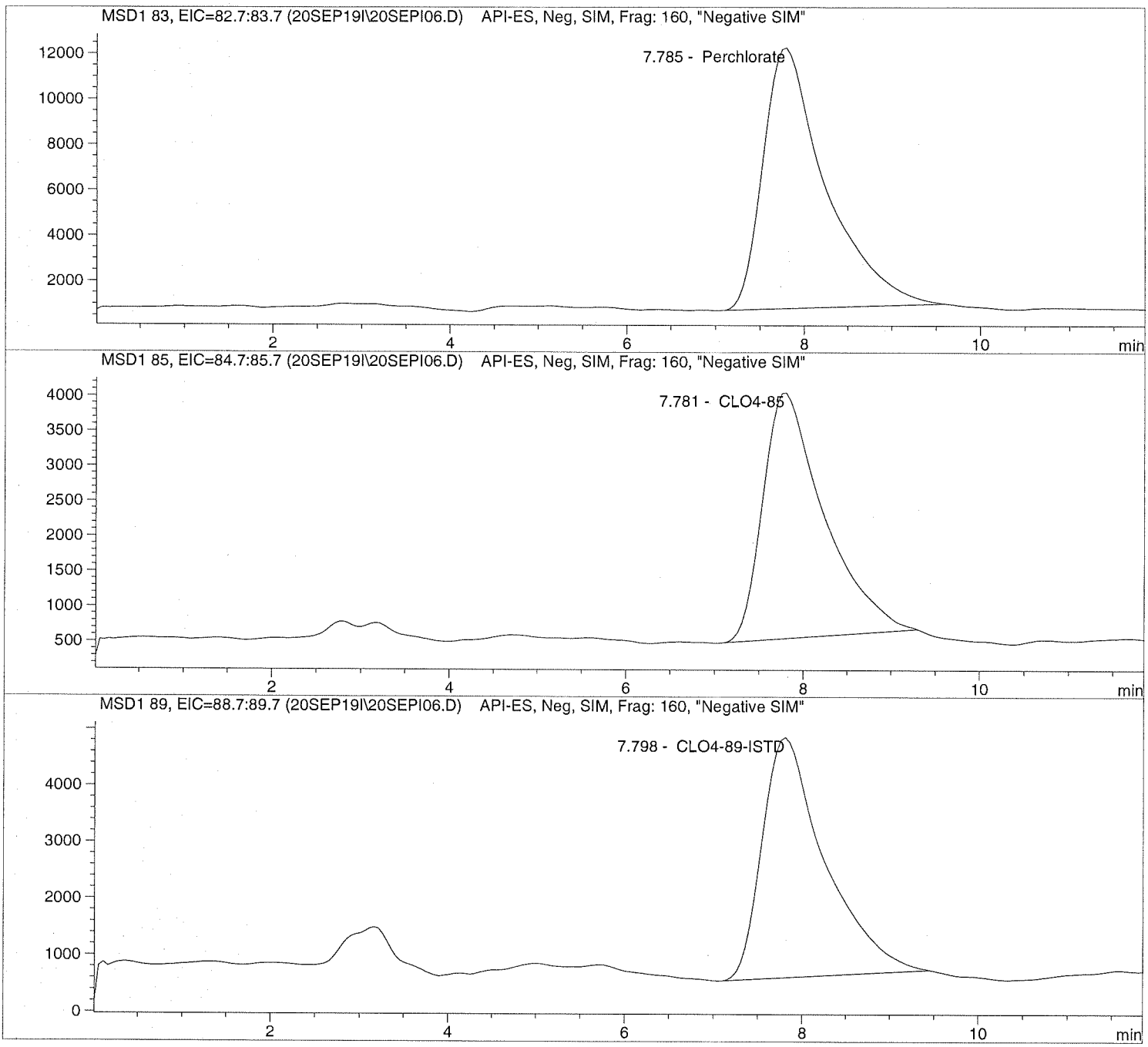
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

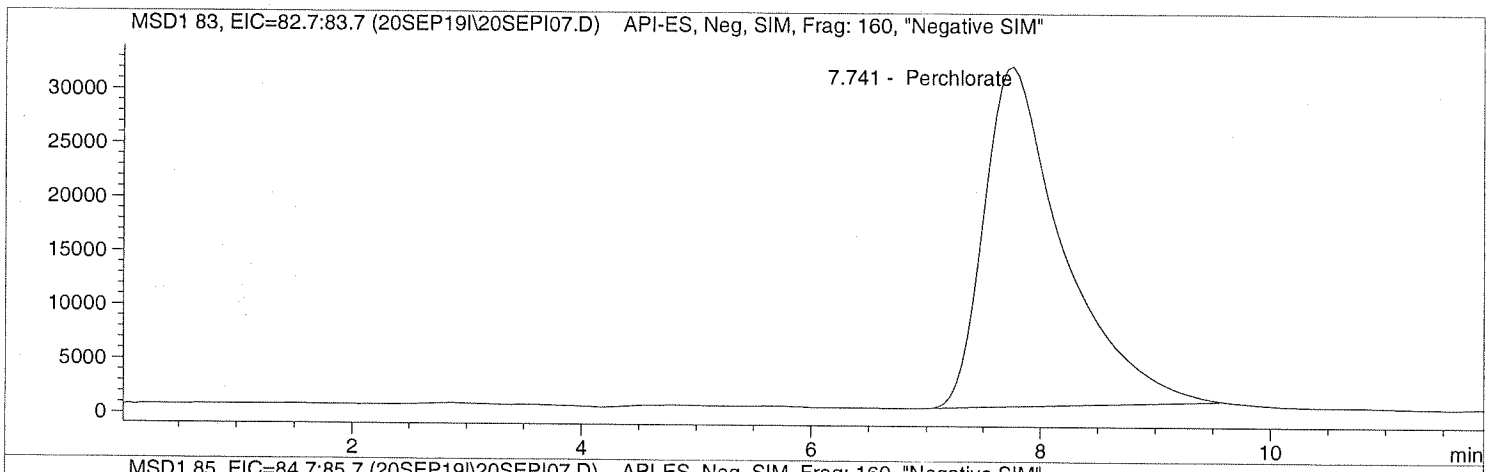
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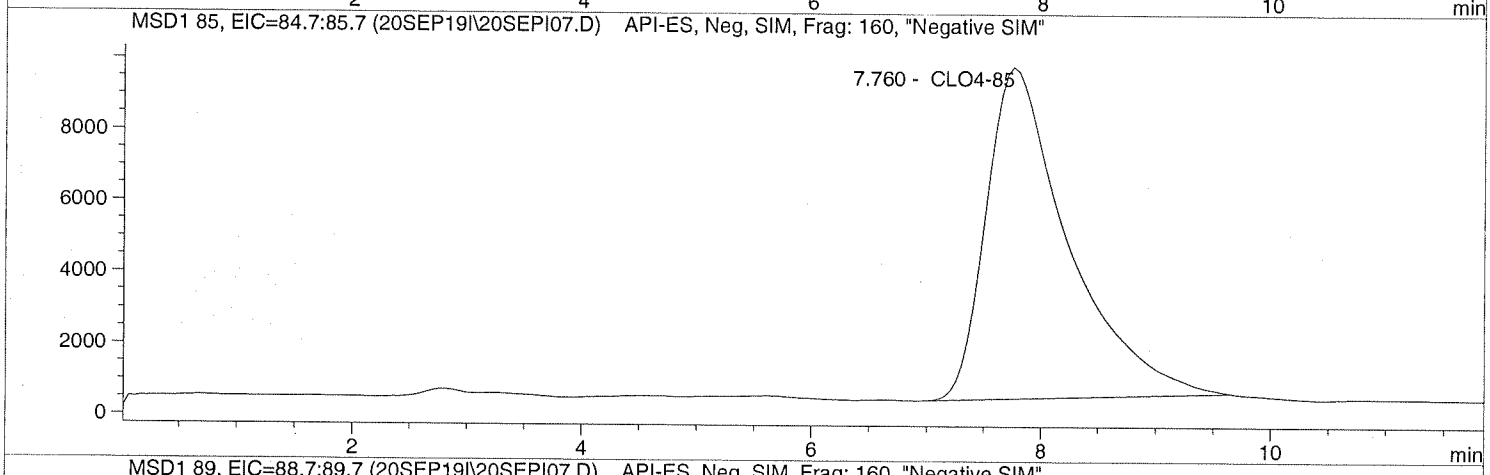
Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

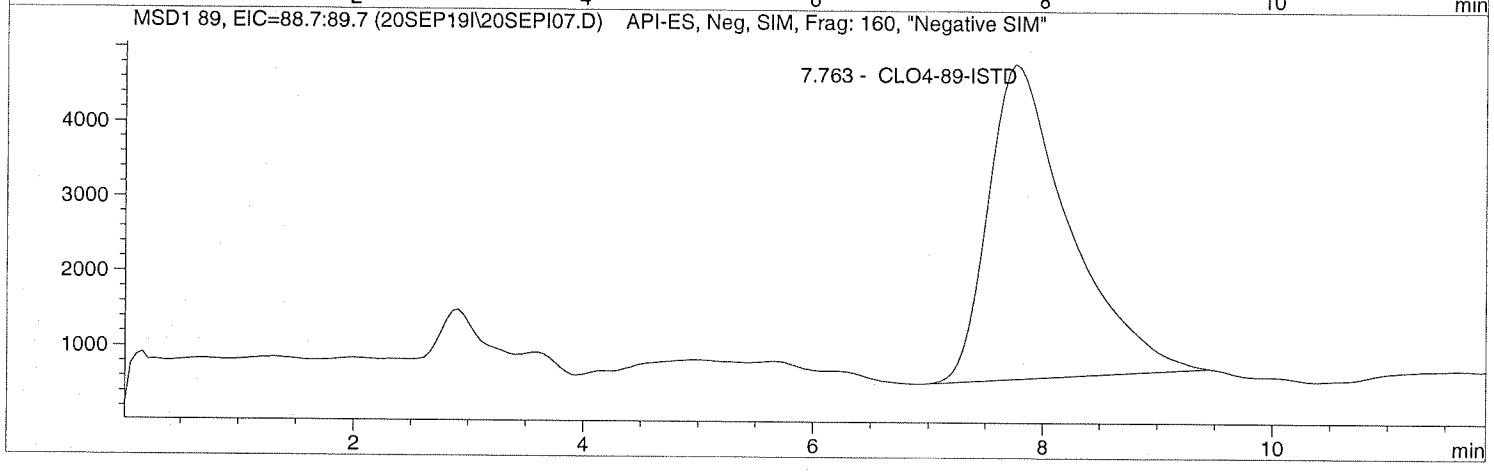
Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

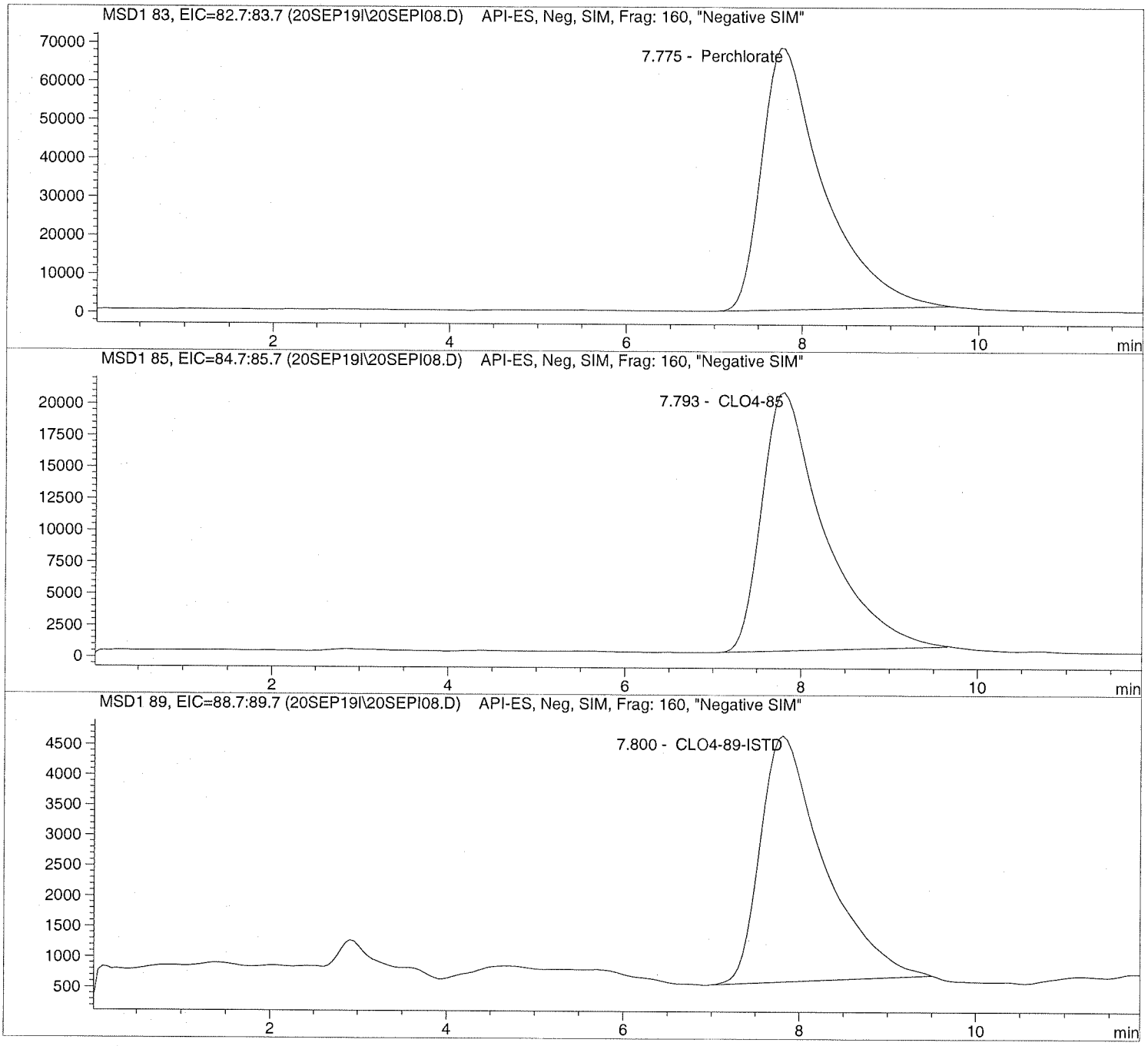
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

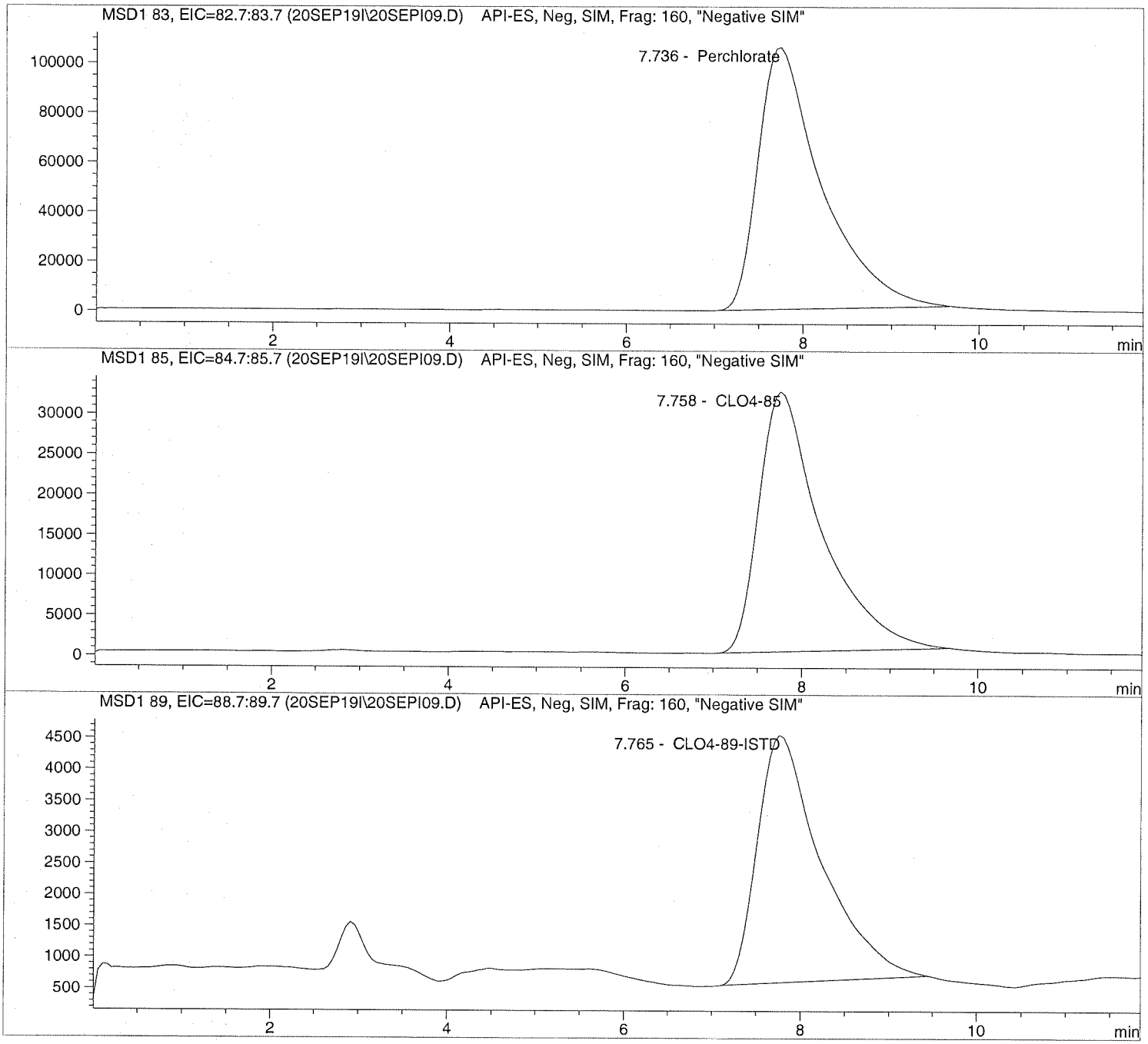
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

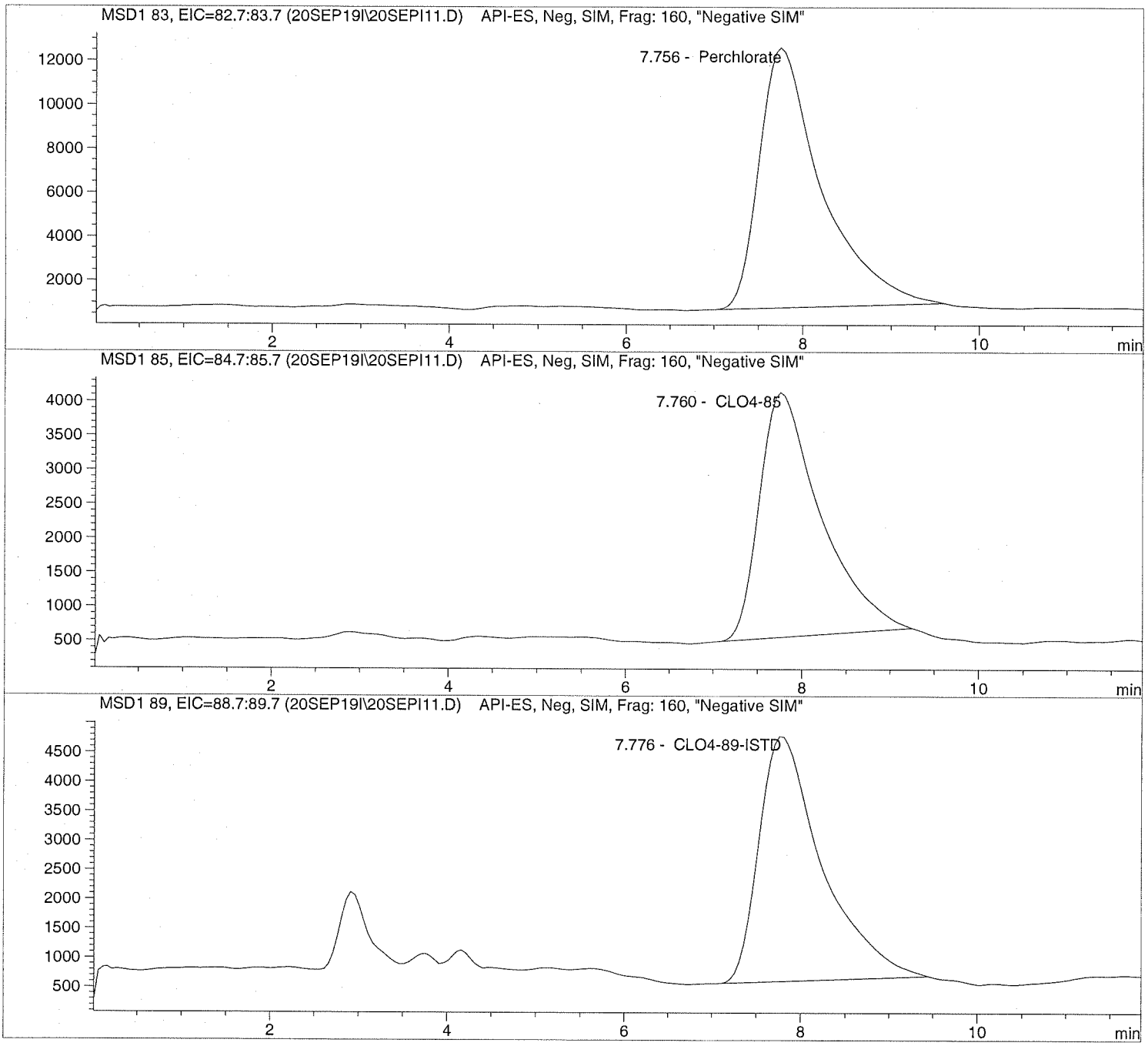
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

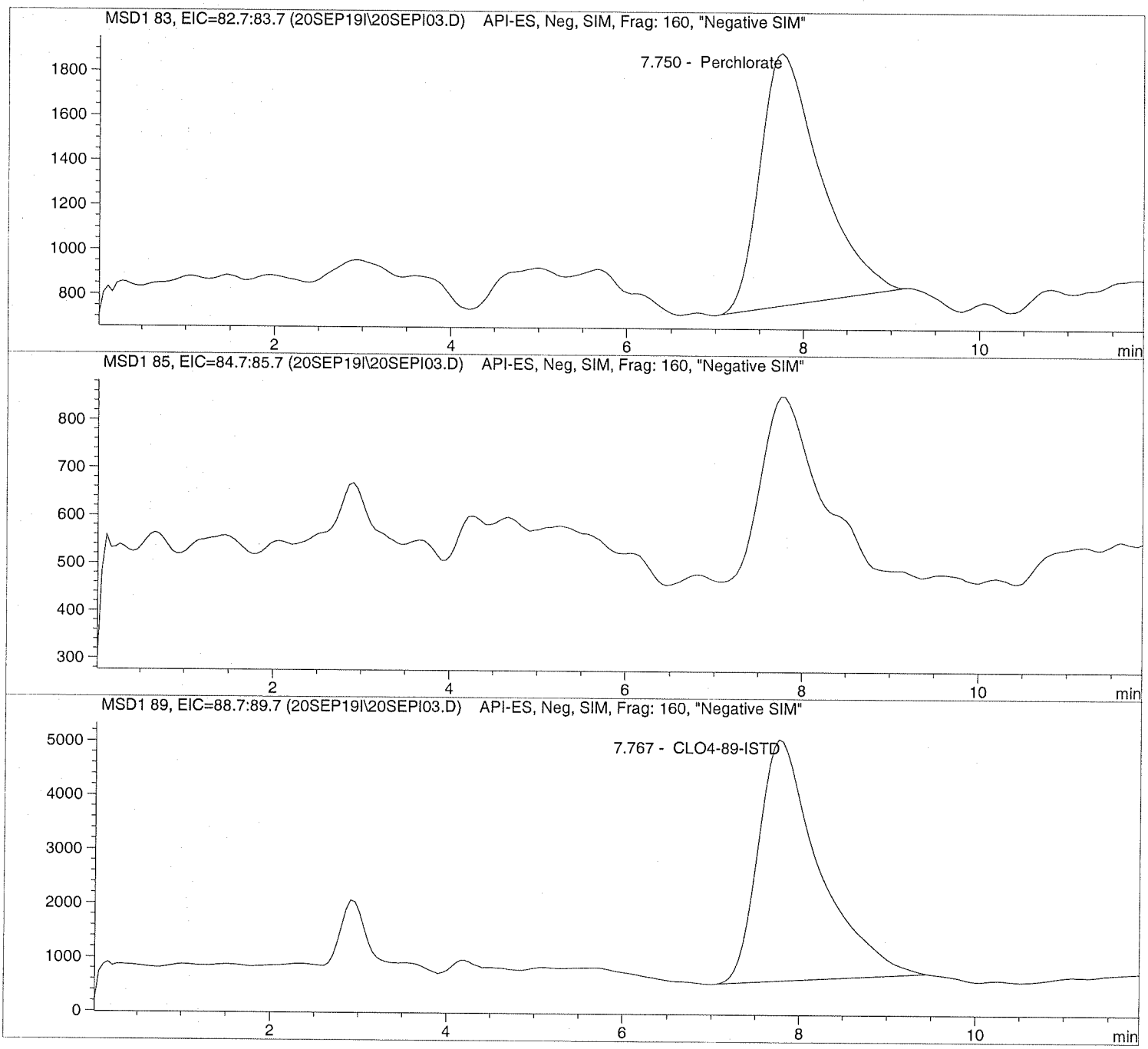
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

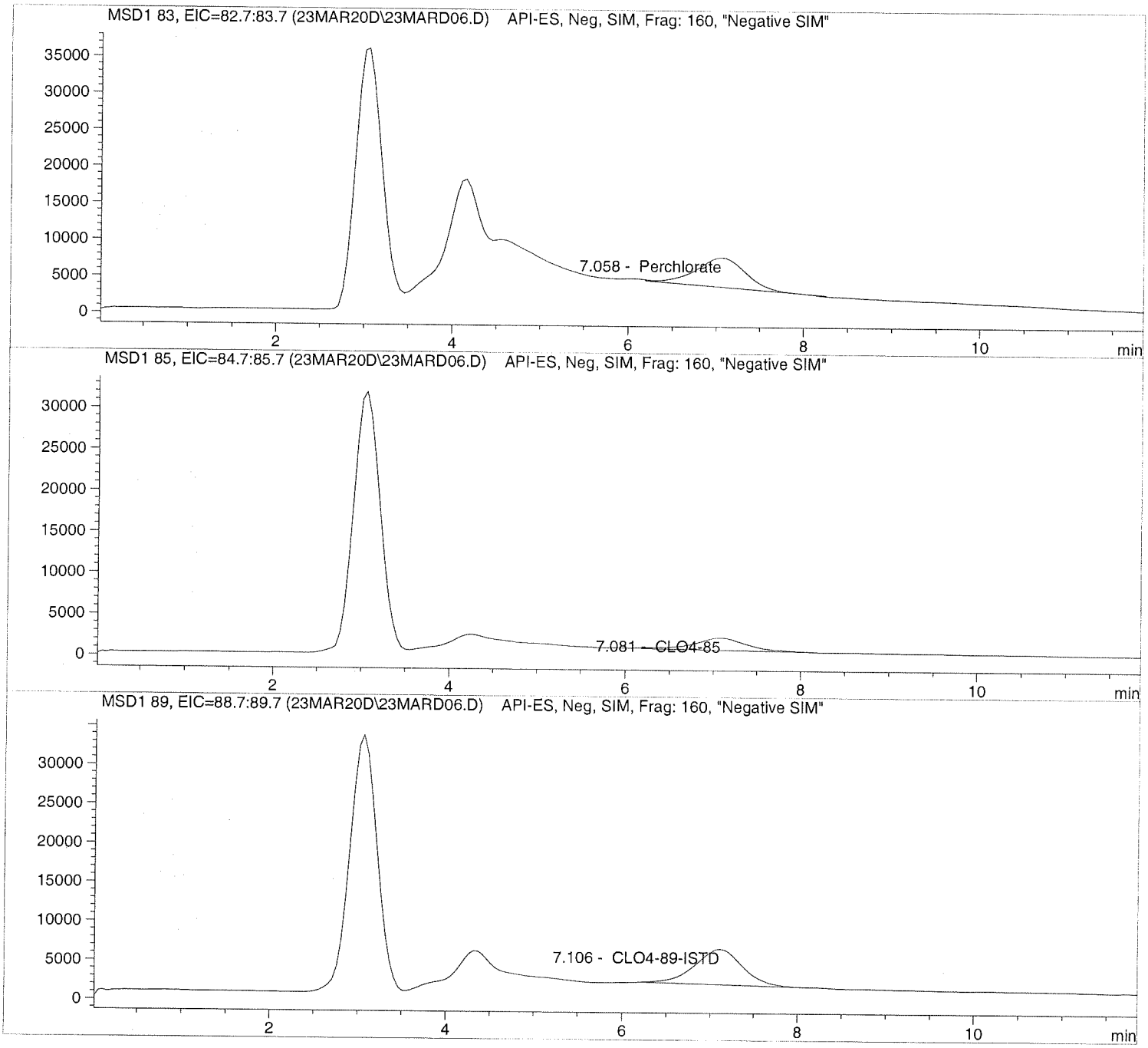
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD06.D Sample Name: 700531 79101MS

Injection Date:	3/23/2020 09:31:23	Seq Line:	6
Sample Name:	700531 79101MS	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD06.D Sample Name: 700531 79101MS

Injection Date:	3/23/2020 09:31:23	Seq Line:	6
Sample Name:	700531 79101MS	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.058	BBA	154695.2	3.3062	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.081	BBA	60755.2	4.1701	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.106	PBA	172346.3	5.0000	CLO4-89-ISTD

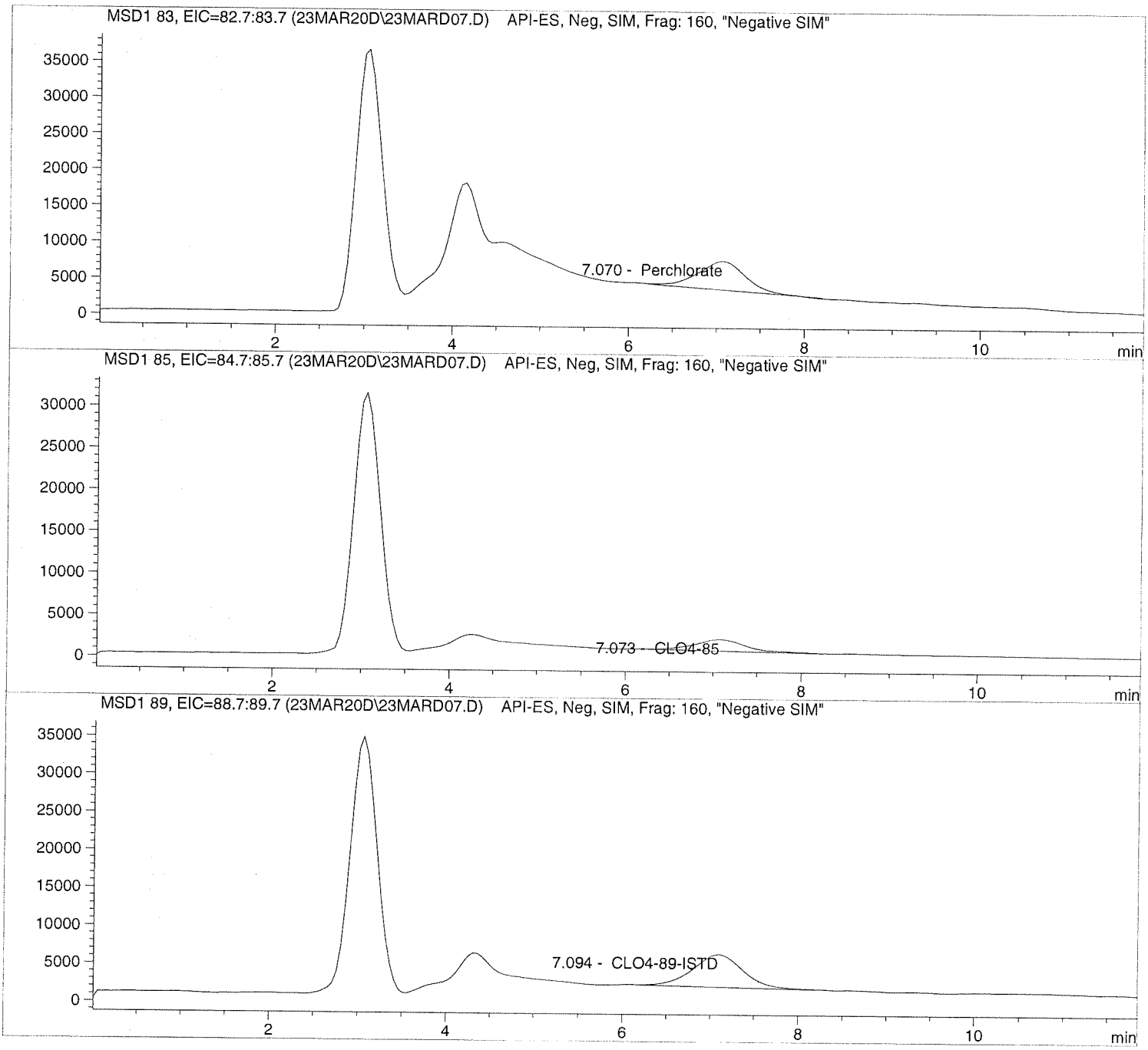
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD07.D Sample Name: 700532 79101SD

Injection Date:	3/23/2020 09:45:23	Seq Line:	7
Sample Name:	700532 79101SD	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD07.D Sample Name: 700532 79101SD

Injection Date:	3/23/2020 09:45:23	Seq Line:	7
Sample Name:	700532 79101SD	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.070	BBA	146805.8	3.1347	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.073	PBA	57104.1	3.9125	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.094	BBA	172409.8	5.0000	CLO4-89-ISTD

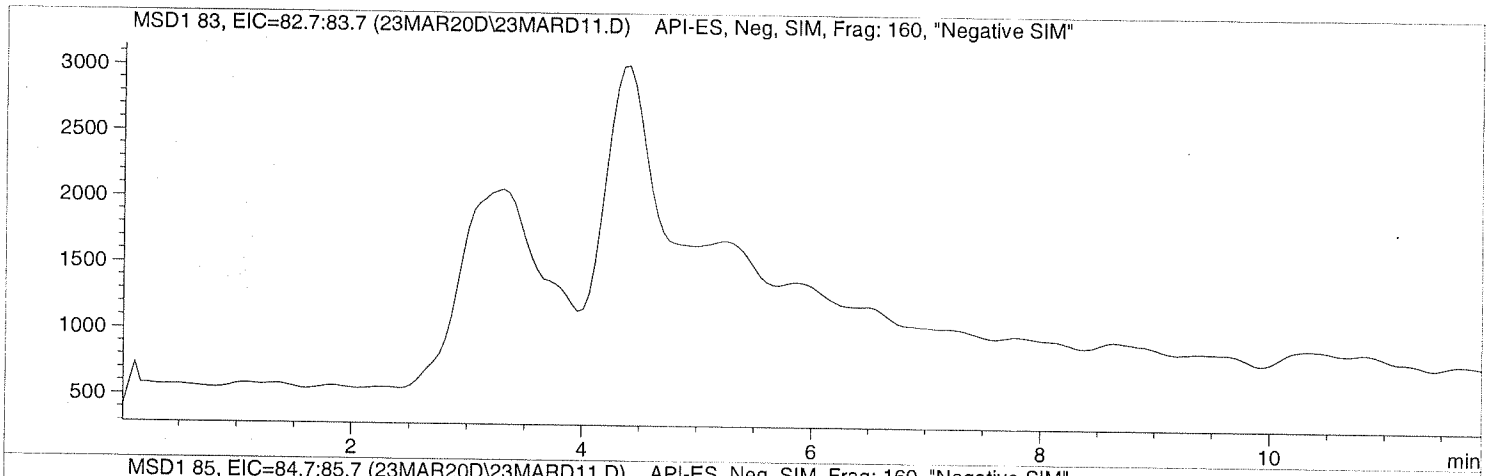
*** End of Report ***

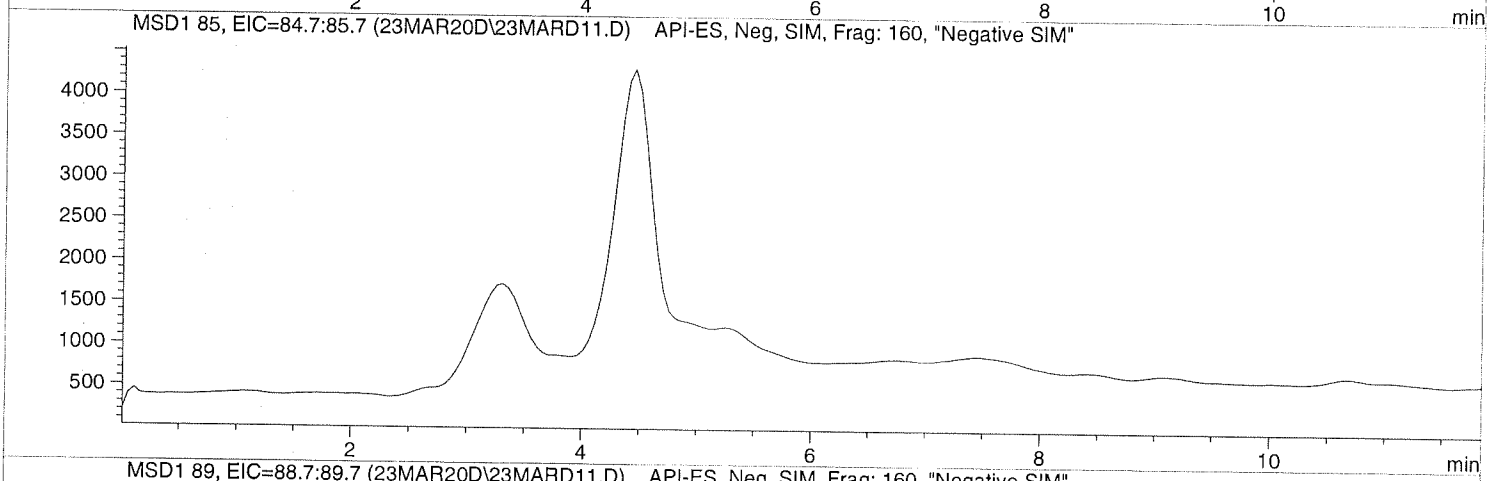
Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD11.D Sample Name: 2007910005

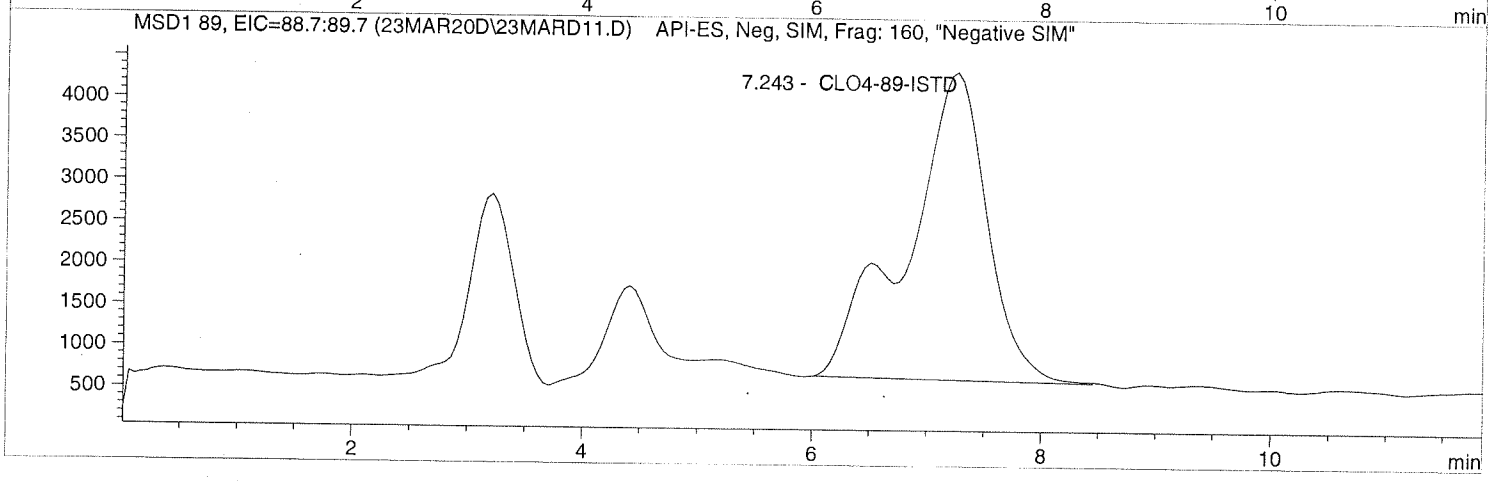
Injection Date:	3/23/2020 10:41:21	Seq Line:	11
Sample Name:	2007910005	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\23MAR20D\23MARD11.D Sample Name: 2007910005

Injection Date:	3/23/2020 10:41:21	Seq Line:	11
Sample Name:	2007910005	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.243	PBA	179483.4	5.0000	CLO4-89-ISTD

*** End of Report ***

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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April 01, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20030733**

Laboratory Results for: **Longhorn Army Ammunition Plant - 16**

Dear Susan,

ALS Environmental received 9 sample(s) on Mar 17, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Work Order: HS20030733

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20030733-01	16WW56-200316	Groundwater		16-Mar-2020 08:15	17-Mar-2020 09:20	☐
HS20030733-02	16WW22-200316	Groundwater		16-Mar-2020 09:10	17-Mar-2020 09:20	☐
HS20030733-03	16WW41-200316	Groundwater		16-Mar-2020 10:05	17-Mar-2020 09:20	☐
HS20030733-04	16WW21-200316	Groundwater		16-Mar-2020 10:55	17-Mar-2020 09:20	☐
HS20030733-05	16WW39-200316	Groundwater		16-Mar-2020 10:50	17-Mar-2020 09:20	☐
HS20030733-06	16WW25-200316	Groundwater		16-Mar-2020 12:55	17-Mar-2020 09:20	☐
HS20030733-07	16WW21-200316-FD	Groundwater		16-Mar-2020 10:55	17-Mar-2020 09:20	☐
HS20030733-08	16WW49-200316	Groundwater		16-Mar-2020 13:55	17-Mar-2020 09:20	☐
HS20030733-09	Trip Blank	Water	CG 021720 -02	16-Mar-2020 00:00	17-Mar-2020 09:20	☐

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant - 16
Work Order: HS20030733

Work Order Comments

• The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

• The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached.

GC Semivolatiles by Method RSK-175

Batch ID: R358625

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R358659,R358682

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R358997

Sample ID: 16WW25-200316 (HS20030733-06)

• The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Bromide)

Batch ID: R358987

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R358569

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW56-200316
Collection Date: 16-Mar-2020 08:15

ANALYTICAL REPORT
WorkOrder:HS20030733
Lab ID:HS20030733-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	22-Mar-2020 15:32
1,1-Dichloroethene	**2.9**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 15:32
1,2-Dichloroethane	**3.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 15:32
cis-1,2-Dichloroethene	**44**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 15:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	22-Mar-2020 15:32
Trichloroethene	**520**		**2.0**	**5.0**	**10**	**UG/L**	10	22-Mar-2020 16:44
Vinyl chloride	**6.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 15:32
Surr: 1,2-Dichloroethane-d4	*91.8*			**0**	*81-118*	*%REC*	*1*	*22-Mar-2020 15:32*
Surr: 1,2-Dichloroethane-d4	*90.3*			**0**	*81-118*	*%REC*	*10*	*22-Mar-2020 16:44*
Surr: 4-Bromofluorobenzene	*98.3*			**0**	*85-114*	*%REC*	*1*	*22-Mar-2020 15:32*
Surr: 4-Bromofluorobenzene	*98.5*			**0**	*85-114*	*%REC*	*10*	*22-Mar-2020 16:44*
Surr: Dibromofluoromethane	*94.8*			**0**	*80-119*	*%REC*	*1*	*22-Mar-2020 15:32*
Surr: Dibromofluoromethane	*93.3*			**0**	*80-119*	*%REC*	*10*	*22-Mar-2020 16:44*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*22-Mar-2020 15:32*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*10*	*22-Mar-2020 16:44*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000417**	J	**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	20-Mar-2020 10:09
Ethene	**0.00517**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	20-Mar-2020 10:09
Methane	**0.00494**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	20-Mar-2020 10:09
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**389**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	20-Mar-2020 09:55
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**3.19**		**0.150**	**0.500**	**0.500**	**mg/L**	5	17-Mar-2020 20:46
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	17-Mar-2020 20:46
Sulfate	**2,090**		**10.0**	**25.0**	**25.0**	**mg/L**	50	17-Mar-2020 21:58
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	25-Mar-2020 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW22-200316
Collection Date: 16-Mar-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20030733
Lab ID:HS20030733-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	21-Mar-2020 07:19
1,1-Dichloroethene	**0.65**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	21-Mar-2020 07:19
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 07:19
cis-1,2-Dichloroethene	**4.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	21-Mar-2020 07:19
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	21-Mar-2020 07:19
Trichloroethene	**52**		**0.20**	**0.50**	**1.0**	**UG/L**	1	21-Mar-2020 07:19
Vinyl chloride	**0.69**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	21-Mar-2020 07:19
Surr: 1,2-Dichloroethane-d4	*90.2*			**0**	*81-118*	*%REC*	*1*	*21-Mar-2020 07:19*
Surr: 4-Bromofluorobenzene	*98.2*			**0**	*85-114*	*%REC*	*1*	*21-Mar-2020 07:19*
Surr: Dibromofluoromethane	*95.0*			**0**	*80-119*	*%REC*	*1*	*21-Mar-2020 07:19*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*21-Mar-2020 07:19*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000288**	J	**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	20-Mar-2020 10:27
Ethene	**0.00168**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	20-Mar-2020 10:27
Methane	**0.00298**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	20-Mar-2020 10:27
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**168**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	20-Mar-2020 10:23
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**4.00**		**0.150**	**0.500**	**0.500**	**mg/L**	5	17-Mar-2020 21:04
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	17-Mar-2020 21:04
Sulfate	**368**		**1.00**	**2.50**	**2.50**	**mg/L**	5	17-Mar-2020 21:04
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	25-Mar-2020 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW41-200316
Collection Date: 16-Mar-2020 10:05

ANALYTICAL REPORT
WorkOrder:HS20030733
Lab ID:HS20030733-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	22-Mar-2020 17:56
1,1-Dichloroethene	**14**		**1.0**	**2.5**	**5.0**	**UG/L**	5	22-Mar-2020 17:56
1,2-Dichloroethane	**4.0**	J	**1.0**	**2.5**	**5.0**	**UG/L**	5	22-Mar-2020 17:56
cis-1,2-Dichloroethene	**2,000**		**10**	**25**	**50**	**UG/L**	50	22-Mar-2020 18:20
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	22-Mar-2020 17:56
Trichloroethene	**6,400**		**10**	**25**	**50**	**UG/L**	50	22-Mar-2020 18:20
Vinyl chloride	**120**		**1.0**	**2.5**	**5.0**	**UG/L**	5	22-Mar-2020 17:56
Surr: 1,2-Dichloroethane-d4	*91.7*			**0**	*81-118*	*%REC*	*50*	*22-Mar-2020 18:20*
Surr: 1,2-Dichloroethane-d4	*91.6*			**0**	*81-118*	*%REC*	*5*	*22-Mar-2020 17:56*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*5*	*22-Mar-2020 17:56*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*85-114*	*%REC*	*50*	*22-Mar-2020 18:20*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*5*	*22-Mar-2020 17:56*
Surr: Dibromofluoromethane	*95.3*			**0**	*80-119*	*%REC*	*50*	*22-Mar-2020 18:20*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*5*	*22-Mar-2020 17:56*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*50*	*22-Mar-2020 18:20*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000374**	J	**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	20-Mar-2020 10:36
Ethene	**0.00996**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	20-Mar-2020 10:36
Methane	**0.0163**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	20-Mar-2020 10:36
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**1,010**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	20-Mar-2020 10:31
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	0.500	U	0.150	0.500	0.500	mg/L	5	17-Mar-2020 21:22
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	17-Mar-2020 21:22
Sulfate	**8,060**		**100**	**250**	**250**	**mg/L**	500	25-Mar-2020 16:40
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	25-Mar-2020 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW21-200316
Collection Date: 16-Mar-2020 10:55

ANALYTICAL REPORT
WorkOrder:HS20030733
Lab ID:HS20030733-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	21-Mar-2020 07:43
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 07:43
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 07:43
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 07:43
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	21-Mar-2020 07:43
Trichloroethene	**1.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	21-Mar-2020 07:43
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 07:43
Surr: 1,2-Dichloroethane-d4	*89.0*			**0**	*81-118*	*%REC*	*1*	*21-Mar-2020 07:43*
Surr: 4-Bromofluorobenzene	*98.0*			**0**	*85-114*	*%REC*	*1*	*21-Mar-2020 07:43*
Surr: Dibromofluoromethane	*94.3*			**0**	*80-119*	*%REC*	*1*	*21-Mar-2020 07:43*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*21-Mar-2020 07:43*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**0.206**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	25-Mar-2020 15:28
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	25-Mar-2020 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW39-200316
Collection Date: 16-Mar-2020 10:50

ANALYTICAL REPORT
WorkOrder:HS20030733
Lab ID:HS20030733-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	22-Mar-2020 17:08
1,1-Dichloroethene	**2.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 17:08
1,2-Dichloroethane	**1.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 17:08
cis-1,2-Dichloroethene	**98**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 17:08
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	22-Mar-2020 17:08
Trichloroethene	**1,100**		**5.0**	**12**	**25**	**UG/L**	25	22-Mar-2020 17:32
Vinyl chloride	**5.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 17:08
Surr: 1,2-Dichloroethane-d4	*91.4*			**0**	*81-118*	*%REC*	*1*	*22-Mar-2020 17:08*
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*81-118*	*%REC*	*25*	*22-Mar-2020 17:32*
Surr: 4-Bromofluorobenzene	*98.5*			**0**	*85-114*	*%REC*	*1*	*22-Mar-2020 17:08*
Surr: 4-Bromofluorobenzene	*96.5*			**0**	*85-114*	*%REC*	*25*	*22-Mar-2020 17:32*
Surr: Dibromofluoromethane	*94.1*			**0**	*80-119*	*%REC*	*1*	*22-Mar-2020 17:08*
Surr: Dibromofluoromethane	*95.4*			**0**	*80-119*	*%REC*	*25*	*22-Mar-2020 17:32*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*22-Mar-2020 17:08*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*25*	*22-Mar-2020 17:32*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**4.84**		**0.300**	**1.00**	**1.00**	**mg/L**	10	25-Mar-2020 15:46
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	25-Mar-2020 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW25-200316
Collection Date: 16-Mar-2020 12:55

ANALYTICAL REPORT
WorkOrder:HS20030733
Lab ID:HS20030733-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	21-Mar-2020 08:07
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 08:07
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 08:07
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 08:07
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	21-Mar-2020 08:07
Trichloroethene	**0.85**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	21-Mar-2020 08:07
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 08:07
Surr: 1,2-Dichloroethane-d4	*89.6*			**0**	*81-118*	*%REC*	*1*	*21-Mar-2020 08:07*
Surr: 4-Bromofluorobenzene	*97.7*			**0**	*85-114*	*%REC*	*1*	*21-Mar-2020 08:07*
Surr: Dibromofluoromethane	*93.5*			**0**	*80-119*	*%REC*	*1*	*21-Mar-2020 08:07*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*21-Mar-2020 08:07*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000371**	J	**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	20-Mar-2020 10:46
Ethene	**0.00226**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	20-Mar-2020 10:46
Methane	**0.0221**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	20-Mar-2020 10:46
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**32.4**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	20-Mar-2020 10:36
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**3.71**	J	**1.50**	**5.00**	**5.00**	**mg/L**	50	17-Mar-2020 23:29
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	17-Mar-2020 21:40
Sulfate	**5,000**		**100**	**250**	**250**	**mg/L**	500	25-Mar-2020 16:59
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	25-Mar-2020 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW21-200316-FD
Collection Date: 16-Mar-2020 10:55

ANALYTICAL REPORT
WorkOrder:HS20030733
Lab ID:HS20030733-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	21-Mar-2020 08:31
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 08:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 08:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 08:31
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	21-Mar-2020 08:31
Trichloroethene	**1.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	21-Mar-2020 08:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 08:31
Surr: 1,2-Dichloroethane-d4	*92.0*			**0**	*81-118*	*%REC*	*1*	*21-Mar-2020 08:31*
Surr: 4-Bromofluorobenzene	*97.0*			**0**	*85-114*	*%REC*	*1*	*21-Mar-2020 08:31*
Surr: Dibromofluoromethane	*93.9*			**0**	*80-119*	*%REC*	*1*	*21-Mar-2020 08:31*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*21-Mar-2020 08:31*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**0.209**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	25-Mar-2020 16:04
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	25-Mar-2020 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW49-200316
Collection Date: 16-Mar-2020 13:55

ANALYTICAL REPORT
WorkOrder:HS20030733
Lab ID:HS20030733-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	22-Mar-2020 15:08
1,1-Dichloroethene	**0.77**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 15:08
1,2-Dichloroethane	**0.85**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 15:08
cis-1,2-Dichloroethene	**270**		**1.0**	**2.5**	**5.0**	**UG/L**	5	22-Mar-2020 21:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	22-Mar-2020 15:08
Trichloroethene	**8.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 15:08
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 15:08
Surr: 1,2-Dichloroethane-d4	*92.2*			**0**	*81-118*	*%REC*	*1*	*22-Mar-2020 15:08*
Surr: 1,2-Dichloroethane-d4	*91.2*			**0**	*81-118*	*%REC*	*5*	*22-Mar-2020 21:32*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*85-114*	*%REC*	*1*	*22-Mar-2020 15:08*
Surr: 4-Bromofluorobenzene	*96.1*			**0**	*85-114*	*%REC*	*5*	*22-Mar-2020 21:32*
Surr: Dibromofluoromethane	*95.8*			**0**	*80-119*	*%REC*	*1*	*22-Mar-2020 15:08*
Surr: Dibromofluoromethane	*95.6*			**0**	*80-119*	*%REC*	*5*	*22-Mar-2020 21:32*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*22-Mar-2020 15:08*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*5*	*22-Mar-2020 21:32*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**2.16**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	25-Mar-2020 16:22
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	25-Mar-2020 14:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: Trip Blank
Collection Date: 16-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20030733
Lab ID:HS20030733-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	21-Mar-2020 01:18
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 01:18
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 01:18
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 01:18
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	21-Mar-2020 01:18
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 01:18
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	21-Mar-2020 01:18
Surr: 1,2-Dichloroethane-d4	*90.5*			**0**	*81-118*	*%REC*	*1*	*21-Mar-2020 01:18*
Surr: 4-Bromofluorobenzene	*95.4*			**0**	*85-114*	*%REC*	*1*	*21-Mar-2020 01:18*
Surr: Dibromofluoromethane	*94.0*			**0**	*80-119*	*%REC*	*1*	*21-Mar-2020 01:18*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*21-Mar-2020 01:18*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R358569 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS20030733-01	16WW56-200316	16 Mar 2020 08:15			20 Mar 2020 09:55	1
HS20030733-02	16WW22-200316	16 Mar 2020 09:10			20 Mar 2020 10:23	1
HS20030733-03	16WW41-200316	16 Mar 2020 10:05			20 Mar 2020 10:31	1
HS20030733-06	16WW25-200316	16 Mar 2020 12:55			20 Mar 2020 10:36	1
Batch ID: R358625 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS20030733-01	16WW56-200316	16 Mar 2020 08:15			20 Mar 2020 10:09	1
HS20030733-02	16WW22-200316	16 Mar 2020 09:10			20 Mar 2020 10:27	1
HS20030733-03	16WW41-200316	16 Mar 2020 10:05			20 Mar 2020 10:36	1
HS20030733-06	16WW25-200316	16 Mar 2020 12:55			20 Mar 2020 10:46	1
Batch ID: R358659 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20030733-09	Trip Blank	16 Mar 2020 00:00			21 Mar 2020 01:18	1
Batch ID: R358659 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20030733-02	16WW22-200316	16 Mar 2020 09:10			21 Mar 2020 07:19	1
HS20030733-04	16WW21-200316	16 Mar 2020 10:55			21 Mar 2020 07:43	1
HS20030733-06	16WW25-200316	16 Mar 2020 12:55			21 Mar 2020 08:07	1
HS20030733-07	16WW21-200316-FD	16 Mar 2020 10:55			21 Mar 2020 08:31	1
Batch ID: R358682 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20030733-01	16WW56-200316	16 Mar 2020 08:15			22 Mar 2020 16:44	10
HS20030733-01	16WW56-200316	16 Mar 2020 08:15			22 Mar 2020 15:32	1
HS20030733-03	16WW41-200316	16 Mar 2020 10:05			22 Mar 2020 18:20	50
HS20030733-03	16WW41-200316	16 Mar 2020 10:05			22 Mar 2020 17:56	5
HS20030733-05	16WW39-200316	16 Mar 2020 10:50			22 Mar 2020 17:32	25
HS20030733-05	16WW39-200316	16 Mar 2020 10:50			22 Mar 2020 17:08	1
HS20030733-08	16WW49-200316	16 Mar 2020 13:55			22 Mar 2020 21:32	5
HS20030733-08	16WW49-200316	16 Mar 2020 13:55			22 Mar 2020 15:08	1
Batch ID: R358878 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20030733-01	16WW56-200316	16 Mar 2020 08:15			25 Mar 2020 14:54	1
HS20030733-02	16WW22-200316	16 Mar 2020 09:10			25 Mar 2020 14:54	1
HS20030733-03	16WW41-200316	16 Mar 2020 10:05			25 Mar 2020 14:54	1
HS20030733-04	16WW21-200316	16 Mar 2020 10:55			25 Mar 2020 14:54	1
HS20030733-05	16WW39-200316	16 Mar 2020 10:50			25 Mar 2020 14:54	1
HS20030733-06	16WW25-200316	16 Mar 2020 12:55			25 Mar 2020 14:54	1
HS20030733-07	16WW21-200316-FD	16 Mar 2020 10:55			25 Mar 2020 14:54	1
HS20030733-08	16WW49-200316	16 Mar 2020 13:55			25 Mar 2020 14:54	1

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R358987 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20030733-03	16WW41-200316	16 Mar 2020 10:05			25 Mar 2020 16:40	500
HS20030733-04	16WW21-200316	16 Mar 2020 10:55			25 Mar 2020 15:28	1
HS20030733-05	16WW39-200316	16 Mar 2020 10:50			25 Mar 2020 15:46	10
HS20030733-06	16WW25-200316	16 Mar 2020 12:55			25 Mar 2020 16:59	500
HS20030733-07	16WW21-200316-FD	16 Mar 2020 10:55			25 Mar 2020 16:04	1
HS20030733-08	16WW49-200316	16 Mar 2020 13:55			25 Mar 2020 16:22	1
Batch ID: R358997 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20030733-01	16WW56-200316	16 Mar 2020 08:15			17 Mar 2020 21:58	50
HS20030733-01	16WW56-200316	16 Mar 2020 08:15			17 Mar 2020 20:46	5
HS20030733-02	16WW22-200316	16 Mar 2020 09:10			17 Mar 2020 21:04	5
HS20030733-03	16WW41-200316	16 Mar 2020 10:05			17 Mar 2020 21:22	5
HS20030733-06	16WW25-200316	16 Mar 2020 12:55			17 Mar 2020 23:29	50
HS20030733-06	16WW25-200316	16 Mar 2020 12:55			17 Mar 2020 21:40	5
Batch ID: R359317 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20030733-01	16WW56-200316	16 Mar 2020 08:15			01 Apr 2020 14:16	1
HS20030733-02	16WW22-200316	16 Mar 2020 09:10			01 Apr 2020 14:16	1
HS20030733-03	16WW41-200316	16 Mar 2020 10:05			01 Apr 2020 14:16	1
HS20030733-04	16WW21-200316	16 Mar 2020 10:55			01 Apr 2020 14:16	1
HS20030733-05	16WW39-200316	16 Mar 2020 10:50			01 Apr 2020 14:16	1
HS20030733-06	16WW25-200316	16 Mar 2020 12:55			01 Apr 2020 14:16	1
HS20030733-07	16WW21-200316-FD	16 Mar 2020 10:55			01 Apr 2020 14:16	1
HS20030733-08	16WW49-200316	16 Mar 2020 13:55			01 Apr 2020 14:16	1

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

QC BATCH REPORT

Batch ID: R358625 (0) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-200320** Units: **mg/L** Analysis Date: **20-Mar-2020 09:55**
Client ID: Run ID: **FID-4_358625** SeqNo: **5523535** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000500	0.00100								U
Ethene	0.000500	0.00100								U
Methane	0.000500	0.000500								U

LCS Sample ID: **LCS-200320** Units: **mg/L** Analysis Date: **20-Mar-2020 09:31**
Client ID: Run ID: **FID-4_358625** SeqNo: **5523533** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0157	0.00100	0.01804	0	87.0	75 - 125				
Ethene	0.0148	0.00100	0.0168	0	88.0	75 - 125				
Methane	0.00845	0.000500	0.009647	0	87.6	75 - 125				

LCSD Sample ID: **LCSD-200320** Units: **mg/L** Analysis Date: **20-Mar-2020 09:42**
Client ID: Run ID: **FID-4_358625** SeqNo: **5523534** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0158	0.00100	0.01804	0	87.7	75 - 125	0.01571	0.741	30	
Ethene	0.0154	0.00100	0.0168	0	91.4	75 - 125	0.01479	3.75	30	
Methane	0.00893	0.000500	0.009647	0	92.6	75 - 125	0.008450	5.55	30	

DUP Sample ID: **HS20030733-01DUP** Units: **mg/L** Analysis Date: **20-Mar-2020 10:18**
Client ID: **16WW56-200316** Run ID: **FID-4_358625** SeqNo: **5523537** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000391	0.00100					0.0004170	0	30	J
Ethene	0.00475	0.00100					0.005168	8.36	30	
Methane	0.00472	0.000500					0.004943	4.61	30	

The following samples were analyzed in this batch: HS20030733-01 HS20030733-02 HS20030733-03 HS20030733-06

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

QC BATCH REPORT

Batch ID: R358659 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW1-200320** Units: **UG/L** Analysis Date: **21-Mar-2020 00:29**
Client ID: Run ID: **VOA6_358659** SeqNo: **5524279** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.95*	*1.0*	*50*	*0*	*89.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.05*	*1.0*	*50*	*0*	*98.1*	*85 - 114*				
Surr: Dibromofluoromethane	*47.12*	*1.0*	*50*	*0*	*94.2*	*80 - 119*				
Surr: Toluene-d8	*53.14*	*1.0*	*50*	*0*	*106*	*89 - 112*				

LCS Sample ID: **VLCSW-200320** Units: **UG/L** Analysis Date: **20-Mar-2020 23:41**
Client ID: Run ID: **VOA6_358659** SeqNo: **5524278** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.89	1.0	20	0	99.5	80 - 119				
1,1-Dichloroethene	18.72	1.0	20	0	93.6	71 - 131				
1,2-Dichloroethane	19.83	1.0	20	0	99.1	73 - 128				
cis-1,2-Dichloroethene	20.22	1.0	20	0	101	78 - 123				
Methylene chloride	20.64	2.0	20	0	103	74 - 124				
Trichloroethene	19.59	1.0	20	0	97.9	79 - 123				
Vinyl chloride	18.09	1.0	20	0	90.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*54.98*	*1.0*	*50*	*0*	*110*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.24*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*56.22*	*1.0*	*50*	*0*	*112*	*80 - 119*				
Surr: Toluene-d8	*51.8*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

QC BATCH REPORT

Batch ID: R358659 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20030621-01MS** Units: **UG/L** Analysis Date: **21-Mar-2020 02:30**
Client ID: Run ID: **VOA6_358659** SeqNo: **5524284** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.02	1.0	20	0	100	80 - 119				
1,1-Dichloroethene	18.87	1.0	20	0	94.3	71 - 131				
1,2-Dichloroethane	19.26	1.0	20	0	96.3	73 - 128				
cis-1,2-Dichloroethene	19.78	1.0	20	0	98.9	78 - 123				
Methylene chloride	18.69	2.0	20	0	93.5	74 - 124				
Trichloroethene	21.01	1.0	20	1.118	99.4	79 - 123				
Vinyl chloride	19.44	1.0	20	0	97.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.45*	*1.0*	*50*	*0*	*92.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.71*	*1.0*	*50*	*0*	*97.4*	*85 - 114*				
Surr: Dibromofluoromethane	*47.23*	*1.0*	*50*	*0*	*94.5*	*80 - 119*				
Surr: Toluene-d8	*52.29*	*1.0*	*50*	*0*	*105*	*89 - 112*				

MSD Sample ID: **HS20030621-01MSD** Units: **UG/L** Analysis Date: **21-Mar-2020 02:54**
Client ID: Run ID: **VOA6_358659** SeqNo: **5524285** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.73	1.0	20	0	98.6	80 - 119	20.02	1.5	20	
1,1-Dichloroethene	17.66	1.0	20	0	88.3	71 - 131	18.87	6.61	20	
1,2-Dichloroethane	19.51	1.0	20	0	97.6	73 - 128	19.26	1.32	20	
cis-1,2-Dichloroethene	18.67	1.0	20	0	93.3	78 - 123	19.78	5.8	20	
Methylene chloride	17.56	2.0	20	0	87.8	74 - 124	18.69	6.27	20	
Trichloroethene	19.79	1.0	20	1.118	93.4	79 - 123	21.01	5.96	20	
Vinyl chloride	17.46	1.0	20	0	87.3	58 - 137	19.44	10.7	20	
Surr: 1,2-Dichloroethane-d4	*45.71*	*1.0*	*50*	*0*	*91.4*	*81 - 118*	*46.45*	*1.6*	*20*	
Surr: 4-Bromofluorobenzene	*48.72*	*1.0*	*50*	*0*	*97.4*	*85 - 114*	*48.71*	*0.0289*	*20*	
Surr: Dibromofluoromethane	*47.12*	*1.0*	*50*	*0*	*94.2*	*80 - 119*	*47.23*	*0.23*	*20*	
Surr: Toluene-d8	*52.23*	*1.0*	*50*	*0*	*104*	*89 - 112*	*52.29*	*0.122*	*20*	

The following samples were analyzed in this batch: HS20030733-02 HS20030733-04 HS20030733-06 HS20030733-07 HS20030733-09

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

QC BATCH REPORT

Batch ID: R358682 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW1-200322** Units: **UG/L** Analysis Date: **22-Mar-2020 13:55**
Client ID: Run ID: **VOA6_358682** SeqNo: **5524950** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.31*	*1.0*	*50*	*0*	*90.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.37*	*1.0*	*50*	*0*	*96.7*	*85 - 114*				
Surr: Dibromofluoromethane	*47.15*	*1.0*	*50*	*0*	*94.3*	*80 - 119*				
Surr: Toluene-d8	*52.17*	*1.0*	*50*	*0*	*104*	*89 - 112*				

LCS Sample ID: **VLCSW-200322** Units: **UG/L** Analysis Date: **22-Mar-2020 13:07**
Client ID: Run ID: **VOA6_358682** SeqNo: **5524949** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	18.87	1.0	20	0	94.3	80 - 119				
1,1-Dichloroethene	18.61	1.0	20	0	93.0	71 - 131				
1,2-Dichloroethane	19.63	1.0	20	0	98.1	73 - 128				
cis-1,2-Dichloroethene	20.16	1.0	20	0	101	78 - 123				
Methylene chloride	19.54	2.0	20	0	97.7	74 - 124				
Trichloroethene	19.83	1.0	20	0	99.1	79 - 123				
Vinyl chloride	18.08	1.0	20	0	90.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.29*	*1.0*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.64*	*1.0*	*50*	*0*	*99.3*	*85 - 114*				
Surr: Dibromofluoromethane	*51.88*	*1.0*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*50.26*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

QC BATCH REPORT

Batch ID: R358682 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20030888-01MS** Units: **UG/L** Analysis Date: **22-Mar-2020 15:56**
Client ID: Run ID: **VOA6_358682** SeqNo: **5524955** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.7	1.0	20	0	98.5	80 - 119				
1,1-Dichloroethene	19.41	1.0	20	0	97.0	71 - 131				
1,2-Dichloroethane	19.71	1.0	20	0	98.6	73 - 128				
cis-1,2-Dichloroethene	19.39	1.0	20	0	96.9	78 - 123				
Methylene chloride	18.18	2.0	20	0	90.9	74 - 124				
Trichloroethene	21.91	1.0	20	0	110	79 - 123				
Vinyl chloride	19.26	1.0	20	0	96.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.31*	*1.0*	*50*	*0*	*90.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.99*	*1.0*	*50*	*0*	*98.0*	*85 - 114*				
Surr: Dibromofluoromethane	*47.73*	*1.0*	*50*	*0*	*95.5*	*80 - 119*				
Surr: Toluene-d8	*51.65*	*1.0*	*50*	*0*	*103*	*89 - 112*				

MSD Sample ID: **HS20030888-01MSD** Units: **UG/L** Analysis Date: **22-Mar-2020 16:20**
Client ID: Run ID: **VOA6_358682** SeqNo: **5524956** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.83	1.0	20	0	99.1	80 - 119	19.7	0.625	20	
1,1-Dichloroethene	18.26	1.0	20	0	91.3	71 - 131	19.41	6.08	20	
1,2-Dichloroethane	19.55	1.0	20	0	97.7	73 - 128	19.71	0.835	20	
cis-1,2-Dichloroethene	18.67	1.0	20	0	93.4	78 - 123	19.39	3.76	20	
Methylene chloride	17.4	2.0	20	0	87.0	74 - 124	18.18	4.36	20	
Trichloroethene	20.18	1.0	20	0	101	79 - 123	21.91	8.25	20	
Vinyl chloride	18.09	1.0	20	0	90.4	58 - 137	19.26	6.3	20	
Surr: 1,2-Dichloroethane-d4	*45.14*	*1.0*	*50*	*0*	*90.3*	*81 - 118*	*45.31*	*0.37*	*20*	
Surr: 4-Bromofluorobenzene	*48.67*	*1.0*	*50*	*0*	*97.3*	*85 - 114*	*48.99*	*0.656*	*20*	
Surr: Dibromofluoromethane	*47.96*	*1.0*	*50*	*0*	*95.9*	*80 - 119*	*47.73*	*0.482*	*20*	
Surr: Toluene-d8	*52.32*	*1.0*	*50*	*0*	*105*	*89 - 112*	*51.65*	*1.29*	*20*	

The following samples were analyzed in this batch: HS20030733-01 HS20030733-03 HS20030733-05 HS20030733-08

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

QC BATCH REPORT

Batch ID: R358569 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW1-032020** Units: **mg/L** Analysis Date: **20-Mar-2020 08:48**
Client ID: Run ID: **ManTech01_358569** SeqNo: **5522482** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **WLCS1-032020** Units: **mg/L** Analysis Date: **20-Mar-2020 08:57**
Client ID: Run ID: **ManTech01_358569** SeqNo: **5522483** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1009	5.00	1000	0	101	85 - 115				

LCSD Sample ID: **WLCSD1-032020** Units: **mg/L** Analysis Date: **20-Mar-2020 09:05**
Client ID: Run ID: **ManTech01_358569** SeqNo: **5522484** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1005	5.00	1000	0	100	85 - 115	1009	0.46	20	

DUP Sample ID: **HS20030586-02DUP** Units: **mg/L** Analysis Date: **20-Mar-2020 09:21**
Client ID: Run ID: **ManTech01_358569** SeqNo: **5522486** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	600.2	5.00					601.9	0.286	20	

The following samples were analyzed in this batch: HS20030733-01 HS20030733-02 HS20030733-03 HS20030733-06

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

QC BATCH REPORT

Batch ID: R358987 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-03.24.20 W** Units: **mg/L** Analysis Date: **25-Mar-2020 15:10**
Client ID: Run ID: **ICS-Integrion_358987** SeqNo: **5532207** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS-03.24.20** Units: **mg/L** Analysis Date: **25-Mar-2020 18:29**
Client ID: Run ID: **ICS-Integrion_358987** SeqNo: **5532216** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.742	0.100	4	0	93.5	80 - 120				
Sulfate	18.26	0.500	20	0	91.3	80 - 120				

LCSD Sample ID: **LCSD-03.24.20** Units: **mg/L** Analysis Date: **25-Mar-2020 18:47**
Client ID: Run ID: **ICS-Integrion_358987** SeqNo: **5532217** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.767	0.100	4	0	94.2	80 - 120	3.742	0.679	20	
Sulfate	19.82	0.500	20	0	99.1	80 - 120	18.26	8.2	20	

MS Sample ID: **HS20030877-01MS** Units: **mg/L** Analysis Date: **26-Mar-2020 15:25**
Client ID: Run ID: **ICS-Integrion_358987** SeqNo: **5532566** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	835.7	50.0	1000	0	83.6	80 - 120				
Sulfate	14340	250	5000	10070	85.3	80 - 120				

MS Sample ID: **HS20030838-01MS** Units: **mg/L** Analysis Date: **26-Mar-2020 00:20**
Client ID: Run ID: **ICS-Integrion_358987** SeqNo: **5532313** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.554	0.100	2	0.7681	89.3	80 - 120				
Sulfate	42.57	0.500	10	32.76	98.1	80 - 120				

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

QC BATCH REPORT

Batch ID: R358987 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS20030877-01MSD** Units: **mg/L** Analysis Date: **26-Mar-2020 15:43**
Client ID: Run ID: **ICS-Integrion_358987** SeqNo: **5532567** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	837.2	50.0	1000	0	83.7	80 - 120	835.7	0.185	20	
Sulfate	14550	250	5000	10070	89.7	80 - 120	14340	1.5	20	

MSD Sample ID: **HS20030838-01MSD** Units: **mg/L** Analysis Date: **26-Mar-2020 00:38**
Client ID: Run ID: **ICS-Integrion_358987** SeqNo: **5532314** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.609	0.100	2	0.7681	92.1	80 - 120	2.554	2.17	20	
Sulfate	41.66	0.500	10	32.76	89.0	80 - 120	42.57	2.17	20	

The following samples were analyzed in this batch: HS20030733-03 HS20030733-04 HS20030733-05 HS20030733-06 HS20030733-07 HS20030733-08

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030733

QC BATCH REPORT

Batch ID: R358997 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **17-Mar-2020 19:51**
Client ID: Run ID: **ICS-Integrion_358997** SeqNo: **5532381** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **17-Mar-2020 20:10**
Client ID: Run ID: **ICS-Integrion_358997** SeqNo: **5532382** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.76	0.100	4	0	94.0	80 - 120				
Nitrogen, Nitrate (As N)	4.01	0.100	4	0	100	80 - 120				
Sulfate	19.35	0.500	20	0	96.8	80 - 120				

LCSD Sample ID: **LCSD** Units: **mg/L** Analysis Date: **17-Mar-2020 20:28**
Client ID: Run ID: **ICS-Integrion_358997** SeqNo: **5532383** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.814	0.100	4	0	95.4	80 - 120	3.76	1.44	20	
Nitrogen, Nitrate (As N)	4.094	0.100	4	0	102	80 - 120	4.01	2.07	20	
Sulfate	19.86	0.500	20	0	99.3	80 - 120	19.35	2.57	20	

The following samples were analyzed in this batch: HS20030733-01 HS20030733-02 HS20030733-03 HS20030733-06

ALS Houston, US Date: 01-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: **HS20030733**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Houston, US Date: 01-Apr-20

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

ALS Houston, US Date: 01-Apr-20

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS20030733
Date/Time Received: **17-Mar-2020 09:20**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 17-Mar-2020 Date
Reviewed by: *RJ Modashia* eSignature 18-Mar-2020 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	2.1°C/2.1°C UC/C	IR11
Cooler(s)/Kit(s):	45563	
Date/Time sample(s) sent to storage:	03/17/2020 17:30	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of _____

COC ID: LHAAP16 March 2020__-ALS | TURNAROUND TIME: Normal | RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@aptim.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-16			Email	RJ.Modashia@alsglobal.com			Email Report To	Susan.Huang@aptim.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Susan Huang		
	PMB 202							Address	4005 Port Chicago Highway, Suite 200		
City	Marshall	State	TX	City	Houston	State	TX	City	Concord	State	CA
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	94520	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.
16WW56-200316	LHAAP16				W6	3/16/20	0815	11
16WW22-200316	LHAAP16				W6	3/16/20	0910	11
16WW41-200316	LHAAP16				W6	3/16/20	1005	11
16WW21-200316	LHAAP16				W6	3/16/20	1055	7
16WW39-200316	LHAAP16				W6	3/16/20	1050	7
16WW25-200316	LHAAP16				W6	3/16/20	1255	11
16WW21-200316-FD	LHAAP16				W6	3/16/20	1055	7
16WW49-200316	LHAAP16				W6	3/16/20	1355	7
TRIP BLANK	LHAAP16				W6	3/16/20		2

ANALYSIS REQUESTED

Sample Container and Preservatives	3-40 ml VOA/HCL	3-40 ml VOA/HCL	2-40ml Amber/H2SO4	1-250 ml PE/HNO3	1-250ml PE/Ice	1-250ml PE /Ice	1-250ml PE/Ice	1-125ml PE/Ice		
ANALYSIS	VOCs by SW8260B	MEE by RSK175	TOC by SM5310C	Metals (arsenic, chromium, manganese, nickel, and thallium) by SW6020	Anions (sulfate/nitrate/bromide) by SW9056	Anions (bromide only) by SW9056	Alkalinity by SM2320	Perchlorate by SW6850		
16WW56-200316	X	X	X		X		X	X		
16WW22-200316	X	X	X		X		X	X		
16WW41-200316	X	X	X		X		X	X		
16WW21-200316	X		X			X		X		
16WW39-200316	X		X			X		X		
16WW25-200316	X	X	X		X	SB	X	X		
16WW21-200316-FD	X		X			X		X		
16WW49-200316	X		X			X		X		
TRIP BLANK	X									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	[illegible] / BHATE	3/16/20 1430	JLC / ALS	3.17.20 09:10

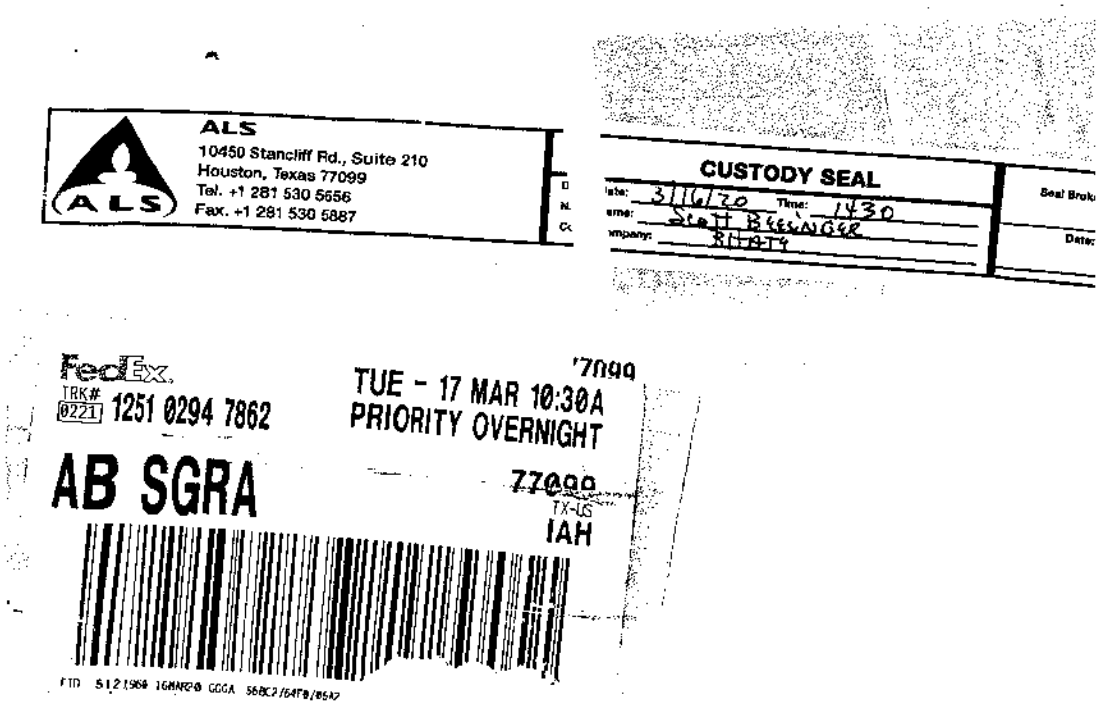
HS20030733

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant - 16

Temp: 2.1 IR # 11 CF 0

45563



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 3/16/20 Time: 1430
Name: Scott Beesinger
Company: Shell
Seal Broke
Date:

FedEx
TRK# 0221 1251 0294 7862
TUE - 17 MAR 10:30A
PRIORITY OVERNIGHT
77099
AB SGRA
TX-US
IAH
FTD 512.1966 16MAR20 GOGA 568C2/64FB/85A2

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www.alsglobal.com

March 25, 2020

Analytical Report for Service Request No: K2002412

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS20030733

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory March 19, 2020
For your reference, these analyses have been assigned our service request number **K2002412.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS20030733
Sample Matrix: Ground Water

Service Request: K2002412
Date Received: 03/19/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Eight ground water samples were received for analysis at ALS Environmental on 03/19/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 03/25/2020

Chain of Custody

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K-1003412

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13537**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20030733
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20030733-01**	**16WW56-200316**	**Groundwater**	**16 Mar 2020 08:15**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			25 Mar 2020
2.	**HS20030733-02**	**16WW22-200316**	**Groundwater**	**16 Mar 2020 09:10**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			25 Mar 2020
3.	**HS20030733-03**	**16WW41-200316**	**Groundwater**	**16 Mar 2020 10:05**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			25 Mar 2020
4.	**HS20030733-04**	**16WW21-200316**	**Groundwater**	**16 Mar 2020 10:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			25 Mar 2020
5.	**HS20030733-05**	**16WW39-200316**	**Groundwater**	**16 Mar 2020 10:50**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			25 Mar 2020
6.	**HS20030733-06**	**16WW25-200316**	**Groundwater**	**16 Mar 2020 12:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			25 Mar 2020
7.	**HS20030733-07**	**16WW21-200316-FD**	**Groundwater**	**16 Mar 2020 10:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			25 Mar 2020
8.	**HS20030733-08**	**16WW49-200316**	**Groundwater**	**16 Mar 2020 13:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			25 Mar 2020

Received: 3/19/2020 0920

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13537**

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By:	J. [illegible]	Date/Time:	3/18/20 18:00
Received By:	[signature]	Date/Time:	3/19/2020 0920
Cooler ID(s):		Temperature(s):	

PC KL

Cooler Receipt and Preservation Form

Client ALS Houston Service Request K20 02412

Received: 3/19/2020 Opened: 3/19/2020 By: CG Unloaded: 3/19/2020 By: CG

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID NA	Tracking Number NA	Filed
0.7					3980Y488WS	13537	1251 0295 5459	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2002412
Project:	HS20030733	**Date Collected:**	03/16/20
Sample Matrix:	Ground Water	**Date Received:**	03/19/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16WW56-200316	K2002412-001	**10.7**	0.50	0.20	0.07	1	03/22/20 02:59	
16WW22-200316	K2002412-002	**2.35**	0.50	0.20	0.07	1	03/22/20 03:27	
16WW41-200316	K2002412-003	**44.8**	0.50	0.20	0.07	1	03/22/20 03:55	
16WW21-200316	K2002412-004	**1.20**	0.50	0.20	0.07	1	03/22/20 04:23	
16WW39-200316	K2002412-005	**4.57**	0.50	0.20	0.07	1	03/22/20 05:50	
16WW25-200316	K2002412-006	**31.2**	0.50	0.20	0.07	1	03/22/20 06:18	
16WW21-200316-FD	K2002412-007	**0.78**	0.50	0.20	0.07	1	03/22/20 06:46	
16WW49-200316	K2002412-008	**5.22**	0.50	0.20	0.07	1	03/22/20 07:14	
Method Blank	K2002412-MB	**0.29 J**	0.50	0.20	0.07	1	03/21/20 20:07	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002412
Project	HS20030733	**Date Collected:**	03/16/20
Sample Matrix:	Ground Water	**Date Received:**	03/19/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	LOQ	LOD	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
16WW56-200316	K2002412-001DUP	0.50	0.20	0.07	10.7	10.3	10.5	4	10	03/22/20
16WW22-200316	K2002412-002DUP	0.50	0.20	0.07	2.35	2.15	2.25	9	10	03/22/20
16WW41-200316	K2002412-003DUP	0.50	0.20	0.07	44.8	44.5	44.7	<1	10	03/22/20
16WW21-200316	K2002412-004DUP	0.50	0.20	0.07	1.20	0.91	1.05	27 #	10	03/22/20
16WW39-200316	K2002412-005DUP	0.50	0.20	0.07	4.57	4.41	4.49	4	10	03/22/20
16WW25-200316	K2002412-006DUP	0.50	0.20	0.07	31.2	30.7	31.0	2	10	03/22/20
16WW21-200316-FD	K2002412-007DUP	0.50	0.20	0.07	0.78	0.58	0.682	30 #	10	03/22/20
16WW49-200316	K2002412-008DUP	0.50	0.20	0.07	5.22	5.27	5.24	<1	10	03/22/20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002412
Project:	HS20030733	**Date Analyzed:**	03/21/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	674205

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2002412-LCS	24.9	25.0	100	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2002412
Project: HS20030733

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	674205	KQ2003999-01	03/21/20 19:52	25.0	26.3	105	90-110
CCV2	674205	KQ2003999-02	03/21/20 23:40	25.0	26.3	105	90-110
CCV3	674205	KQ2003999-03	03/22/20 04:51	25.0	26.5	106	90-110
CCV4	674205	KQ2003999-30	03/22/20 09:35	25.0	25.8	103	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2002412
Project: HS20030733

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	674205	KQ2003999-04	03/21/20 19:37	0.50	0.20	0.07	ND	U
CCB2	674205	KQ2003999-05	03/21/20 23:55	0.50	0.20	0.07	0.12	J
CCB3	674205	KQ2003999-06	03/22/20 05:06	0.50	0.20	0.07	ND	U
CCB4	674205	KQ2003999-31	03/22/20 09:49	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original ( ) K2062276, 2337, 2353, 2365, 2412, 2434, 2416, 2424, 2434, 2462, 2470, 2471, 2489, 2492, 2496 (2432, 2437, 2456, 2422)
IV II IV II IV I IV IV I II IV IV II I II (IV I IV II)

Tier:

Date Analyzed: 3/21/20

Analyst: RD

Analysis: TOC/DOC

Run # TOC: 674205, 674225, 674226 DOC: 674227

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K2002416-3/3rd/24h-4/4th, 24h27th'd report a high %RSD. However, these samples are less than 5x the MRL

Final Approved by: _____ Date: 3/24/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674205 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002276-001	Carbon, Total Organic	N/A		Ground Water	5.85 mg/L	10 mL	58.5 mg/L	10	0.7	5.0			3/22/20 01:06:00	N	IV
K2002337-001	Carbon, Total Organic	N/A		Water	0.92 mg/L	10 mL	0.92 mg/L	1	0.07	0.50			3/21/20 20:51:00	N	II
K2002337-002	Carbon, Total Organic	N/A		Water	0.85 mg/L	10 mL	0.85 mg/L	1	0.07	0.50			3/21/20 21:48:00	N	II
K2002337-003	Carbon, Total Organic	N/A		Water	0.77 mg/L	10 mL	0.77 mg/L	1	0.07	0.50			3/21/20 22:16:00	N	II
K2002337-004	Carbon, Total Organic	N/A		Water	0.68 mg/L	10 mL	0.68 mg/L	1	0.07	0.50			3/21/20 22:44:00	N	II
K2002337-005	Carbon, Total Organic	N/A		Water	0.45 mg/L	10 mL	0.45 mg/L J	1	0.07	0.50			3/21/20 23:12:00	N	II
K2002337-006	Carbon, Total Organic	N/A		Water	1.87 mg/L	10 mL	1.87 mg/L	1	0.07	0.50			3/22/20 00:10:00	N	II
K2002337-007	Carbon, Total Organic	N/A		Water	0.63 mg/L	10 mL	0.63 mg/L	1	0.07	0.50			3/22/20 00:38:00	N	II
K2002353-001	Carbon, Total Organic	N/A		Ground Water	1.25 mg/L	10 mL	500 mg/L	400	30	200			3/22/20 02:03:00	N	IV
K2002365-001	Carbon, Total Organic	N/A		Water	6.75 mg/L	10 mL	6.75 mg/L	1	0.07	0.50			3/22/20 01:34:00	N	II
K2002412-001	Carbon, Total Organic	N/A		Ground Water	10.68 mg/L	10 mL	10.7 mg/L	1	0.07	0.50			3/22/20 02:59:00	N	IV
K2002412-002	Carbon, Total Organic	N/A		Ground Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50			3/22/20 03:27:00	N	IV
K2002412-003	Carbon, Total Organic	N/A		Ground Water	44.83 mg/L	10 mL	44.8 mg/L	1	0.07	0.50			3/22/20 03:55:00	N	IV
K2002412-004	Carbon, Total Organic	N/A		Ground Water	1.20 mg/L	10 mL	1.20 mg/L	1	0.07	0.50			3/22/20 04:23:00	N	IV
K2002412-005	Carbon, Total Organic	N/A		Ground Water	4.57 mg/L	10 mL	4.57 mg/L	1	0.07	0.50			3/22/20 05:50:00	N	IV
K2002412-006	Carbon, Total Organic	N/A		Ground Water	31.25 mg/L	10 mL	31.2 mg/L	1	0.07	0.50			3/22/20 06:18:00	N	IV
K2002412-007	Carbon, Total Organic	N/A		Ground Water	0.78 mg/L	10 mL	0.78 mg/L	1	0.07	0.50			3/22/20 06:46:00	N	IV
K2002412-008	Carbon, Total Organic	N/A		Ground Water	5.22 mg/L	10 mL	5.22 mg/L	1	0.07	0.50			3/22/20 07:14:00	N	IV
K2002434-001	Carbon, Total Organic	N/A		Water	0.24 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 07:42:00	N	I
K2002434-002	Carbon, Total Organic	N/A		Water	0.61 mg/L	10 mL	0.61 mg/L	1	0.07	0.50			3/22/20 08:10:00	N	I
KQ2003999-01	Carbon, Total Organic	CCV		Water	26.33 mg/L	10 mL	26.3 mg/L	1					3/21/20 19:52:00	N	II
KQ2003999-02	Carbon, Total Organic	CCV		Water	26.30 mg/L	10 mL	26.3 mg/L	1					3/21/20 23:40:00	N	II
KQ2003999-03	Carbon, Total Organic	CCV		Water	26.46 mg/L	10 mL	26.5 mg/L	1					3/22/20 04:51:00	N	II
KQ2003999-04	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/21/20 19:37:00	N	II
KQ2003999-05	Carbon, Total Organic	CCB		Water	0.12 mg/L	10 mL	0.12 mg/L J	1	0.07	0.50			3/21/20 23:55:00	N	II
KQ2003999-06	Carbon, Total Organic	CCB		Water	-0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:06:00	N	II
KQ2003999-07	Carbon, Total Organic	MB		Water	0.29 mg/L	10 mL	0.29 mg/L J	1	0.07	0.50			3/21/20 20:07:00	N	II
KQ2003999-08	Carbon, Total Organic	LCS		Water	24.88 mg/L	10 mL	24.9 mg/L	1	0.07	0.50	100		3/21/20 20:21:00	N	II
KQ2003999-09	Carbon, Total Organic	MS	K2002337-001	Water	29.48 mg/L	10 mL	29.5 mg/L	1	0.07	0.50	114		3/21/20 21:19:00	N	II
KQ2003999-10	Carbon, Total Organic	DUP	K2002276-001	Ground Water	5.92 mg/L	10 mL	59.2 mg/L	10	0.7	5.0		1	3/22/20 01:06:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674205 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2003999-11	Carbon, Total Organic	DUP	K2002337-001	Water	0.91 mg/L	10 mL	0.91 mg/L	1	0.07	0.50		1	3/21/20 20:51:00	N	II
KQ2003999-12	Carbon, Total Organic	DUP	K2002337-002	Water	0.79 mg/L	10 mL	0.79 mg/L	1	0.07	0.50		7	3/21/20 21:48:00	N	II
KQ2003999-13	Carbon, Total Organic	DUP	K2002337-003	Water	0.70 mg/L	10 mL	0.70 mg/L	1	0.07	0.50		10	3/21/20 22:16:00	N	II
KQ2003999-14	Carbon, Total Organic	DUP	K2002337-004	Water	0.67 mg/L	10 mL	0.67 mg/L	1	0.07	0.50		2	3/21/20 22:44:00	N	II
KQ2003999-15	Carbon, Total Organic	DUP	K2002337-005	Water	0.46 mg/L	10 mL	0.46 mg/L J	1	0.07	0.50		3	3/21/20 23:12:00	N	II
KQ2003999-16	Carbon, Total Organic	DUP	K2002337-006	Water	1.85 mg/L	10 mL	1.85 mg/L	1	0.07	0.50		1	3/22/20 00:10:00	N	II
KQ2003999-17	Carbon, Total Organic	DUP	K2002337-007	Water	0.58 mg/L	10 mL	0.58 mg/L	1	0.07	0.50		9	3/22/20 00:38:00	N	II
KQ2003999-18	Carbon, Total Organic	DUP	K2002353-001	Ground Water	1.19 mg/L	10 mL	480 mg/L	400	30	200		4	3/22/20 02:03:00	N	IV
KQ2003999-19	Carbon, Total Organic	DUP	K2002365-001	Water	6.74 mg/L	10 mL	6.74 mg/L	1	0.07	0.50		<1	3/22/20 01:34:00	N	II
KQ2003999-20	Carbon, Total Organic	DUP	K2002434-001	Water	0.19 mg/L	10 mL	0.19 mg/L J	1	0.07	0.50		NC	3/22/20 07:42:00	N	I
KQ2003999-21	Carbon, Total Organic	DUP	K2002434-002	Water	0.60 mg/L	10 mL	0.60 mg/L	1	0.07	0.50		2	3/22/20 08:10:00	N	I
KQ2003999-22	Carbon, Total Organic	DUP	K2002412-002	Ground Water	2.15 mg/L	10 mL	2.15 mg/L	1	0.07	0.50		9	3/22/20 03:27:00	N	IV
KQ2003999-23	Carbon, Total Organic	DUP	K2002412-001	Ground Water	10.27 mg/L	10 mL	10.3 mg/L	1	0.07	0.50		4	3/22/20 02:59:00	N	IV
KQ2003999-24	Carbon, Total Organic	DUP	K2002412-003	Ground Water	44.51 mg/L	10 mL	44.5 mg/L	1	0.07	0.50		<1	3/22/20 03:55:00	N	IV
KQ2003999-25	Carbon, Total Organic	DUP	K2002412-004	Ground Water	0.91 mg/L	10 mL	0.91 mg/L	1	0.07	0.50		27*	3/22/20 04:23:00	N	IV
KQ2003999-26	Carbon, Total Organic	DUP	K2002412-005	Ground Water	4.41 mg/L	10 mL	4.41 mg/L	1	0.07	0.50		4	3/22/20 05:50:00	N	IV
KQ2003999-27	Carbon, Total Organic	DUP	K2002412-006	Ground Water	30.72 mg/L	10 mL	30.7 mg/L	1	0.07	0.50		2	3/22/20 06:18:00	N	IV
KQ2003999-28	Carbon, Total Organic	DUP	K2002412-007	Ground Water	0.58 mg/L	10 mL	0.58 mg/L	1	0.07	0.50		30*	3/22/20 06:46:00	N	IV
KQ2003999-29	Carbon, Total Organic	DUP	K2002412-008	Ground Water	5.27 mg/L	10 mL	5.27 mg/L	1	0.07	0.50		<1	3/22/20 07:14:00	N	IV
KQ2003999-30	Carbon, Total Organic	CCV		Water	25.76 mg/L	10 mL	25.8 mg/L	1					3/22/20 09:35:00	N	II
KQ2003999-31	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:49:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674225 **Method/Testcode:** 415.1/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002416-001	Carbon, Total Organic	N/A		Ground Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:07:00	Y	IV
K2002416-002	Carbon, Total Organic	N/A		Ground Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 10:33:00	N	IV
K2002416-003	Carbon, Total Organic	N/A		Ground Water	0.19 mg/L	10 mL	0.19 mg/L J	1	0.07	0.50			3/22/20 11:01:00	N	IV
K2002416-004	Carbon, Total Organic	N/A		Ground Water	0.54 mg/L	10 mL	0.54 mg/L	1	0.07	0.50			3/22/20 11:29:00	N	IV
K2002421-001	Carbon, Total Organic	N/A		Water	1.53 mg/L	10 mL	1.53 mg/L	1	0.07	0.50			3/22/20 15:45:00	N	IV
K2002421-002	Carbon, Total Organic	N/A		Water	0.79 mg/L	10 mL	0.79 mg/L	1	0.07	0.50			3/22/20 16:14:00	N	IV
K2002421-003	Carbon, Total Organic	N/A		Water	1.69 mg/L	10 mL	1.69 mg/L	1	0.07	0.50			3/22/20 16:42:00	N	IV
K2002421-004	Carbon, Total Organic	N/A		Water	0.82 mg/L	10 mL	0.82 mg/L	1	0.07	0.50			3/22/20 17:10:00	N	IV
K2002434-003	Carbon, Total Organic	N/A		Water	0.11 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 08:39:00	N	I
K2002462-001	Carbon, Total Organic	N/A		Water	2.96 mg/L	10 mL	2.96 mg/L	1	0.07	0.50			3/22/20 11:58:00	N	II
K2002470-001	Carbon, Total Organic	N/A		Water	2.07 mg/L	10 mL	2.07 mg/L	1	0.07	0.50			3/22/20 12:26:00	N	IV
K2002471-001	Carbon, Total Organic	N/A		Ground Water	4.43 mg/L	10 mL	4.43 mg/L	1	0.07	0.50			3/22/20 12:54:00	N	IV
K2002489-001	Carbon, Total Organic	N/A		Water	4.72 mg/L	10 mL	4.72 mg/L	1	0.07	0.50			3/22/20 13:22:00	N	II
K2002492-002	Carbon, Total Organic	N/A		Drinking Water	0.37 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 13:50:00	N	I
K2002496-001	Carbon, Total Organic	N/A		Water	14.38 mg/L	10 mL	14.4 mg/L	1	0.07	0.50			3/22/20 15:17:00	N	II
KQ2004008-01	Carbon, Total Organic	MS	K2002416-001	Ground Water	27.78 mg/L	10 mL	27.8 mg/L	1	0.07	0.50	111		3/22/20 10:04:00	N	IV
KQ2004008-02	Carbon, Total Organic	DUP	K2002416-001	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	3/22/20 09:07:00	N	IV
KQ2004008-03	Carbon, Total Organic	DUP	K2002416-002	Ground Water	0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	3/22/20 10:33:00	N	IV
KQ2004008-04	Carbon, Total Organic	DUP	K2002416-003	Ground Water	0.16 mg/L	10 mL	0.16 mg/L J	1	0.07	0.50		21*	3/22/20 11:01:00	N	IV
KQ2004008-05	Carbon, Total Organic	DUP	K2002416-004	Ground Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50		2	3/22/20 11:29:00	N	IV
KQ2004008-06	Carbon, Total Organic	DUP	K2002421-001	Water	1.47 mg/L	10 mL	1.47 mg/L	1	0.07	0.50		4	3/22/20 15:45:00	N	IV
KQ2004008-07	Carbon, Total Organic	DUP	K2002421-002	Water	0.76 mg/L	10 mL	0.76 mg/L	1	0.07	0.50		3	3/22/20 16:14:00	N	IV
KQ2004008-08	Carbon, Total Organic	DUP	K2002421-003	Water	1.71 mg/L	10 mL	1.71 mg/L	1	0.07	0.50		1	3/22/20 16:42:00	N	IV
KQ2004008-09	Carbon, Total Organic	DUP	K2002421-004	Water	0.78 mg/L	10 mL	0.78 mg/L	1	0.07	0.50		5	3/22/20 17:10:00	N	IV
KQ2004008-10	Carbon, Total Organic	DUP	K2002434-003	Water	0.18 mg/L	10 mL	0.18 mg/L J	1	0.07	0.50		NC	3/22/20 08:39:00	N	I
KQ2004008-11	Carbon, Total Organic	DUP	K2002462-001	Water	2.96 mg/L	10 mL	2.96 mg/L	1	0.07	0.50		<1	3/22/20 11:58:00	N	II
KQ2004008-12	Carbon, Total Organic	DUP	K2002470-001	Water	1.98 mg/L	10 mL	1.98 mg/L	1	0.07	0.50		4	3/22/20 12:26:00	N	IV
KQ2004008-13	Carbon, Total Organic	DUP	K2002471-001	Ground Water	4.30 mg/L	10 mL	4.30 mg/L	1	0.07	0.50		3	3/22/20 12:54:00	N	IV
KQ2004008-14	Carbon, Total Organic	DUP	K2002489-001	Water	4.65 mg/L	10 mL	4.65 mg/L	1	0.07	0.50		2	3/22/20 13:22:00	N	II
KQ2004008-15	Carbon, Total Organic	DUP	K2002492-002	Drinking Water	0.40 mg/L	10 mL	0.40 mg/L J	1	0.07	0.50		NC	3/22/20 13:50:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674225 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2004008-16	Carbon, Total Organic	DUP	K2002496-001	Water	13.50 mg/L	10 mL	13.5 mg/L	1	0.07	0.50		6	3/22/20 15:17:00	N	II
KQ2004008-17	Carbon, Total Organic	CCV		Water	26.46 mg/L	10 mL	26.5 mg/L	1					3/22/20 04:51:00	N	I
KQ2004008-17	Carbon, Total Organic	CCV		Water	26.46 mg/L	10 mL	26.5 mg/L	1					3/22/20 04:51:00	N	I
KQ2004008-18	Carbon, Total Organic	CCV		Water	25.76 mg/L	10 mL	25.8 mg/L	1					3/22/20 09:35:00	N	I
KQ2004008-18	Carbon, Total Organic	CCV		Water	25.76 mg/L	10 mL	25.8 mg/L	1					3/22/20 09:35:00	N	I
KQ2004008-19	Carbon, Total Organic	CCV		Water	25.62 mg/L	10 mL	25.6 mg/L	1					3/22/20 14:19:00	N	I
KQ2004008-19	Carbon, Total Organic	CCV		Water	25.62 mg/L	10 mL	25.6 mg/L	1					3/22/20 14:19:00	N	I
KQ2004008-20	Carbon, Total Organic	CCV		Water	25.34 mg/L	10 mL	25.3 mg/L	1					3/22/20 18:35:00	N	I
KQ2004008-20	Carbon, Total Organic	CCV		Water	25.34 mg/L	10 mL	25.3 mg/L	1					3/22/20 18:35:00	N	I
KQ2004008-21	Carbon, Total Organic	CCB		Water	-0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:06:00	N	I
KQ2004008-21	Carbon, Total Organic	CCB		Water	-0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:06:00	N	I
KQ2004008-22	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:49:00	N	I
KQ2004008-22	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:49:00	N	I
KQ2004008-23	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 14:33:00	N	I
KQ2004008-23	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 14:33:00	N	I
KQ2004008-24	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 18:50:00	N	I
KQ2004008-24	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 18:50:00	N	I
KQ2004008-25	Carbon, Total Organic	MB		Water	0.06 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:21:00	N	I
KQ2004008-25	Carbon, Total Organic	MB		Water	0.06 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:21:00	N	I
KQ2004008-26	Carbon, Total Organic	LCS		Water	24.62 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		3/22/20 05:35:00	N	I
KQ2004008-26	Carbon, Total Organic	LCS		Water	24.62 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		3/22/20 05:35:00	N	I
KQ2004008-27	Carbon, Total Organic	N/A		Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:07:00	N	IV
KQ2004008-28	Carbon, Total Organic	MS	KQ2004008-27	Water	27.78 mg/L	10 mL	27.8 mg/L	1	0.07	0.50	111		3/22/20 10:04:00	N	IV
KQ2004008-29	Carbon, Total Organic	DUP	KQ2004008-27	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	3/22/20 09:07:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674226 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002432-001	Carbon, Total Organic	N/A		Water	0.03 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 17:38:00	N	IV
K2002437-001	Carbon, Total Organic	N/A		Water	1.83 mg/L	10 mL	1.83 mg/L	1	0.07	0.50			3/22/20 19:04:00	N	I
K2002437-002	Carbon, Total Organic	N/A		Water	0.72 mg/L	10 mL	0.72 mg/L	1	0.07	0.50			3/22/20 19:33:00	N	I
K2002437-003	Carbon, Total Organic	N/A		Water	3.10 mg/L	10 mL	3.10 mg/L	1	0.07	0.50			3/22/20 20:00:00	N	I
K2002437-004	Carbon, Total Organic	N/A		Water	0.71 mg/L	10 mL	0.71 mg/L	1	0.07	0.50			3/22/20 20:29:00	N	I
K2002437-005	Carbon, Total Organic	N/A		Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50			3/22/20 20:57:00	N	I
K2002456-001	Carbon, Total Organic	N/A		Water	1.07 mg/L	10 mL	1.07 mg/L	1	0.07	0.50			3/22/20 21:25:00	N	IV
K2002456-002	Carbon, Total Organic	N/A		Water	0.72 mg/L	10 mL	0.72 mg/L	1	0.07	0.50			3/22/20 21:53:00	N	IV
K2002456-003	Carbon, Total Organic	N/A		Water	1.35 mg/L	10 mL	1.35 mg/L	1	0.07	0.50			3/22/20 22:21:00	N	IV
K2002456-004	Carbon, Total Organic	N/A		Water	1.35 mg/L	10 mL	1.35 mg/L	1	0.07	0.50			3/22/20 22:49:00	N	IV
KQ2004009-01	Carbon, Total Organic	CCV		Water	25.62 mg/L	10 mL	25.6 mg/L	1					3/22/20 14:19:00	N	IV
KQ2004009-02	Carbon, Total Organic	CCV		Water	25.34 mg/L	10 mL	25.3 mg/L	1					3/22/20 18:35:00	N	IV
KQ2004009-03	Carbon, Total Organic	CCV		Water	25.05 mg/L	10 mL	25.1 mg/L	1					3/23/20 00:13:00	N	IV
KQ2004009-04	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 14:33:00	N	IV
KQ2004009-05	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 18:50:00	N	IV
KQ2004009-06	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:27:00	N	IV
KQ2004009-07	Carbon, Total Organic	MB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 14:48:00	N	IV
KQ2004009-08	Carbon, Total Organic	LCS		Water	24.66 mg/L	10 mL	24.7 mg/L	1	0.07	0.50	99		3/22/20 15:03:00	N	IV
KQ2004009-09	Carbon, Total Organic	MS	K2002432-001	Water	26.30 mg/L	10 mL	26.3 mg/L	1	0.07	0.50	105		3/22/20 18:06:00	N	IV
KQ2004009-10	Carbon, Total Organic	DUP	K2002432-001	Water	0.06 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	3/22/20 17:38:00	N	IV
KQ2004009-11	Carbon, Total Organic	DUP	K2002437-001	Water	1.78 mg/L	10 mL	1.78 mg/L	1	0.07	0.50		3	3/22/20 19:04:00	N	I
KQ2004009-12	Carbon, Total Organic	DUP	K2002437-002	Water	0.71 mg/L	10 mL	0.71 mg/L	1	0.07	0.50		2	3/22/20 19:33:00	N	I
KQ2004009-13	Carbon, Total Organic	DUP	K2002437-003	Water	3.13 mg/L	10 mL	3.13 mg/L	1	0.07	0.50		<1	3/22/20 20:00:00	N	I
KQ2004009-14	Carbon, Total Organic	DUP	K2002437-004	Water	0.64 mg/L	10 mL	0.64 mg/L	1	0.07	0.50		10	3/22/20 20:29:00	N	I
KQ2004009-15	Carbon, Total Organic	DUP	K2002437-005	Water	0.56 mg/L	10 mL	0.56 mg/L	1	0.07	0.50		4	3/22/20 20:57:00	N	I
KQ2004009-16	Carbon, Total Organic	DUP	K2002456-001	Water	1.04 mg/L	10 mL	1.04 mg/L	1	0.07	0.50		2	3/22/20 21:25:00	N	IV
KQ2004009-17	Carbon, Total Organic	DUP	K2002456-002	Water	0.66 mg/L	10 mL	0.66 mg/L	1	0.07	0.50		9	3/22/20 21:53:00	N	IV
KQ2004009-18	Carbon, Total Organic	DUP	K2002456-003	Water	1.35 mg/L	10 mL	1.35 mg/L	1	0.07	0.50		<1	3/22/20 22:21:00	N	IV
KQ2004009-19	Carbon, Total Organic	DUP	K2002456-004	Water	1.30 mg/L	10 mL	1.30 mg/L	1	0.07	0.50		4	3/22/20 22:49:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674227 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002422-001	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	9.45 mg/L	10 mL	9.45 mg/L	1	0.07	0.50			3/23/20 02:23:00	N	III
K2002462-002	Carbon, Dissolved Organic	N/A		Water	4.12 mg/L	10 mL	4.12 mg/L	1	0.07	0.50			3/23/20 01:11:00	N	II
KQ2004010-01	Carbon, Dissolved Organic	CCV		Water	25.13 mg/L	10 mL	25.1 mg/L	1					3/23/20 00:13:00	N	II
KQ2004010-01	Carbon, Dissolved Organic (DOC)	CCV		Water	25.13 mg/L	10 mL	25.1 mg/L	1					3/23/20 00:13:00	N	II
KQ2004010-02	Carbon, Dissolved Organic	CCV		Water	25.06 mg/L	10 mL	25.1 mg/L	1					3/23/20 03:20:00	N	II
KQ2004010-02	Carbon, Dissolved Organic (DOC)	CCV		Water	25.06 mg/L	10 mL	25.1 mg/L	1					3/23/20 03:20:00	N	II
KQ2004010-03	Carbon, Dissolved Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:27:00	N	II
KQ2004010-03	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:27:00	N	II
KQ2004010-04	Carbon, Dissolved Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 03:35:00	N	II
KQ2004010-04	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 03:35:00	N	II
KQ2004010-05	Carbon, Dissolved Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:42:00	N	II
KQ2004010-05	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:42:00	N	II
KQ2004010-06	Carbon, Dissolved Organic	LCS		Water	24.20 mg/L	10 mL	24.2 mg/L	1	0.07	0.50	97		3/23/20 00:57:00	N	II
KQ2004010-06	Carbon, Dissolved Organic (DOC)	LCS		Water	24.20 mg/L	10 mL	24.2 mg/L	1	0.07	0.50	97		3/23/20 00:57:00	N	II
KQ2004010-07	Carbon, Dissolved Organic	MS	K2002462-002	Water	32.05 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	112		3/23/20 01:40:00	N	II
KQ2004010-08	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	4.12 mg/L	10 mL	4.12 mg/L	1	0.07	0.50			3/23/20 01:11:00	N	III
KQ2004010-09	Carbon, Dissolved Organic (DOC)	MS	KQ2004010-08	Surface Water	32.05 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	112		3/23/20 01:40:00	N	III
KQ2004010-10	Carbon, Dissolved Organic (DOC)	DUP	K2002422-001	Surface Water	9.61 mg/L	10 mL	9.61 mg/L	1	0.07	0.50		2	3/23/20 02:23:00	N	III
KQ2004010-11	Carbon, Dissolved Organic	DUP	K2002462-002	Water	4.07 mg/L	10 mL	4.07 mg/L	1	0.07	0.50		1	3/23/20 01:11:00	N	II
KQ2004010-12	Carbon, Dissolved Organic (DOC)	DUP	KQ2004010-08	Surface Water	4.07 mg/L	10 mL	4.07 mg/L	1	0.07	0.50		1	3/23/20 01:11:00	N	III

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

0.043	0.043			OBSERVATIONS	12	0.0432
0.366				STD Deviation	0.11429	ABOVE
0.200				AVERAGE	0.06658	ABOVE
0.055	0.055	0.055	######	UCL	0.18087	0.0545
0.136	0.136			LCL	-0.04772	0.1357
0.000						0
0.000						0
0.000				OBSERVATIONS	3	0
0.000				STD Deviation	0.02578	0
0.000				AVERAGE	0.07780	0
0.000				UCL	0.10358	0
0.000				LCL	0.05202	0
						0
						0
				OBSERVATIONS	1	0
				STD Deviation	#DIV/0!	0
				AVERAGE	0.05450	0
				UCL	#DIV/0!	0
				LCL	#DIV/0!	0
						0
						0
				OBSERVATIONS	0	0
				STD Deviation	#DIV/0!	0
				AVERAGE	#DIV/0!	0
						0
						0
						0
						0
						0
						0

BLP 3/24/20

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccb	1	0.043	0.0778	-0.0346	-0.0346	<0.5	3/21/2020
3	ccv	1	26.406	0.0778	26.3280	26.328	26.3	3/21/2020
4	mb	1	0.366	0.0778	0.2878	0.2878	<0.5	3/21/2020
5	lcs	1	24.954	0.0778	24.8758	24.8758	24.9	3/21/2020
6	K2002337-001	1	0.994	0.0778	0.9162	0.9162	0.92	3/21/2020
7	K2002337-001	1	0.983	0.0778	0.9055	0.9055	0.9	3/21/2020
8	KQ2003999-09	1	29.561	0.0778	29.4834	29.4834	29	3/21/2020
9	K2002337-002	1	0.927	0.0778	0.8490	0.849	0.85	3/21/2020
10	K2002337-002	1	0.868	0.0778	0.7902	0.7902	0.79	3/21/2020
11	K2002337-003	1	0.851	0.0778	0.7733	0.7733	0.8	3/21/2020
12	K2002337-003	1	0.778	0.0778	0.6997	0.6997	0.70	3/21/2020
13	K2002337-004	1	0.759	0.0778	0.6814	0.6814	0.68	3/21/2020
14	K2002337-004	1	0.748	0.0778	0.6704	0.6704	0.67	3/21/2020
15	K2002337-005	1	0.530	0.0778	0.4518	0.4518	<0.5	3/21/2020
16	K2002337-005	1	0.543	0.0778	0.4649	0.4649	<0.5	3/21/2020
17	ccv	1	26.379	0.0778	26.3014	26.3014	26.30	3/21/2020
18	ccb	1	0.200	0.0778	0.1221	0.1221	<0.5	3/21/2020
19	K2002337-006	1	1.952	0.0778	1.8738	1.8738	1.9	3/22/2020
20	K2002337-006	1	1.929	0.0778	1.8513	1.8513	1.85	3/22/2020
21	K2002337-007	1	0.710	0.0778	0.6317	0.6317	0.63	3/22/2020
22	K2002337-007	1	0.658	0.0778	0.5798	0.5798	0.6	3/22/2020
23	K2002276-001	10	5.931	0.0778	5.8531	58.531	58.5	3/22/2020
24	K2002276-001	10	5.997	0.0778	5.9193	59.193	59.19	3/22/2020
25	K2002365-001	1	6.825	0.0778	6.7471	6.7471	6.75	3/22/2020

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

date time

Analyzed By: KW	Date Analyzed 3/21/20
Reviewed By:	Date Reviewed

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K2002365-001	1	6.814	0.0778	6.7366	6.7366	6.74	3/22/2020
27	K2002353-001	400	1.325	0.0778	1.2473	498.92	498.92	3/22/2020
28	K2002353-001	400	1.272	0.0778	1.1941	477.64	477.6	3/22/2020
29	K2002412-001	1	10.758	0.0778	10.6798	10.6798	10.7	3/22/2020
30	K2002412-001	1	10.352	0.0778	10.2738	10.2738	10.3	3/22/2020
31	K2002412-002	1	2.431	0.0778	2.3535	2.3535	2.4	3/22/2020
32	K2002412-002	1	2.226	0.0778	2.1484	2.1484	2.1	3/22/2020
33	K2002412-003	1	44.908	0.0778	44.8304	44.8304	44.8	3/22/2020
34	K2002412-003	1	44.589	0.0778	44.5114	44.5114	44.5	3/22/2020
35	K2002412-004	1	1.276	0.0778	1.1981	1.1981	1.2	3/22/2020
36	K2002412-004	1	0.987	0.0778	0.9096	0.9096	0.9	3/22/2020
37	ccv	1	26.538	0.0778	26.4599	26.4599	26.5	3/22/2020
38	ccb	1	0.055	0.0778	-0.0233	-0.0233	<0.5	3/22/2020
39	K2002412-005	1	4.650	0.0778	4.5720	4.572	4.6	3/22/2020
40	K2002412-005	1	4.487	0.0778	4.4096	4.4096	4.4	3/22/2020
41	K2002412-006	1	31.326	0.0778	31.2482	31.2482	31.2	3/22/2020
42	K2002412-006	1	30.802	0.0778	30.7243	30.7243	30.7	3/22/2020
43	K2002412-007	1	0.861	0.0778	0.7828	0.7828	0.8	3/22/2020
44	K2002412-007	1	0.659	0.0778	0.5810	0.581	0.6	3/22/2020
45	K2002412-008	1	5.297	0.0778	5.2192	5.2192	5.2	3/22/2020
46	K2002412-008	1	5.349	0.0778	5.2707	5.2707	5.3	3/22/2020
47	K2002434-001	1	0.318	0.0778	0.2402	0.2402	<0.5	3/22/2020
48	K2002434-001	1	0.271	0.0778	0.1933	0.1933	<0.5	3/22/2020
49	K2002434-002	1	0.689	0.0778	0.6116	0.6116	0.6	3/22/2020
50	K2002434-002	1	0.674	0.0778	0.5965	0.5965	0.6	3/22/2020

Analyzed By: BCD	Date Analyzed 3/24/20
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccv	1	25.843	0.0778	25.7647	25.7647	25.76	3/22/2020
52	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: BKP	Date Analyzed 3/24/20
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	26.538	0.0778	26.4599	26.4599	26.5	3/22/2020
3	ccb	1	0.055	0.0778	-0.0233	-0.0233	<0.5	3/22/2020
4	mb	1	0.136	0.0778	0.0579	0.0579	<0.5	3/22/2020
5	lcs	1	24.698	0.0778	24.6205	24.6205	24.6	3/22/2020
6	K2002434-003	1	0.192	0.0778	0.1139	0.1139	<0.5	3/22/2020
7	K2002434-003	1	0.258	0.0778	0.1797	0.1797	<0.5	3/22/2020
8	K2002416-001	1	0.099	0.0778	0.0207	0.0207	<0.5	3/22/2020
9	K2002416-001	1	0.083	0.0778	0.0048	0.0048	<0.5	3/22/2020
10	ccv	1	25.843	0.0778	25.7647	25.7647	25.76	3/22/2020
11	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
12	KQ2004008-01	1	27.862	0.0778	27.7842	27.7842	27.78	3/22/2020
13	K2002416-002	1	0.099	0.0778	0.0210	0.021	<0.5	3/22/2020
14	K2002416-002	1	0.085	0.0778	0.0067	0.0067	<0.5	3/22/2020
15	K2002416-003	1	0.271	0.0778	0.1932	0.1932	<0.5	3/22/2020
16	K2002416-003	1	0.235	0.0778	0.1572	0.1572	<0.5	3/22/2020
17	K2002416-004	1	1.615	0.0778	1.5370	1.537	1.54	3/22/2020
18	K2002416-004	1	1.605	0.0778	1.5267	1.5267	1.5	3/22/2020
19	K2002462-001	1	3.041	0.0778	2.9627	2.9627	3.0	3/22/2020
20	K2002462-001	1	3.038	0.0778	2.9600	2.96	2.96	3/22/2020
21	K2002470-001	1	2.148	0.0778	2.0704	2.0704	2.07	3/22/2020
22	K2002470-001	1	2.061	0.0778	1.9828	1.9828	2.0	3/22/2020
23	K2002471-001	1	4.509	0.0778	4.4308	4.4308	4.4	3/22/2020
24	K2002471-001	1	4.381	0.0778	4.3030	4.303	4.30	3/22/2020
25	K2002489-001	1	4.801	0.0778	4.7227	4.7227	4.72	3/22/2020

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

date time

Analyzed By: [signature]	Date Analyzed 3/22/20
Reviewed By:	Date Reviewed

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K2002489-001	1	4.724	0.0778	4.6460	4.646	4.65	3/22/2020
27	K2002492-002	1	0.452	0.0778	0.3746	0.3746	<0.5	3/22/2020
28	K2002492-002	1	0.479	0.0778	0.4014	0.4014	<0.5	3/22/2020
29	ccv	1	25.695	0.0778	25.6168	25.6168	25.6	3/22/2020
30	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
31	K2002496-001	1	14.459	0.0778	14.3812	14.3812	14.4	3/22/2020
32	K2002496-001	1	13.578	0.0778	13.5000	13.5	13.5	3/22/2020
33	K2002421-001	1	1.605	0.0778	1.5272	1.5272	1.5	3/22/2020
34	K2002421-001	1	1.548	0.0778	1.4705	1.4705	1.5	3/22/2020
35	K2002421-002	1	0.866	0.0778	0.7878	0.7878	0.8	3/22/2020
36	K2002421-002	1	0.842	0.0778	0.7645	0.7645	0.8	3/22/2020
37	K2002421-003	1	1.766	0.0778	1.6881	1.6881	1.7	3/22/2020
38	K2002421-003	1	1.790	0.0778	1.7125	1.7125	1.7	3/22/2020
39	K2002421-004	1	0.896	0.0778	0.8180	0.818	0.8	3/22/2020
40	K2002421-004	1	0.859	0.0778	0.7812	0.7812	0.8	3/22/2020
41	ccv	1	25.418	0.0778	25.3398	25.3398	25.3	3/22/2020
42	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: KP	Date Analyzed 3/22/20
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.695	0.0778	25.6168	25.6168	25.6	3/22/2020
3	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
4	mb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
5	lcs	1	24.742	0.0778	24.6645	24.6645	24.7	3/22/2020
6	K2002432-001	1	0.108	0.0778	0.0305	0.0305	<0.5	3/22/2020
7	K2002432-001	1	0.143	0.0778	0.0649	0.0649	<0.5	3/22/2020
8	KQ2004009-09	1	26.380	0.0778	26.3020	26.302	26	3/22/2020
9	ccv	1	25.418	0.0778	25.3398	25.3398	25.34	3/22/2020
10	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
11	K2002437-001	1	1.911	0.0778	1.8331	1.8331	1.8	3/22/2020
12	K2002437-001	1	1.853	0.0778	1.7754	1.7754	1.78	3/22/2020
13	K2002437-002	1	0.802	0.0778	0.7246	0.7246	0.72	3/22/2020
14	K2002437-002	1	0.788	0.0778	0.7099	0.7099	0.71	3/22/2020
15	K2002437-003	1	3.181	0.0778	3.1028	3.1028	3.1	3/22/2020
16	K2002437-003	1	3.208	0.0778	3.1306	3.1306	3.1	3/22/2020
17	K2002437-004	1	0.783	0.0778	0.7056	0.7056	0.71	3/22/2020
18	K2002437-004	1	0.715	0.0778	0.6372	0.6372	0.6	3/22/2020
19	K2002437-005	1	0.665	0.0778	0.5874	0.5874	0.6	3/22/2020
20	K2002437-005	1	0.641	0.0778	0.5633	0.5633	0.56	3/22/2020
21	K2002456-001	1	1.145	0.0778	1.0675	1.0675	1.07	3/22/2020
22	K2002456-001	1	1.122	0.0778	1.0438	1.0438	1.0	3/22/2020
23	K2002456-002	1	0.794	0.0778	0.7165	0.7165	0.7	3/22/2020
24	K2002456-002	1	0.735	0.0778	0.6568	0.6568	0.66	3/22/2020
25	K2002456-003	1	1.431	0.0778	1.3528	1.3528	1.35	3/22/2020

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

date time

Analyzed By: BDP	Date Analyzed 3/12/20
Reviewed By:	Date Reviewed

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K2002456-003	1	1.431	0.0778	1.3528	1.3528	1.35	3/22/2020
27	K2002456-004	1	1.433	0.0778	1.3548	1.3548	1.35	3/22/2020
28	K2002456-004	1	1.375	0.0778	1.2971	1.2971	1.3	3/22/2020
29	ccv	1	25.130	0.0778	25.0525	25.0525	25.1	3/23/2020
30	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/23/2020
31		1		0.0000	0.0000	0	<0.5	
32		1		0.0000	0.0000	0	<0.5	
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: BCP	Date Analyzed 3/21/20
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.130	0.0778	25.0525	25.0525	25.1	3/23/2020
3	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/23/2020
4	mb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/23/2020
5	lcs	1	24.199	0.0778	24.1209	24.1209	24.1	3/23/2020
6	K2002462-002	1	4.117	0.0778	4.0393	4.0393	4.04	3/23/2020
7	K2002462-002	1	4.067	0.0778	3.9892	3.9892	4.0	3/23/2020
8	KQ2004010-07	1	32.047	0.0778	31.9695	31.9695	32	3/23/2020
9	K2002422-001	1	9.445	0.0778	9.3675	9.3675	9.37	3/23/2020
10	K2002422-001	1	9.612	0.0778	9.5338	9.5338	9.53	3/23/2020
11	ccv	1	25.060	0.0778	24.9820	24.982	25.0	3/23/2020
12	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/23/2020
13		1		0.0000	0.0000	0	<0.5	
14		1		0.0000	0.0000	0	<0.5	
15		1		0.0000	0.0000	0	<0.5	
16		1		0.0000	0.0000	0	<0.5	
17		1		0.0000	0.0000	0	<0.5	
18		1		0.0000	0.0000	0	<0.5	
19		1		0.0000	0.0000	0	<0.5	
20		1		0.0000	0.0000	0	<0.5	
21		1		0.0000	0.0000	0	<0.5	
22		1		0.0000	0.0000	0	<0.5	
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

date time

Analyzed By: BCP	Date Analyzed 3/21/20
Reviewed By:	Date Reviewed

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

TOC: 674205, 674225, 674226
DOC: 674227

Schedule: 03212020

Version: 4
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/03/21 21:07 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
74	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2002337-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2002337-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K2002337-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2002337-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2002337-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2002337-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2002337-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2002337-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2002276-001.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2002365-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2002353-001.01 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2002412-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2002412-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2002412-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K2002412-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K2002412-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K2002412-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2002412-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2002412-008.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2002434-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2002434-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2002434-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2002416-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2002416-001.02 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
30	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
31	Sample	K2002416-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K2002416-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2002416-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K2002462-001.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K2002470-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K2002471-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K2002489-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K2002492-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 03212020

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K2002496-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K2002421-001.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K2002421-002.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K2002421-003.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K2002421-004.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K2002432-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K2002432-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
47	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K2002437-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K2002437-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K2002437-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K2002437-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K2002437-005.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K2002456-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K2002456-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K2002456-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K2002456-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K2002462-002.04 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K2002462-002.04 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
61	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
62	Sample	FB 3/19/20 1619	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
63	Sample	K2002422-001.04 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
64	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 03212020
Saturday, March 21, 2020 04:44 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/03/24 09:26 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	03212020	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/03/21 16:44

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.01	16.15	4.14	49.81	08:01
2	TC Clean	18.09	21.86	3.77	49.56	07:17
3	TC Clean	6.93	10.79	3.86	49.61	07:02
4	TC Clean	5.02	8.90	3.88	49.63	07:01

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	RB	0.4528 ppm	0.0533 ppm	11.7700%	2020/03/21 17:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4804	4.8037	10.62	14.37	3.75	49.71	10:29
2	TOC	0.4973	4.9732	10.74	14.56	3.82	49.67	10:29
3	TOC	0.4567	4.5672	10.46	14.14	3.68	49.67	10:27
4	TOC	0.3769	3.7687	9.93	13.76	3.83	49.65	10:29

Dilution **Blank Contribution** **Method** **Calibration**

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/03/21 18:14

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	9.17	13.91	4.74	49.79	07:59
2	TC Clean	6.79	10.62	3.83	49.55	07:20
3	TC Clean	4.32	8.23	3.91	49.61	07:00
4	TC Clean	3.54	7.40	3.86	49.60	07:01

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/03/21 18:48

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.92	4.73	3.81	49.82	07:59
2	TC Clean	8.57	12.40	3.83	49.62	07:17
3	TC Clean	4.30	8.10	3.80	49.63	07:00
4	TC Clean	3.55	7.36	3.81	49.65	07:03

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.2621 ppm	0.0000 ppm	0.0000%	2020/03/21 19:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2621	2.6207	9.15	12.95	3.80	49.69	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0432 ppm (PASS)	0.0000 ppm	0%	2020/03/21 19:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0432	0.4318	8.11	11.92	3.82	49.72	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.4058 ppm (PASS)	0.0000 ppm	0%	2020/03/21 19:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.4058	264.0582	185.40	189.22	3.82	49.75	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.3656 ppm	0.0000 ppm	0.0000%	2020/03/21 20:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3656	3.6557	9.85	13.62	3.77	49.76	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.9536 ppm (PASS)	0.0000 ppm	0%	2020/03/21 20:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.9536	249.5362	175.63	179.68	4.05	49.79	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	2.0813 ppm	0.0000 ppm	0.0000%	2020/03/21 20:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0813	20.8126	21.39	25.32	3.93	49.83	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	K2002337-001.01	0.9886 ppm	0.0076 ppm	0.7700%	2020/03/21 20:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9940	9.9397	14.08	17.85	3.78	49.85	10:28
2	TOC	0.9833	9.8327	14.00	17.80	3.80	49.88	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	K2002337-001.01 ms	29.5612 ppm	0.0000 ppm	0.0000%	2020/03/21 21:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.5612	295.6123	206.19	209.98	3.79	49.90	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	RB	0.2728 ppm	0.0000 ppm	0.0000%	2020/03/21 21:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2728	2.7278	9.23	12.95	3.72	49.94	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K2002337-002.01	0.8974 ppm	0.0415 ppm	4.6300%	2020/03/21 21:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9268	9.2676	13.62	17.26	3.63	49.95	10:26
2	TOC	0.8680	8.6802	13.23	17.12	3.89	49.98	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K2002337-003.01	0.8143 ppm	0.0520 ppm	6.3900%	2020/03/21 22:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8511	8.5107	13.12	16.70	3.59	49.97	10:27
2	TOC	0.7775	7.7747	12.62	16.55	3.93	50.00	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2002337-004.01	0.7537 ppm	0.0078 ppm	1.0300%	2020/03/21 22:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7592	7.5918	12.50	16.55	4.05	50.01	10:30
2	TOC	0.7482	7.4817	12.42	16.32	3.90	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K2002337-005.01	0.5361 ppm	0.0093 ppm	1.7300%	2020/03/21 23:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5296	5.2958	10.95	14.68	3.72	49.98	10:30
2	TOC	0.5427	5.4267	11.04	14.79	3.75	49.99	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.3792 ppm	0.0000 ppm	0%	2020/03/21 23:40

							(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.3792	263.7921	185.22	188.92	3.71	50.01	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.1999 ppm (PASS)	0.0000 ppm	0%	2020/03/21 23:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.1999	1.9991	9.16	12.96	3.80	50.00	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K2002337-006.01	1.9404 ppm	0.0159 ppm	0.8200%	2020/03/22 00:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9516	19.5160	20.52	24.28	3.76	50.01	10:33
2	TOC	1.9291	19.2914	20.37	24.25	3.89	49.98	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K2002337-007.01	0.6836 ppm	0.0367 ppm	5.3700%	2020/03/22 00:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7095	7.0951	12.16	15.91	3.75	49.97	10:25
2	TOC	0.6576	6.5762	11.81	15.68	3.87	49.95	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
◈	12	TOC	K2002276-001.01 10x	5.9640 ppm	0.0468 ppm	0.7800%	2020/03/22 01:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.9309	59.3095	47.28	51.18	3.91	49.95	10:27
2	TOC	5.9971	59.9712	47.72	51.51	3.79	49.96	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2002365-001.01	6.8196 ppm	0.0075 ppm	0.1100%	2020/03/22 01:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.8249	68.2493	53.29	57.25	3.96	49.94	10:26
2	TOC	6.8144	68.1437	53.22	57.13	3.91	49.94	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2002353-001.01 400x	1.2985 ppm	0.0376 ppm	2.9000%	2020/03/22 02:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3251	13.2513	16.30	20.20	3.90	49.93	10:28
2	TOC	1.2719	12.7189	15.94	19.92	3.97	49.90	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	RB	0.0981 ppm	0.0036 ppm	3.6500%	2020/03/22 02:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1006	1.0059	8.07	11.84	3.77	49.88	10:26
2	TOC	0.0955	0.9553	8.03	12.08	4.05	49.88	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K2002412-001.01	10.5546 ppm	0.2870 ppm	2.7200%	2020/03/22 02:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.7576	107.5758	79.74	83.68	3.95	49.85	10:29
2	TOC	10.3516	103.5163	77.01	80.95	3.94	49.85	10:26

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K2002412-002.01	2.3288 ppm	0.1450 ppm	6.2300%	2020/03/22 03:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4313	24.3130	23.74	27.73	3.98	49.85	10:28
2	TOC	2.2262	22.2625	22.36	26.60	4.24	49.85	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K2002412-003.01	44.7487 ppm	0.2255 ppm	0.5000%	2020/03/22 03:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	44.9082	449.0821	309.40	313.24	3.84	49.85	10:30
2	TOC	44.5892	445.8925	307.25	311.28	4.03	49.85	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K2002412-004.01	1.1317 ppm	0.2040 ppm	18.0300%	2020/03/22 04:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2759	12.7591	15.97	20.08	4.10	49.87	10:27
2	TOC	0.9874	9.8743	14.03	18.07	4.04	49.92	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.5377 ppm (PASS)	0.0000 ppm	0%	2020/03/22 04:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.5377	265.3772	186.28	190.22	3.94	49.88	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria	Do Nothing	CAS_salt_010711	CAS_salt_010711	50 ppmC

met.	(v4)	(v32)

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0545 ppm (PASS)	0.0000 ppm	0%	2020/03/22 05:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0545	0.5449	8.18	12.24	4.06	49.92	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.1357 ppm	0.0000 ppm	0.0000%	2020/03/22 05:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1357	1.3568	8.30	12.27	3.97	49.92	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.6983 ppm (PASS)	0.0000 ppm	0%	2020/03/22 05:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.6983	246.9831	173.91	177.85	3.94	49.91	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	21	TOC	K2002412-005.01	4.5686 ppm	0.1148 ppm	2.5100%	2020/03/22 05:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6498	46.4975	38.66	42.58	3.92	49.92	10:28
2	TOC	4.4874	44.8737	37.57	41.59	4.02	49.93	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K2002412-006.01	31.0641 ppm	0.3704 ppm	1.1900%	2020/03/22 06:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.3260	313.2600	218.06	222.06	4.00	49.92	10:27
2	TOC	30.8021	308.0213	214.54	218.63	4.09	49.93	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K2002412-007.01	0.7597 ppm	0.1427 ppm	18.7800%	2020/03/22 06:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8606	8.6059	13.18	17.31	4.14	49.93	10:28
2	TOC	0.6588	6.5880	11.82	15.93	4.11	49.94	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K2002412-008.01	5.3228 ppm	0.0364 ppm	0.6800%	2020/03/22 07:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2970	52.9704	43.01	47.07	4.06	49.93	10:27
2	TOC	5.3485	53.4849	43.36	47.40	4.04	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2002434-001.01	0.2946 ppm	0.0331 ppm	11.2400%	2020/03/22 07:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3180	3.1799	9.53	13.49	3.96	49.96	10:27
2	TOC	0.2711	2.7115	9.22	13.14	3.93	49.95	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K2002434-002.01	0.6819 ppm	0.0107 ppm	1.5700%	2020/03/22 08:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6894	6.8944	12.03	15.93	3.91	49.95	10:31
2	TOC	0.6743	6.7427	11.93	15.87	3.94	49.94	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K2002434-003.01	0.2246 ppm	0.0465 ppm	20.6900%	2020/03/22 08:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1917	1.9174	8.68	12.65	3.97	49.94	10:25
2	TOC	0.2575	2.5746	9.12	13.14	4.02	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K2002416-001.02	0.0905 ppm	0.0113 ppm	12.4200%	2020/03/22 09:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0985	0.9850	8.05	11.97	3.92	49.94	10:26
2	TOC	0.0826	0.8259	7.95	11.91	3.97	49.95	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.8425 ppm (PASS)	0.0000 ppm	0%	2020/03/22 09:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.8425	258.4255	181.61	185.65	4.04	49.95	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria	Do Nothing	CAS_salt_010711	CAS_salt_010711	50 ppmC

met.	(v4)	(v32)

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/22 09:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.06	10.95	3.89	49.94	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2002416-001.02 ms	27.8620 ppm	0.0000 ppm	0.0000%	2020/03/22 10:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.8620	278.6204	194.76	198.67	3.91	49.95	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/22 10:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.09	11.09	4.00	49.95	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	31	TOC	K2002416-002.02	0.0917 ppm	0.0101 ppm	11.0100%	2020/03/22 10:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0988	0.9880	8.06	12.13	4.08	49.96	10:26
2	TOC	0.0845	0.8453	7.96	12.11	4.15	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2002416-003.02	0.2530 ppm	0.0254 ppm	10.0600%	2020/03/22 11:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2710	2.7100	9.21	13.27	4.06	49.93	10:29
2	TOC	0.2350	2.3501	8.97	12.92	3.95	49.92	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2002416-004.02	1.6097 ppm	0.0073 ppm	0.4500%	2020/03/22 11:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6148	16.1479	18.25	22.09	3.84	49.94	10:26
2	TOC	1.6045	16.0453	18.18	22.08	3.90	49.92	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K2002462-001.06	3.0392 ppm	0.0019 ppm	0.0600%	2020/03/22 11:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0405	30.4052	27.84	31.73	3.89	49.91	10:31
2	TOC	3.0378	30.3785	27.82	31.60	3.78	49.91	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K2002470-001.01	2.1044 ppm	0.0619 ppm	2.9400%	2020/03/22 12:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1482	21.4818	21.84	25.60	3.76	49.92	10:27
2	TOC	2.0606	20.6059	21.25	25.19	3.94	49.92	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K2002471-001.01	4.4447 ppm	0.0904 ppm	2.0300%	2020/03/22 12:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.5086	45.0863	37.71	41.74	4.03	49.90	10:29

2	TOC	4.3808	43.8075	36.85	40.81	3.96	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	K2002489-001.01	4.7622 ppm	0.0543 ppm	1.1400%	2020/03/22 13:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.8005	48.0053	39.67	43.66	3.99	49.91	10:29
2	TOC	4.7238	47.2380	39.16	43.00	3.84	49.91	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K2002492-002.01	0.4658 ppm	0.0189 ppm	4.0600%	2020/03/22 13:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4524	4.5241	10.43	14.40	3.97	49.90	10:27
2	TOC	0.4792	4.7918	10.61	14.28	3.66	49.89	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.6946 ppm (PASS)	0.0000 ppm	0%	2020/03/22 14:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.6946	256.9459	180.61	184.49	3.88	49.89	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/22 14:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.32	10.16	3.85	49.87	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/22 14:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.92	9.75	3.83	49.87	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.7423 ppm (PASS)	0.0000 ppm	0%	2020/03/22 15:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7423	247.4232	174.21	178.06	3.85	49.87	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K2002496-001.01	14.0184 ppm	0.6231 ppm	4.4400%	2020/03/22 15:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.4590	144.5901	104.63	108.44	3.81	49.85	10:28
2	TOC	13.5778	135.7782	98.70	102.54	3.83	49.84	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K2002421-001.12	1.5767 ppm	0.0401 ppm	2.5400%	2020/03/22 15:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6050	16.0498	18.18	22.01	3.83	49.82	10:28
2	TOC	1.5483	15.4833	17.80	21.76	3.95	49.80	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K2002421-002.12	0.8540 ppm	0.0165 ppm	1.9300%	2020/03/22 16:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8656	8.6565	13.21	17.17	3.96	49.80	10:29
2	TOC	0.8423	8.4230	13.06	16.87	3.81	49.81	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K2002421-003.12	1.7781 ppm	0.0172 ppm	0.9700%	2020/03/22 16:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7659	17.6587	19.27	23.22	3.95	49.79	10:29
2	TOC	1.7903	17.9026	19.43	23.24	3.81	49.77	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K2002421-004.12	0.8774 ppm	0.0261 ppm	2.9700%	2020/03/22 17:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8958	8.9583	13.42	17.18	3.76	49.77	10:27
2	TOC	0.8590	8.5895	13.17	16.92	3.75	49.78	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K2002432-001.01	0.1255 ppm	0.0243 ppm	19.3500%	2020/03/22 17:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1083	1.0832	8.12	11.94	3.82	49.80	10:28

2	TOC	0.1427	1.4267	8.35	12.16	3.81	49.84	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	K2002432-001.01 ms	26.3798 ppm	0.0000 ppm	0.0000%	2020/03/22 18:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.3798	263.7980	184.80	188.75	3.96	49.85	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/22 18:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.97	9.86	3.88	49.86	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4176 ppm (PASS)	0.0000 ppm	0%	2020/03/22 18:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4176	254.1757	178.75	182.64	3.89	49.88	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/22 18:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

D	TOC	0 ppm	1	0.0000	0.0000	6.08	9.82	3.74	49.92	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC	K2002437-001.03	1.8820 ppm	0.0408 ppm	2.1700%	2020/03/22 19:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9109	19.1085	20.24	24.02	3.78	49.93	10:29
2	TOC	1.8532	18.5316	19.85	23.57	3.71	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC	K2002437-002.03	0.7951 ppm	0.0104 ppm	1.3100%	2020/03/22 19:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8024	8.0245	12.79	16.50	3.71	50.00	10:24
2	TOC	0.7877	7.8773	12.69	16.46	3.77	49.99	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	50	TOC	K2002437-003.03	3.1945 ppm	0.0197 ppm	0.6200%	2020/03/22 20:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1806	31.8060	28.78	32.47	3.69	50.00	10:30
2	TOC	3.2084	32.0841	28.97	32.65	3.68	50.00	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	51	TOC	K2002437-004.03	0.7492 ppm	0.0484 ppm	6.4600%	2020/03/22 20:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7834	7.8341	12.66	16.42	3.76	50.00	10:32
2	TOC	0.7150	7.1501	12.20	15.91	3.71	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC)	CAS_salt_010711	CAS_salt_010711

(v1364) (v4) (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K2002437-005.03	0.6532 ppm	0.0170 ppm	2.6100%	2020/03/22 20:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6652	6.6520	11.86	15.62	3.76	50.00	10:25
2	TOC	0.6411	6.4111	11.70	15.67	3.96	50.03	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K2002456-001.01	1.1335 ppm	0.0168 ppm	1.4800%	2020/03/22 21:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1453	11.4535	15.09	18.93	3.84	50.00	10:25
2	TOC	1.1216	11.2156	14.93	18.88	3.94	50.02	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K2002456-002.01	0.7645 ppm	0.0422 ppm	5.5200%	2020/03/22 21:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7943	7.9427	12.73	16.72	3.99	50.05	10:29
2	TOC	0.7346	7.3464	12.33	16.17	3.83	50.01	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K2002456-003.01	1.4306 ppm	0.0000 ppm	0.0000%	2020/03/22 22:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4306	14.3056	17.01	21.07	4.05	50.03	10:28
2	TOC	1.4306	14.3056	17.01	20.90	3.89	50.04	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K2002456-004.01	1.4038 ppm	0.0408 ppm	2.9100%	2020/03/22 22:49

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	1.4326	14.3264	17.03	21.09	4.07	50.03	10:26
2	TOC	1.3749	13.7494	16.64	20.59	3.96	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/22 23:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.12	9.08	3.96	50.08	10:29
2	TOC	0.0000	0.0000	5.08	8.91	3.83	50.03	10:26
3	TOC	0.0000	0.0000	4.92	8.74	3.82	50.02	10:27
4	TOC	0.0000	0.0000	4.82	8.59	3.76	50.04	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1303 ppm (PASS)	0.0000 ppm	0%	2020/03/23 00:13

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1303	251.3028	176.82	180.56	3.74	50.04	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/23 00:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.42	9.22	3.80	50.03	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/23 00:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.04	8.76	3.72	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.1987 ppm (PASS)	0.0000 ppm	0%	2020/03/23 00:57

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.1987	241.9868	170.55	174.42	3.87	50.01	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K2002462-002.04 doc	4.0921 ppm	0.0354 ppm	0.8700%	2020/03/23 01:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1171	41.1711	35.08	38.88	3.80	50.00	10:29
2	TOC	4.0670	40.6700	34.74	38.61	3.87	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	K2002462-002.04 ms doc	32.0473 ppm	0.0000 ppm	0.0000%	2020/03/23 01:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.0473	320.4734	222.91	226.80	3.89	50.01	10:31

Dilution	Blank Contribution	Method	Calibration

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	61	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/23 01:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.10	10.11	4.00	50.00	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	62	TOC	FB 3/19/20 1619	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/23 02:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.24	9.23	4.00	49.99	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	63	TOC	K2002422-001.04 doc	9.5284 ppm	0.1176 ppm	1.2300%	2020/03/23 02:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.4453	94.4531	70.91	74.94	4.03	50.01	10:29
2	TOC	9.6116	96.1156	72.03	75.73	3.70	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	64	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/23 02:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.59	9.48	3.89	49.99	10:29
2	TOC	0.0000	0.0000	5.25	9.15	3.90	49.99	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25	0 / infinity	25.0598	0.0000	0%	2020/03/23 03:20

					ppm [25 ppm]	(NA / NA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0598	250.5980	176.34	180.27	3.92	49.97	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/23 03:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.46	9.42	3.96	50.00	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1364	1.7787	1.3950	0.0000	0.0000	0.0000	2020/03/19 15:10	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v32	Calibration curve formula:	TOC: y = 6.725x + 7.818
Ver Creation:	2020/03/11 15:55	r^2 value:	TOC: r^2 = 0.99921
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	5.8640	0.0000		2020/03/11 14:28
0.500 ppm	9.5210	0.5000		2020/03/11 14:42
1.0 ppm	12.5930	1.0000		2020/03/11 14:56
5.0 ppm	40.5270	5.0000		2020/03/11 15:10
10 ppm	79.5310	10.0000		2020/03/11 15:25
25 ppm	181.4610	25.0000		2020/03/11 15:39
50 ppm	340.5610	50.0000		2020/03/11 15:53

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)

Ver Creation: 2019/02/21 17:57

Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/03/23 03:50

ALS Environmental

StarLIMS Run:	674205, 674225, 674226, 674227
Analysis:	DOC/TOC
Method:	SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/11/2020

ICAL ID: 19-GEN-8-7-E->J

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-9-H

21 % H3PO4: 19-GEN-08-8-K

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BCP	Date Analyzed: 3/24/20
Reviewed By:	Date Reviewed: 3/24/20

21 BCP 3/24/20

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 2008062; 2008310

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2362 (259687)

General Set Information: There were twenty field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 701041) was less than 1/2 the CRDL. The recovery for the LCS (701038) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on samples 2008310002/03 (Client ID: 16WW44-200317). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. Field sample 2008062001 had a positive result for perchlorate. However, because the 83/85 ion ratio failed, the result was not reported. The Reporting Limit Verification Standard (RLVS – 701039) is reported from the analysis of the Laboratory Control Sample (LCS – 701038) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafiles 26MARD07.

Thomas Bosch — Analyst
March 29, 2020 — Date

ANALYTICAL REPORT

Report Date: March 31, 2020

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-2008062**
Project ID: HS20030733
Purchase Order: HS20030733
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
16WW56-200316	2008062001	03/16/20	03/19/20	
16WW22-200316	2008062002	03/16/20	03/19/20	
16WW41-200316	2008062003	03/16/20	03/19/20	
16WW21-200316	2008062004	03/16/20	03/19/20	
16WW39-200316	2008062005	03/16/20	03/19/20	
16WW25-200316	2008062006	03/16/20	03/19/20	
16WW21-200316-FD	2008062007	03/16/20	03/19/20	
16WW49-200316	2008062008	03/16/20	03/19/20	

ANALYTICAL REPORT

Workorder: 34-2008062
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16WW56-200316** | Sampling Site: NA | Collected: 03/16/2020
Lab ID: 2008062001 | Media: 125 mL Nalgene | Received: 03/19/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 09:16 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW22-200316** | Sampling Site: NA | Collected: 03/16/2020
Lab ID: 2008062002 | Media: 125 mL Nalgene | Received: 03/19/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 09:30 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW41-200316** | Sampling Site: NA | Collected: 03/16/2020
Lab ID: 2008062003 | Media: 125 mL Nalgene | Received: 03/19/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 14:24 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**310**	10	20	40	10	

Sample ID: **16WW21-200316** | Sampling Site: NA | Collected: 03/16/2020
Lab ID: 2008062004 | Media: 125 mL Nalgene | Received: 03/19/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 09:58 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-2008062
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16WW39-200316** | Sampling Site: NA | Collected: 03/16/2020
Lab ID: 2008062005 | Media: 125 mL Nalgene | Received: 03/19/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 10:12 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**62**	1.0	2.0	4.0	1	

Sample ID: **16WW25-200316** | Sampling Site: NA | Collected: 03/16/2020
Lab ID: 2008062006 | Media: 125 mL Nalgene | Received: 03/19/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 10:26 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW21-200316-FD** | Sampling Site: NA | Collected: 03/16/2020
Lab ID: 2008062007 | Media: 125 mL Nalgene | Received: 03/19/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 10:40 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW49-200316** | Sampling Site: NA | Collected: 03/16/2020
Lab ID: 2008062008 | Media: 125 mL Nalgene | Received: 03/19/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 10:54 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-2008062
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 03/27/2020 11:27	/S/ Stephen Brose 03/31/2020 15:31

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
The following was provided by the client: Sample ID, Collection Date, Sampling Location, Media Type, Sampling Parameter.
Collection Date, Media Type, and Sampling Parameter can potentially affect the validity of the results.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

ANALYTICAL REPORT

Workorder: 34-2008062
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 2008062

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2362 (HBN: 259687)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 701041
Analyzed: 03/26/2020 09:02
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 701038
Analyzed: 03/26/2020 08:34
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.07	3.00	102	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 2008310001	**MS:** 2008310002	**MSD:** 2008310003
Analyzed: 03/26/2020 11:08	**Analyzed:** 03/26/2020 11:22	**Analyzed:** 03/26/2020 11:50
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.03	3	101	78.8	123.8	3	100	0.991	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
03/29/2020 11:11	03/31/2020 15:31

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable



2008062

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

18698 #2

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13536**

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20030733
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20030733-01**	**16WW56-200316**	**Groundwater**	**16 Mar 2020 08:15**
	SUB_Perch-6850			25 Mar 2020
2.	**HS20030733-02**	**16WW22-200316**	**Groundwater**	**16 Mar 2020 09:10**
	SUB_Perch-6850			25 Mar 2020
3.	**HS20030733-03**	**16WW41-200316**	**Groundwater**	**16 Mar 2020 10:05**
	SUB_Perch-6850			25 Mar 2020
4.	**HS20030733-04**	**16WW21-200316**	**Groundwater**	**16 Mar 2020 10:55**
	SUB_Perch-6850			25 Mar 2020
5.	**HS20030733-05**	**16WW39-200316**	**Groundwater**	**16 Mar 2020 10:50**
	SUB_Perch-6850			25 Mar 2020
6.	**HS20030733-06**	**16WW25-200316**	**Groundwater**	**16 Mar 2020 12:55**
	SUB_Perch-6850			25 Mar 2020
7.	**HS20030733-07**	**16WW21-200316-FD**	**Groundwater**	**16 Mar 2020 10:55**
	SUB_Perch-6850			25 Mar 2020
8.	**HS20030733-08**	**16WW49-200316**	**Groundwater**	**16 Mar 2020 13:55**
	SUB_Perch-6850			25 Mar 2020

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13536**

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 3/18/2020 1800

Received By: _____ Date/Time: 3-19-20 9:54

Cooler ID(s): _____ Temperature(s): _____

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS20030733	***Split:***	**Workorder ID:** 2008062	**Level:** ENV_LVL4
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly
Comments:			**Preservatives**

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Preservatives COOL	Requested Analysis EPA 6850, DoD QSM
1	03/16/2020 08:15	16WW56-200316	2008062001		Water	A	1		A
2	03/16/2020 09:10	16WW22-200316	2008062002		Water	A	1		A
3	03/16/2020 10:05	16WW41-200316	2008062003		Water	A	1		A
4	03/16/2020 10:55	16WW21-200316	2008062004		Water	A	1		A
5	03/16/2020 10:50	16WW39-200316	2008062005		Water	A	1		A
6	03/16/2020 12:55	16WW25-200316	2008062006		Water	A	1		A
7	03/16/2020 10:55	16WW21-200316-FD	2008062007	FLDDUP	Water	A	1		A
8	03/16/2020 13:55	16WW49-200316	2008062008		Water	A	1		A

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Wrath, Julie	03/19/2020 09:54	ALS Sample Receiving	Sample Login
Julie Wrath R.33.1	3/19/20 1130 03.24.20/12:35	14C T. Booth	storage cool analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

01088815

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 2088862

Date/Time of Receipt: 03-19-20 9:54

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA	
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA	
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA	
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA	

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	Good	2 °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: Jan VanRussell (Signature) T. VanRussell (Printed Name) 03-19-20 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

01088816

Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 159469-434 RIT2 EXP 12/20 *

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 18MAR20
ACTWGT: 15.25 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS20030733 - RJ

551C2/64E0/104C

FedEx Express

J131190605051aa

THU - 19 MAR 3:00P
STANDARD OVERNIGHT

TRK# 0201 1251 0295 5448

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2362 Created: 3/26/2020 08:10 Instrument: HBN: 259687

Rule: EPA 6850, DoD QSM Water Analyst: T. Bosch Status: WP

Workorder: 2008062 [ENV_LVL4]

Workorder: 2008310 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	701037	CCV for HBN 259687 [ELMS/2362]				CCV	3		E685041C3Q	5311		4/1/2020	
2	701038	LCS for HBN 259687 [ELMS/2362]				LCS	3		E6850Q413Q	5311		4/1/2020	
3	701039	RLVS for HBN 259687 [ELMS/2362				RLVS	3		E685041C3Q	5311		4/1/2020	
4	701040	ICS for HBN 259687 [ELMS/2362]				ICS	3		E6850..D3Q	5311		4/1/2020	
5	701041	LMB for HBN 259687 [ELMS/2362]				LMB	3		E6850Q413Q	5311		4/1/2020	
6	2008062001	16WW56-200316				SAMPLE	3	2008062001-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
7	2008062002	16WW22-200316				SAMPLE	3	2008062002-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
8	2008062003	16WW41-200316				SAMPLE	3	2008062003-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
9	2008062004	16WW21-200316				SAMPLE	3	2008062004-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
10	2008062005	16WW39-200316				SAMPLE	3	2008062005-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
11	2008062006	16WW25-200316				SAMPLE	3	2008062006-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
12	2008062007	16WW21-200316-FD				FLDDUP	3	2008062007-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
13	2008062008	16WW49-200316				SAMPLE	3	2008062008-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
14	2008310001	16WW44-200317				SAMPLE	3	2008310001-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
15	2008310002	16WW44-200317MS				MS	3	2008310002-A	E6850Q413Q	5480		4/1/2020	
16	701042	CCV for HBN 259687 [ELMS/2362]				CCV	3		E685041C3Q	5311		4/1/2020	
17	2008310003	16WW44-200317MSD				MSD	3	2008310003-A	E6850Q413Q	5480		4/1/2020	
18	2008310004	16WW37-200317				SAMPLE	3	2008310004-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
19	2008310005	16WW38-200317				SAMPLE	3	2008310005-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
20	2008310006	16WW14-200317				SAMPLE	3	2008310006-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
21	2008310007	16RW06-200317				SAMPLE	3	2008310007-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
22	2008310008	16PM03-200317				SAMPLE	3	2008310008-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
23	2008310009	16PM02-200317				SAMPLE	3	2008310009-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
24	2008310010	16RW07-200317				SAMPLE	3	2008310010-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
25	2008310011	16RW11-200317				SAMPLE	3	2008310011-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
26	2008310012	16WW51-200317				SAMPLE	3	2008310012-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
27	701043	CCV for HBN 259687 [ELMS/2362]				CCV	3		E685041C3Q	5311		4/1/2020	
28	701102	CCV for HBN 259687 [ELMS/2362]				CCV	3		E685041C3Q	5311		4/1/2020	

01088818

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 2008062 (001-08); 2008310 (001-12)
ELMS Batch/HBN ID: 2362 (259687)
Prep Date: 03/24,25/2020 Analysis Date: 03/26/2020 Analyst: Tom Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2020\MAR\26MAR0D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Tom Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 10 Injection Volume: 40µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 701038; Target = 3.0µg/L. ASTM type II water was used for LMB 701041.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on samples 2008310002/03 (Client ID: 16WW44-200317). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters. Field sample 2008062001 had a positive result for perchlorate. However, because the 83/85 ion ratio failed, the result was not reported.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2020\MAR\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2020\DOD\259687-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 701039) is reported from the analysis of the Laboratory Control Sample (LCS – 701038) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEP103) along with datafile 26MARD07.

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2362 HBN: 259687 **Sample Set IDs if Applicable:** 2008062 / 2008310	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	**Description - 6850 Stock AccStd 1,000ug/mL**

Standard: 43659
MFG: AccuStandard
MFG Lot: 218065075
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 09/17/2018 09:09AM

Amount: 100 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	Description - 6850 Intermdt AccStd 10.ug/mL

Standard: 49947
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/23/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK — **Description - 6850 QC WKG STD 100ug/L**

Standard: 47516
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM

Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		**Description - 6850 QC Stock STD 1,000ug/mL**
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 47515 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 05/06/2019 03:05PM **Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ULTRA ISO 9001 ISO GUIDE 34 ISO 17025

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

Cambridge Isotope Laboratories, Inc. Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: ** For isotopically labeled compounds, MW listed is for the fully enriched product.*	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\26MAR20D\26MAR20S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	701037 CCV@25	Vial 71	1	Control	1	1.31519e6	7.596	24.50269
*	701038 LCS@3.	Vial 72	1	Control	2	1.66008e5	7.469	3.07012
*	701040 ICS@3.0	Vial 73	1	Control	3	9.99850e4	7.425	2.96673
*	701041 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2008062001	Vial 75	1	Sample	5	1.09960e5	6.921	2.23127
*	2008062002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2008062003	Vial 77	1	Sample	7	1.17976e7	6.021	147.31769 D1K
*	2008062004	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	2008062005	Vial 79	1	Sample	9	3.68639e6	7.063	61.54884
*	2008062006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	2008062007	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	2008062008	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	2008310001	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	2008310002 MS	Vial 84	1	Sample	14	1.61579e5	7.624	3.03065
*	701042 CCV@25	Vial 71	1	Control	15	1.25770e6	7.542	25.04210
*	2008310003 MSD	Vial 85	1	Sample	16	1.56764e5	7.529	3.00067
*	2008310004	Vial 86	1	Sample	17	0.00000	0.000	0.00000
*	2008310005	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*	2008310006	Vial 88	1	Sample	19	0.00000	0.000	0.00000
*	2008310007	Vial 89	1	Sample	20	0.00000	0.000	0.00000
*	2008310008 10X	Vial 90	1	Sample	21	2.26474e6	7.461	396.52335
*	2008310009	Vial 91	1	Sample	22	0.00000	0.000	0.00000
*	2008310010	Vial 92	1	Sample	23	2.13687e5	7.243	4.87047
*	2008310011	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	2008310012	Vial 94	1	Sample	25	0.00000	0.000	0.00000
*	701043 CCV@25	Vial 71	1	Control	26	1.23305e6	7.642	25.29232
*	2008062003 10X	Vial 95	1	Sample	27	1.66187e6	7.172	308.79978
*	701102 CCV@25	Vial 71	1	Control	28	1.21579e6	7.568	25.02152

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	701037 CCV@25	Vial 71	1	Control	1	1.83781e5	7.637	5.00000
*	701038 LCS@3.	Vial 72	1	Control	2	1.99015e5	7.478	5.00000
*	701040 ICS@3.0	Vial 73	1	Control	3	1.23987e5	7.431	5.00000
*	701041 LMB	Vial 74	1	Control	4	1.77630e5	7.646	5.00000
*	2008062001	Vial 75	1	Sample	5	1.80290e5	6.911	5.00000
*	2008062002	Vial 76	1	Sample	6	2.21066e5	7.204	5.00000
*	2008062003	Vial 77	1	Sample	7	1.80433e5	5.955	5.00000
*	2008062004	Vial 78	1	Sample	8	2.38862e5	7.519	5.00000
*	2008062005	Vial 79	1	Sample	9	1.77448e5	7.086	5.00000
*	2008062006	Vial 80	1	Sample	10	1.94128e5	8.130	5.00000
*	2008062007	Vial 81	1	Sample	11	1.72495e5	7.483	5.00000
*	2008062008	Vial 82	1	Sample	12	2.20984e5	7.241	5.00000
*	2008310001	Vial 83	1	Sample	13	2.23497e5	7.586	5.00000
*	2008310002 MS	Vial 84	1	Sample	14	1.96195e5	7.631	5.00000
*	701042 CCV@25	Vial 71	1	Control	15	1.71580e5	7.576	5.00000
*	2008310003 MSD	Vial 85	1	Sample	16	1.92226e5	7.553	5.00000
*	2008310004	Vial 86	1	Sample	17	1.66041e5	7.125	5.00000
*	2008310005	Vial 87	1	Sample	18	1.63139e5	7.338	5.00000
*	2008310006	Vial 88	1	Sample	19	1.67930e5	7.299	5.00000
*	2008310007	Vial 89	1	Sample	20	1.37320e5	7.249	5.00000
*	2008310008 10X	Vial 90	1	Sample	21	1.83925e5	7.486	50.00000
*	2008310009	Vial 91	1	Sample	22	2.26093e5	7.401	5.00000
*	2008310010	Vial 92	1	Sample	23	1.61722e5	7.250	5.00000
*	2008310011	Vial 93	1	Sample	24	1.41774e5	7.091	5.00000
*	2008310012	Vial 94	1	Sample	25	1.86602e5	7.252	5.00000

Batch Report: C:\HPCHEM\1\DATA\26MAR20D\26MAR20S.B

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	701043 CCV@25	Vial 71	1	Control	26	1.66381e5	7.665	5.00000
*	2008062003 10X	Vial 95	1	Sample	27	1.79512e5	7.187	50.00000
*	701102 CCV@25	Vial 71	1	Control	28	1.66012e5	7.575	5.00000

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	701037 CCV@25	Vial 71	1	Control	1	4.23244e5	7.613	25.73518
*	701038 LCS@3.	Vial 72	1	Control	2	5.75315e4	7.501	3.40153
*	701040 ICS@3.0	Vial 73	1	Control	3	3.96560e4	7.435	3.77484
*	701041 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2008062001	Vial 75	1	Sample	5	1.31311e4	6.920	7.42428e-1
*	2008062002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2008062003	Vial 77	1	Sample	7	3.62321e6	6.035	150.65418
*	2008062004	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	2008062005	Vial 79	1	Sample	9	1.09785e6	7.077	60.87616
*	2008062006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	2008062007	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	2008062008	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	2008310001	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	2008310002 MS	Vial 84	1	Sample	14	5.55387e4	7.622	3.32853
*	701042 CCV@25	Vial 71	1	Control	15	4.03497e5	7.547	26.23064
*	2008310003 MSD	Vial 85	1	Sample	16	5.07657e4	7.527	3.09739
*	2008310004	Vial 86	1	Sample	17	0.00000	0.000	0.00000
*	2008310005	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*	2008310006	Vial 88	1	Sample	19	0.00000	0.000	0.00000
*	2008310007	Vial 89	1	Sample	20	0.00000	0.000	0.00000
*	2008310008 10X	Vial 90	1	Sample	21	7.08209e5	7.477	407.04413
*	2008310009	Vial 91	1	Sample	22	0.00000	0.000	0.00000
*	2008310010	Vial 92	1	Sample	23	6.45639e4	7.251	4.73281
*	2008310011	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	2008310012	Vial 94	1	Sample	25	0.00000	0.000	0.00000
*	701043 CCV@25	Vial 71	1	Control	26	3.91623e5	7.660	26.25206
*	2008062003 10X	Vial 95	1	Sample	27	4.89002e5	7.190	299.63811
*	701102 CCV@25	Vial 71	1	Control	28	3.97063e5	7.579	26.63751

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2020\MAR\26MAR20D.S

Sequence Table:

Method and Injection Info Part:

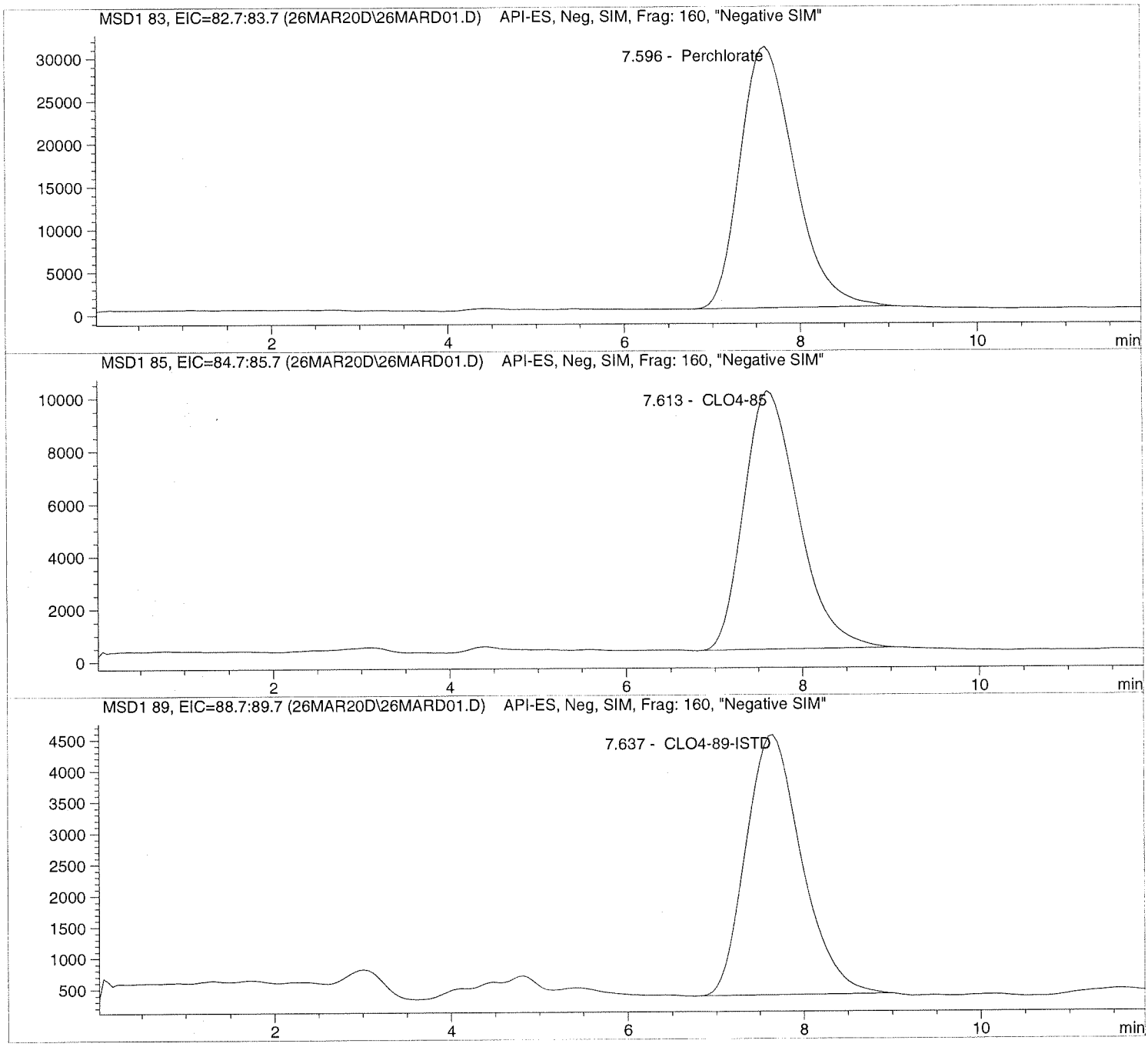
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	701037	CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	701038	LCS@3.	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	701040	ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	701041	LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	2008062001		CLO4-AQN	1	Sample		
6	Vial 76	2008062002		CLO4-AQN	1	Sample		
7	Vial 77	2008062003		CLO4-AQN	1	Sample		
8	Vial 78	2008062004		CLO4-AQN	1	Sample		
9	Vial 79	2008062005		CLO4-AQN	1	Sample		
10	Vial 80	2008062006		CLO4-AQN	1	Sample		
11	Vial 81	2008062007		CLO4-AQN	1	Sample		
12	Vial 82	2008062008		CLO4-AQN	1	Sample		
13	Vial 83	2008310001		CLO4-AQN	1	Sample		
14	Vial 84	2008310002	MS	CLO4-AQN	1	Sample		
15	Vial 71	701042	CCV@25	CLO4-AQN	1	Ctrl Samp		
16	Vial 85	2008310003	MSD	CLO4-AQN	1	Sample		
17	Vial 86	2008310004		CLO4-AQN	1	Sample		
18	Vial 87	2008310005		CLO4-AQN	1	Sample		
19	Vial 88	2008310006		CLO4-AQN	1	Sample		
20	Vial 89	2008310007		CLO4-AQN	1	Sample		
21	Vial 90	2008310008	10X	CLO4-AQN	1	Sample		
22	Vial 91	2008310009		CLO4-AQN	1	Sample		
23	Vial 92	2008310010		CLO4-AQN	1	Sample		
24	Vial 93	2008310011		CLO4-AQN	1	Sample		
25	Vial 94	2008310012		CLO4-AQN	1	Sample		
26	Vial 71	701043	CCV@25	CLO4-AQN	1	Ctrl Samp		
27	Vial 95	2008062003	10X	CLO4-AQN	1	Sample		
28	Vial 71	701102	CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD01.D Sample Name: 701037 CCV@25

Injection Date:	3/26/2020 08:19:01	Seq Line:	1
Sample Name:	701037 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD01.D Sample Name: 701037 CCV@25

Injection Date:	3/26/2020 08:19:01	Seq Line:	1
Sample Name:	701037 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.596	PBA	1315193.4	24.5027	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.613	PBA	423244.0	25.7352	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.637	PBA	183780.9	5.0000	CLO4-89-ISTD

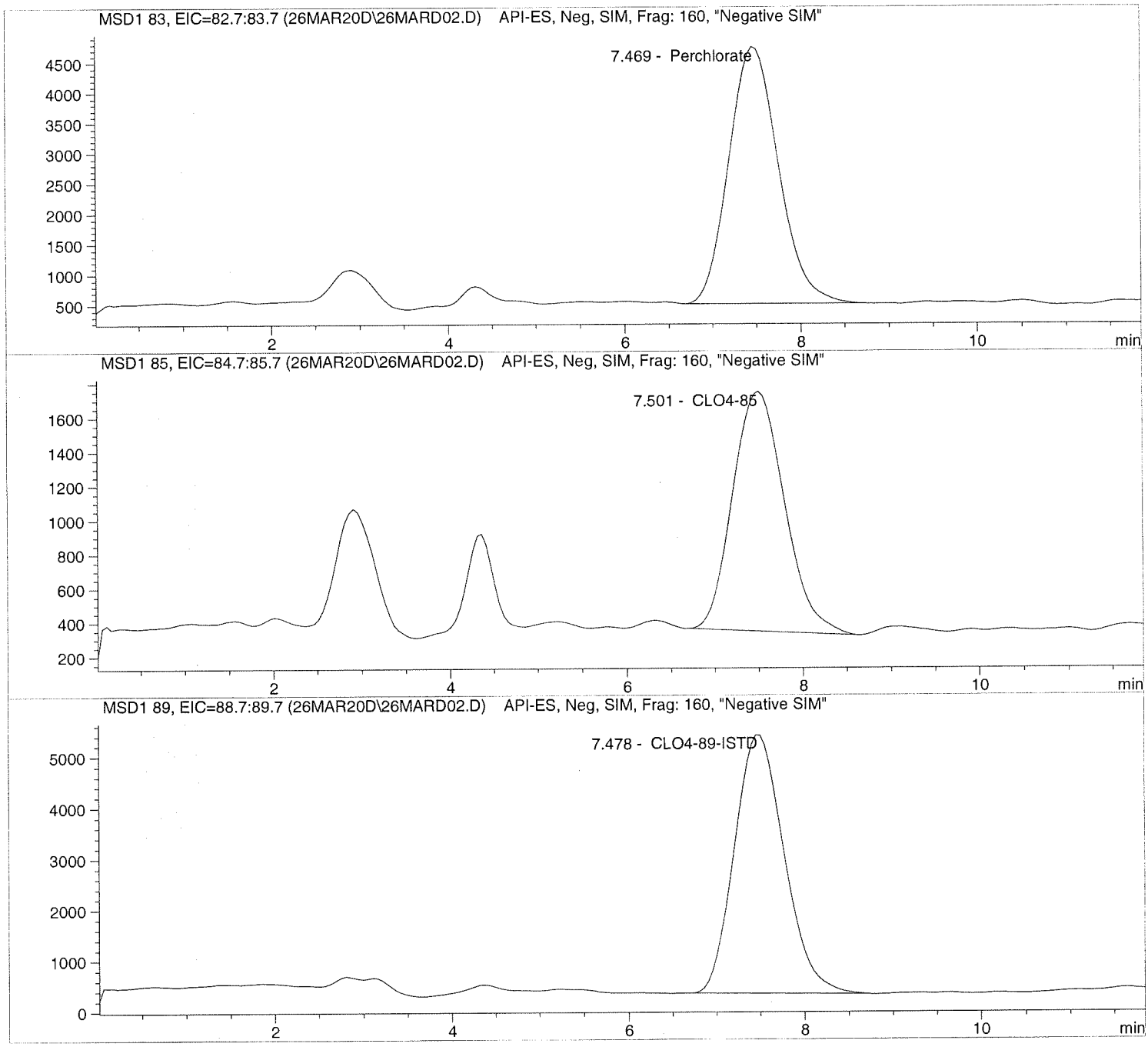
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Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD02.D Sample Name: 701038 LCS@3.

Injection Date:	3/26/2020 08:34:46	Seq Line:	2
Sample Name:	701038 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD02.D Sample Name: 701038 LCS@3.

Injection Date:	3/26/2020 08:34:46	Seq Line:	2
Sample Name:	701038 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.469	PBA	166008.5	3.0701	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.501	PBA	57531.5	3.4015	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.478	PBA	199014.8	5.0000	CLO4-89-ISTD

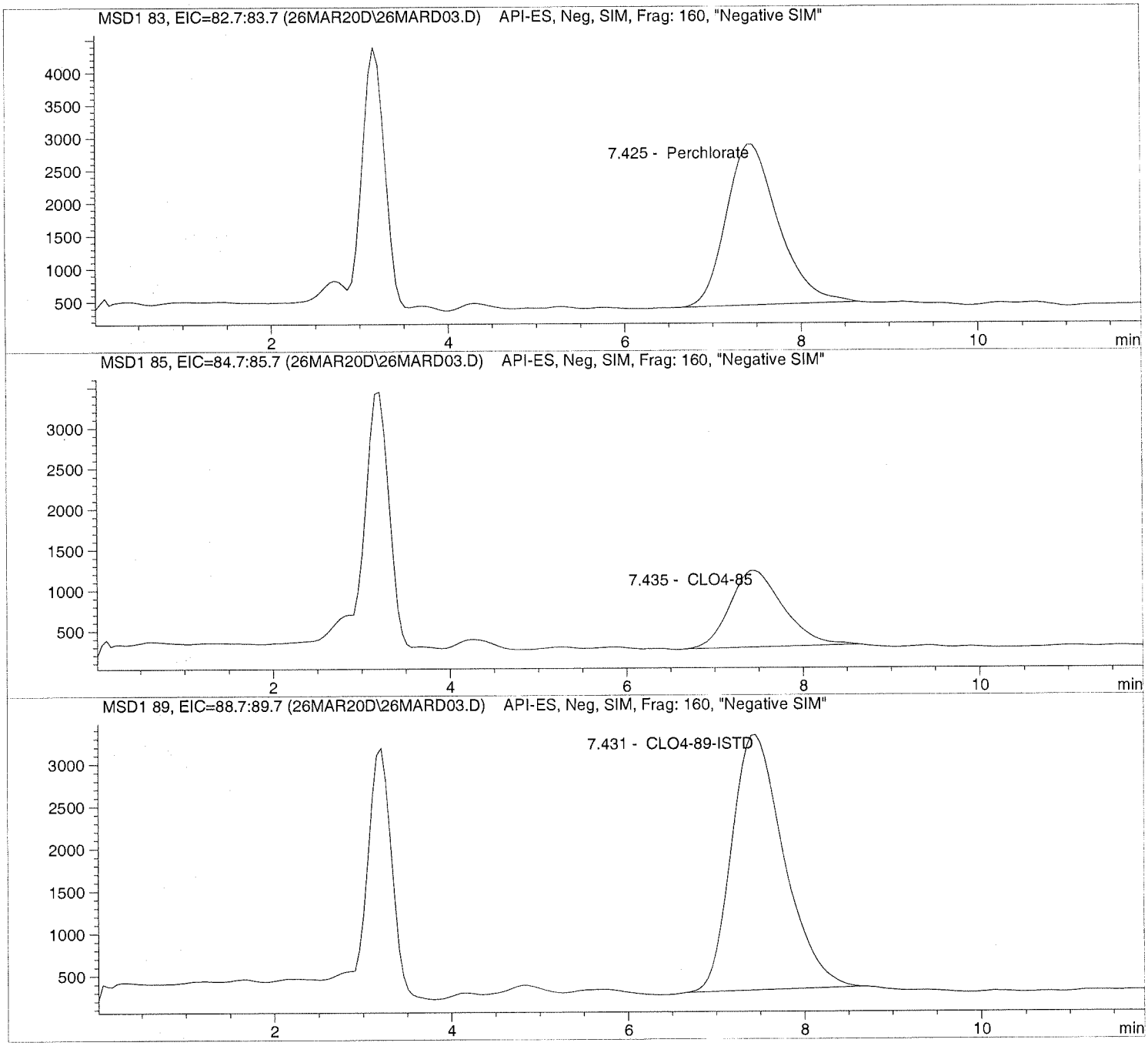
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD03.D Sample Name: 701040 ICS@3.0

Injection Date:	3/26/2020 08:48:42	Seq Line:	3
Sample Name:	701040 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD03.D Sample Name: 701040 ICS@3.0

Injection Date:	3/26/2020 08:48:42	Seq Line:	3
Sample Name:	701040 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.425	PBA	99985.0	2.9667	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.435	PBA	39656.0	3.7748	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.431	PBA	123986.5	5.0000	CLO4-89-ISTD

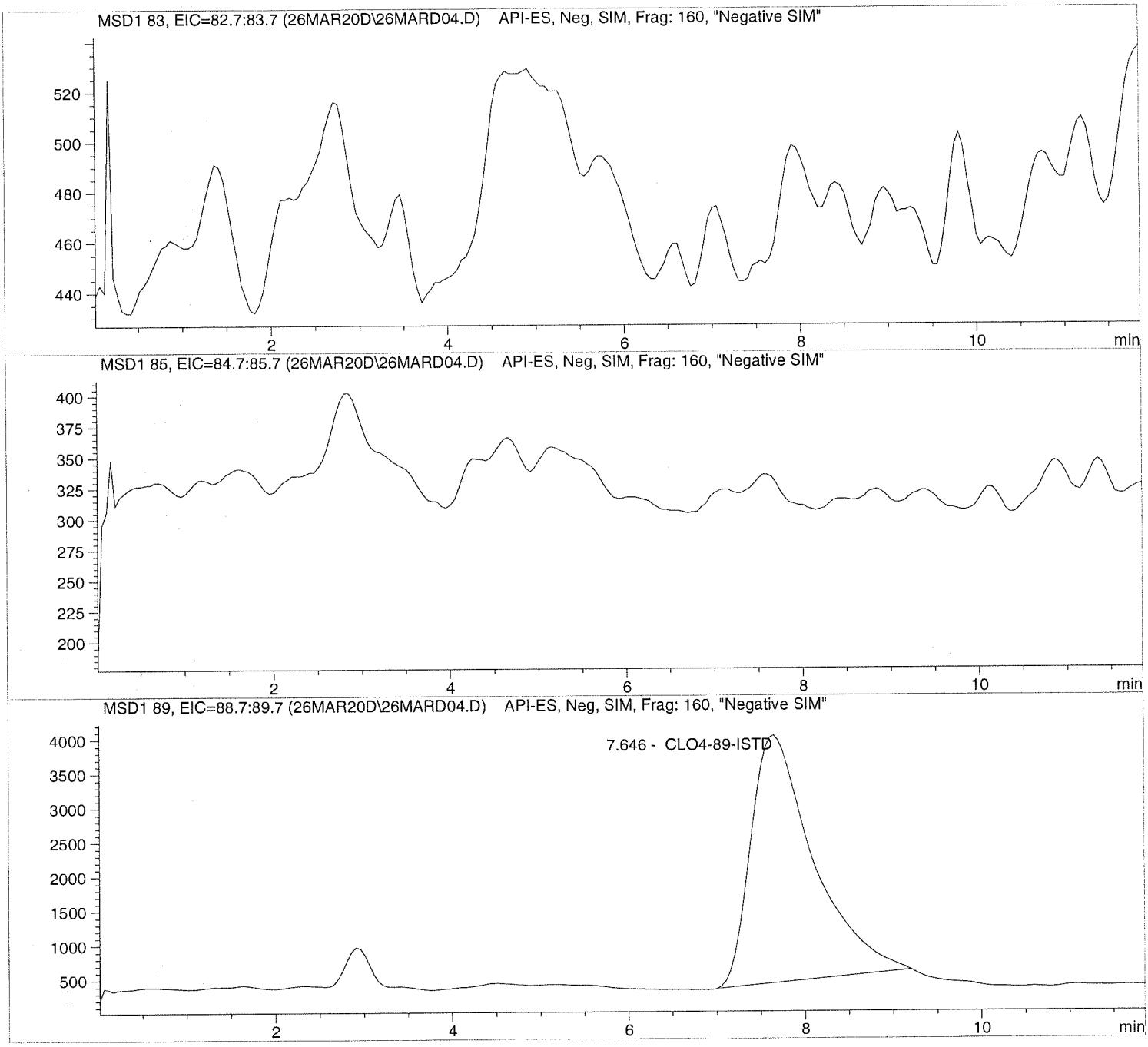
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD04.D Sample Name: 701041 LMB

Injection Date:	3/26/2020 09:02:43	Seq Line:	4
Sample Name:	701041 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD04.D Sample Name: 701041 LMB

Injection Date:	3/26/2020 09:02:43	Seq Line:	4
Sample Name:	701041 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.646	PBA	177629.6	5.0000	CLO4-89-ISTD

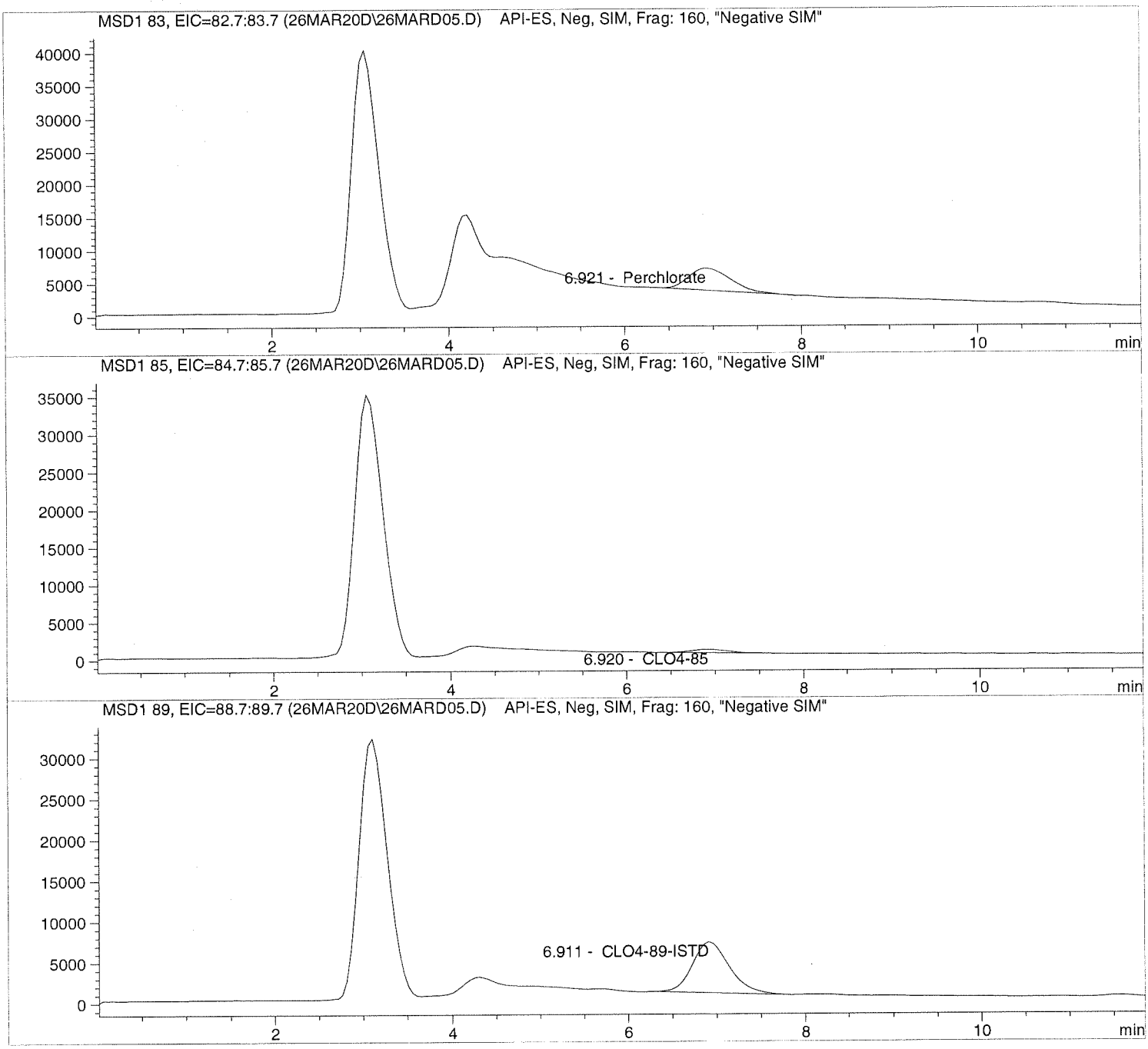
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD05.D Sample Name: 2008062001

Injection Date:	3/26/2020 09:16:42	Seq Line:	5
Sample Name:	2008062001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD05.D Sample Name: 2008062001

Injection Date:	3/26/2020 09:16:42	Seq Line:	5
Sample Name:	2008062001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.921	PBA	109960.3	2.2313	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.920	PBA	13131.1	0.7424	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.911	PBA	180290.0	5.0000	CLO4-89-ISTD

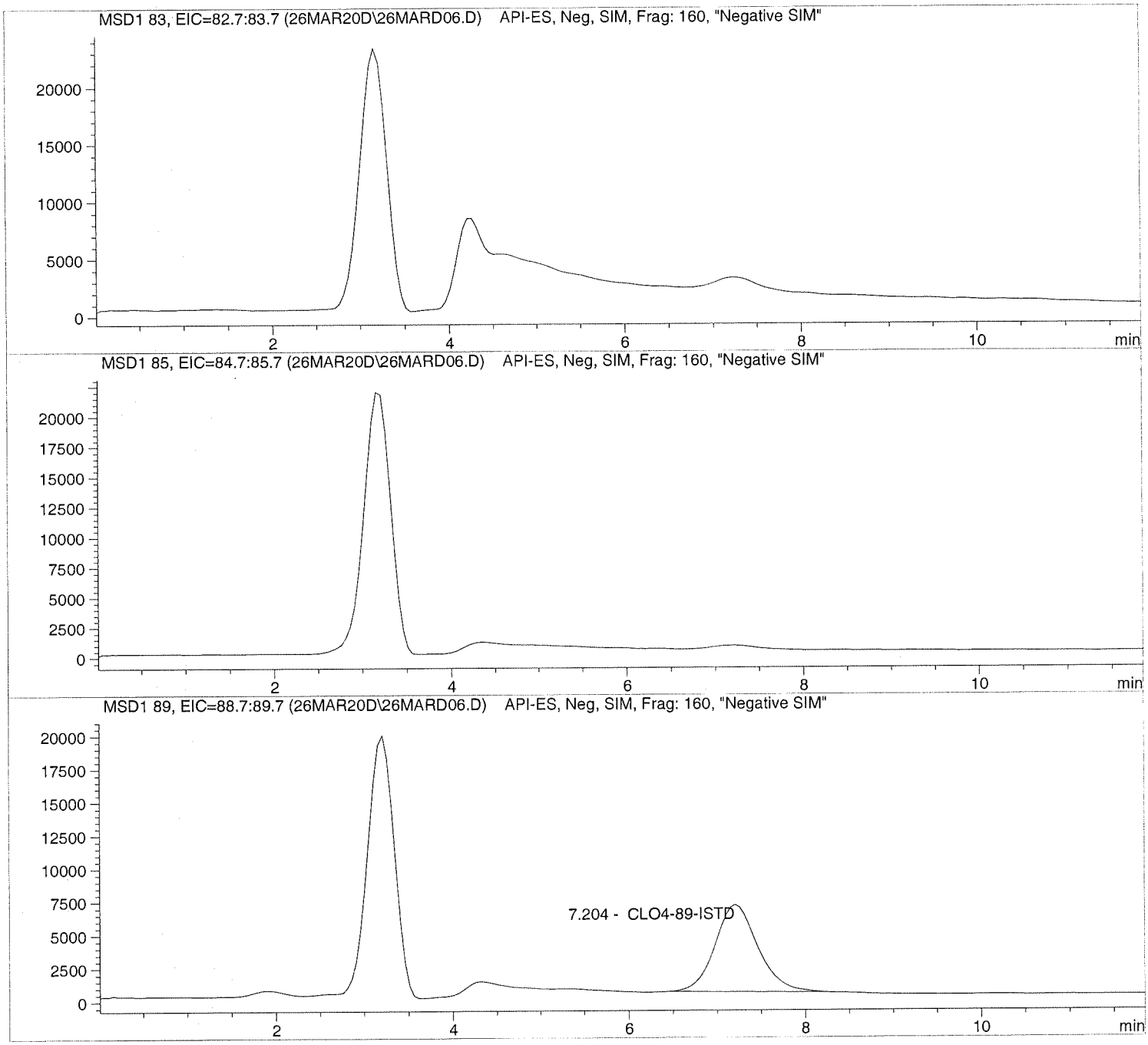
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD06.D Sample Name: 2008062002

Injection Date:	3/26/2020 09:30:41	Seq Line:	6
Sample Name:	2008062002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD06.D Sample Name: 2008062002

Injection Date:	3/26/2020 09:30:41	Seq Line:	6
Sample Name:	2008062002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.204	PBA	221065.7	5.0000	CLO4-89-ISTD

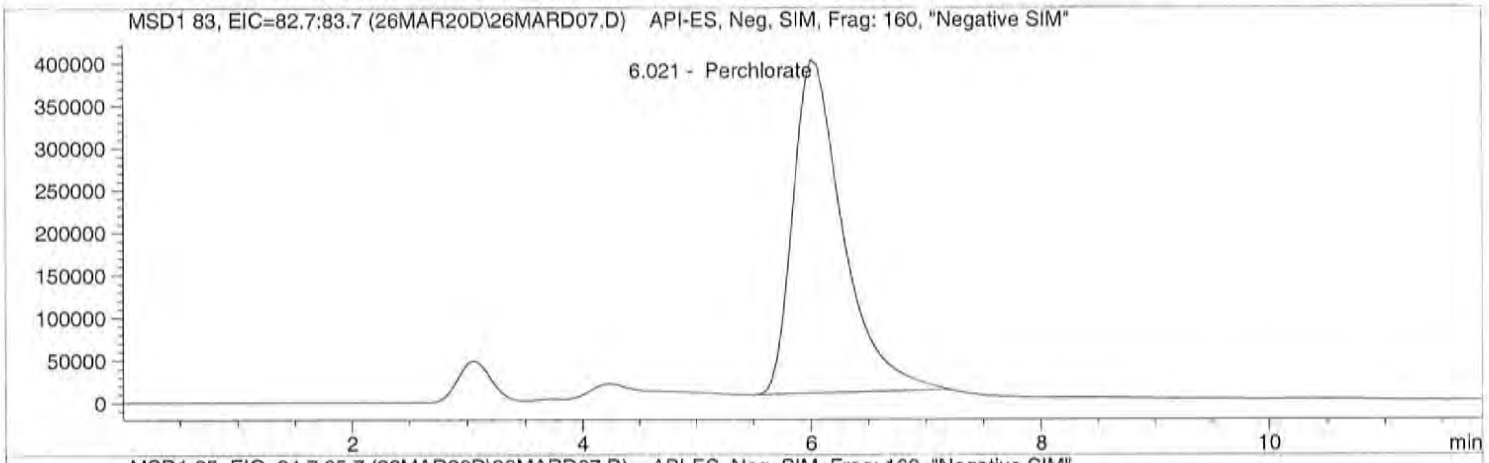
*** End of Report ***

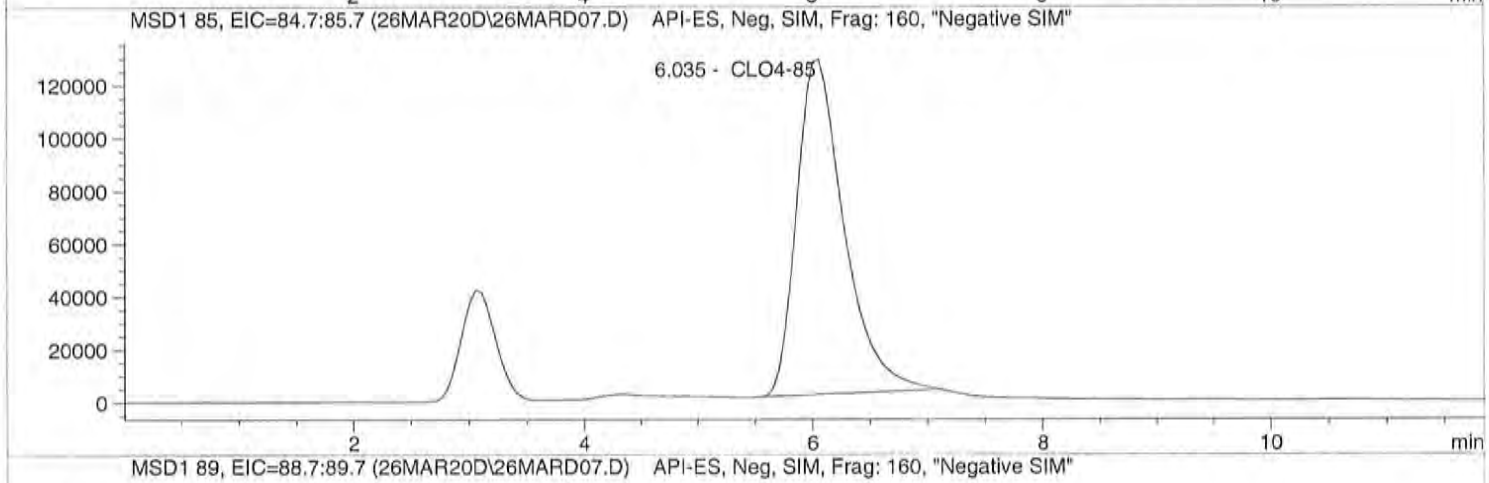
Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD07.D Sample Name: 2008062003

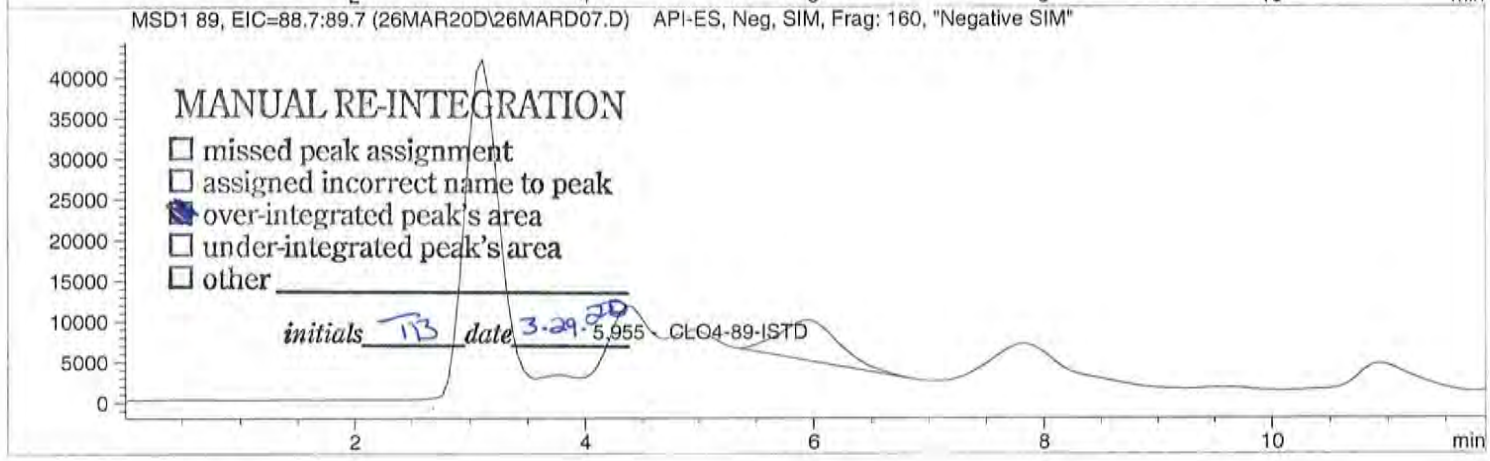
Injection Date:	3/26/2020 09:44:40	Seq Line:	7
Sample Name:	2008062003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD07.D Sample Name: 2008062003

Injection Date:	3/26/2020 09:44:40	Seq Line:	7
Sample Name:	2008062003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.021	PBA	11797552.0	147.3177	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.035	PBA	3623208.0	150.6542	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.955	MM	180433.5	5.0000	CLO4-89-ISTD

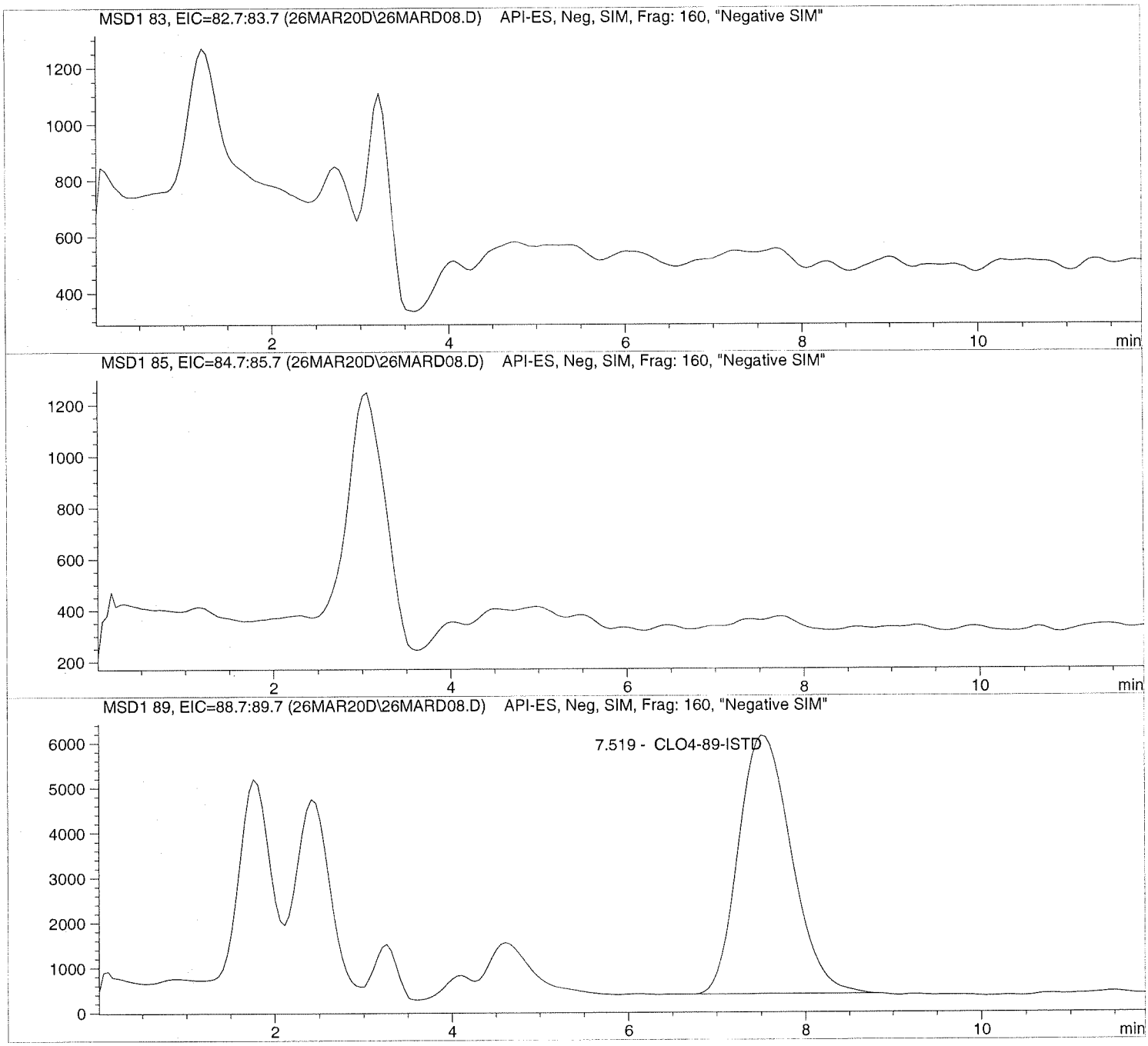
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD08.D Sample Name: 2008062004

Injection Date:	3/26/2020 09:58:39	Seq Line:	8
Sample Name:	2008062004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD08.D Sample Name: 2008062004

Injection Date:	3/26/2020 09:58:39	Seq Line:	8
Sample Name:	2008062004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.519	PBA	238862.2	5.0000	CLO4-89-ISTD

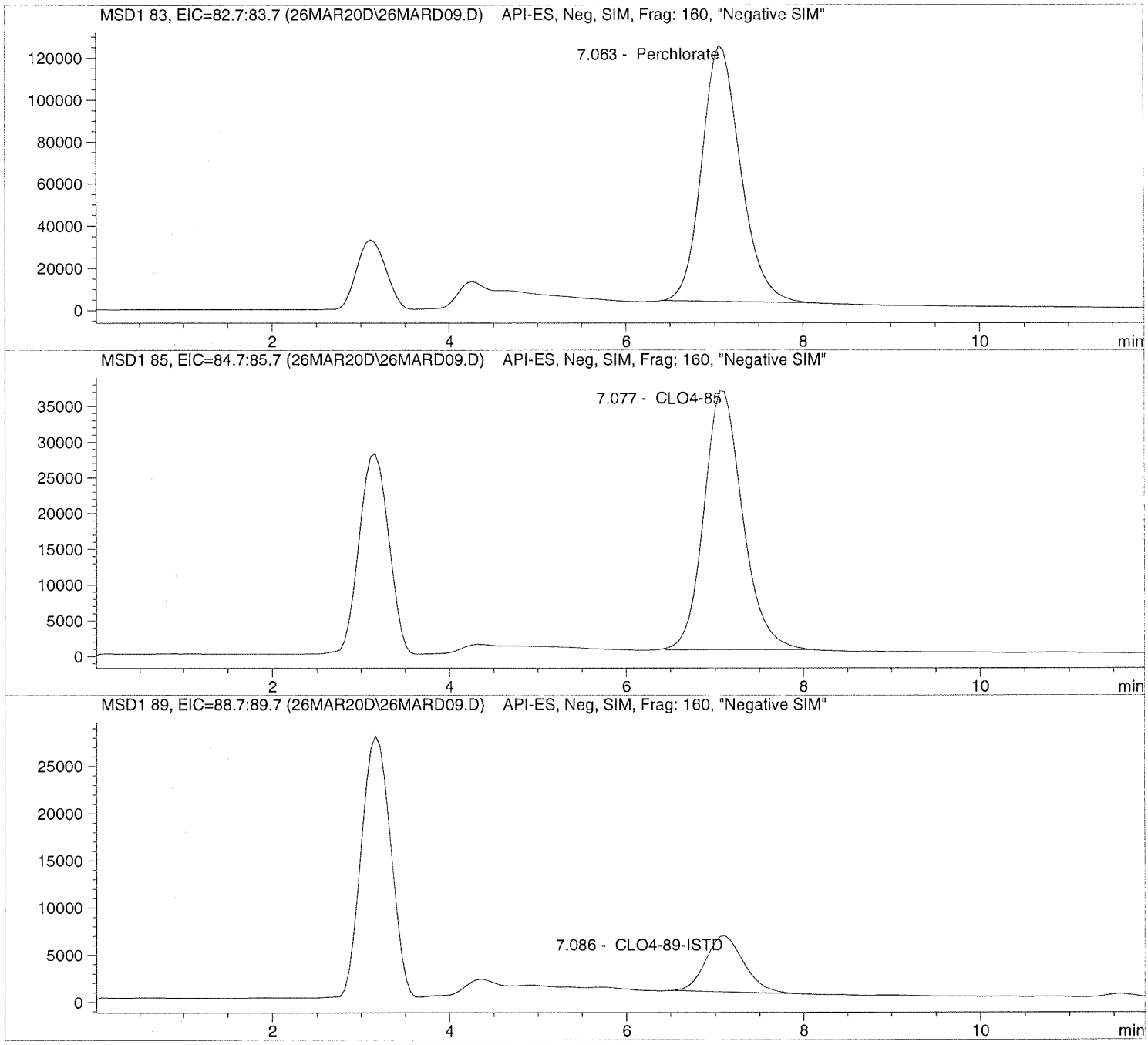
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD09.D Sample Name: 2008062005

Injection Date:	3/26/2020 10:12:38	Seq Line:	9
Sample Name:	2008062005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD09.D Sample Name: 2008062005

Injection Date:	3/26/2020 10:12:38	Seq Line:	9
Sample Name:	2008062005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.063	BBA	3686393.8	61.5488	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.077	BBA	1097853.7	60.8762	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.086	PBA	177447.9	5.0000	CLO4-89-ISTD

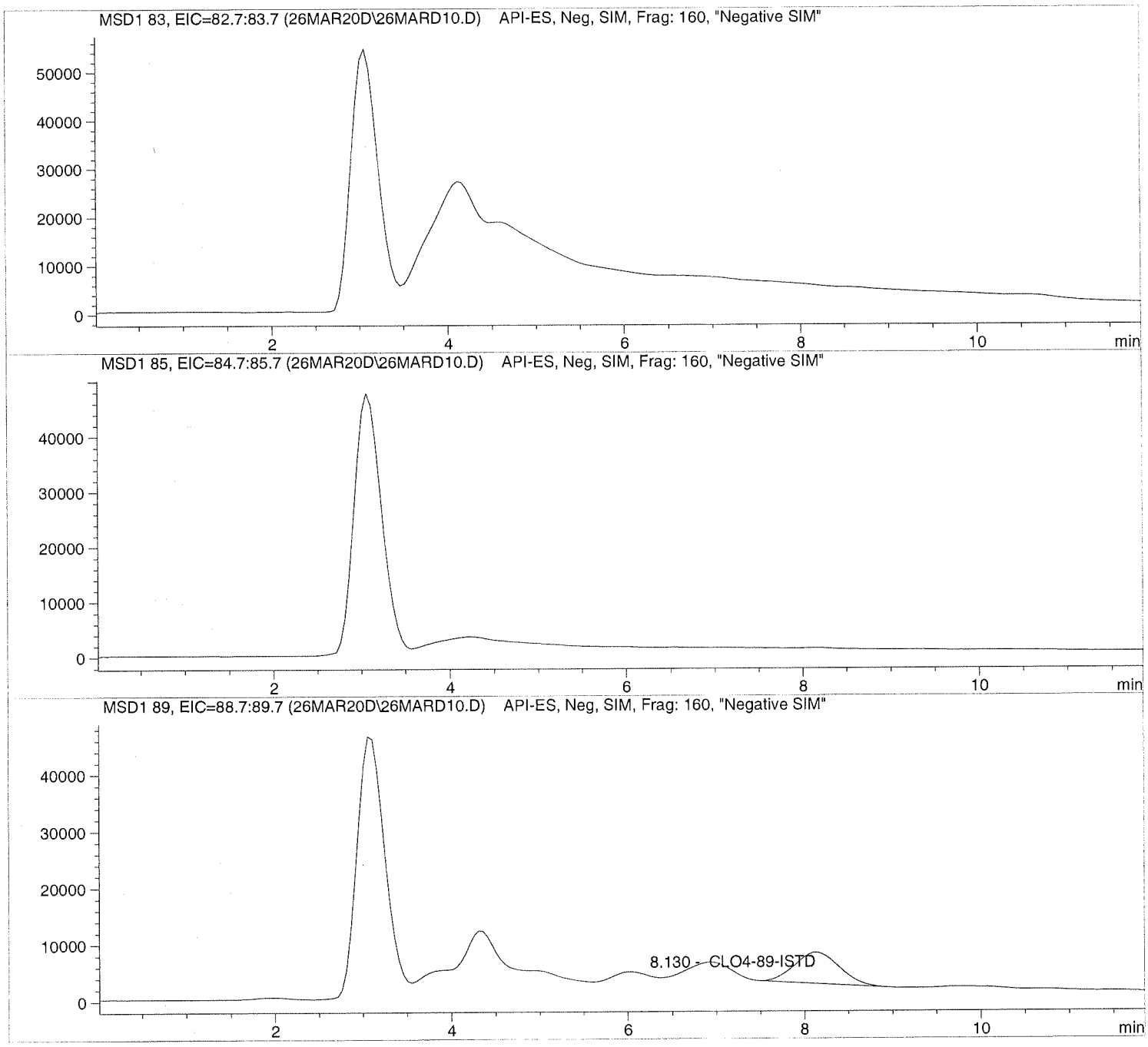
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD10.D Sample Name: 2008062006

Injection Date:	3/26/2020 10:26:37	Seq Line:	10
Sample Name:	2008062006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD10.D Sample Name: 2008062006

Injection Date:	3/26/2020 10:26:37	Seq Line:	10
Sample Name:	2008062006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.130	VBA	194127.8	5.0000	CLO4-89-ISTD

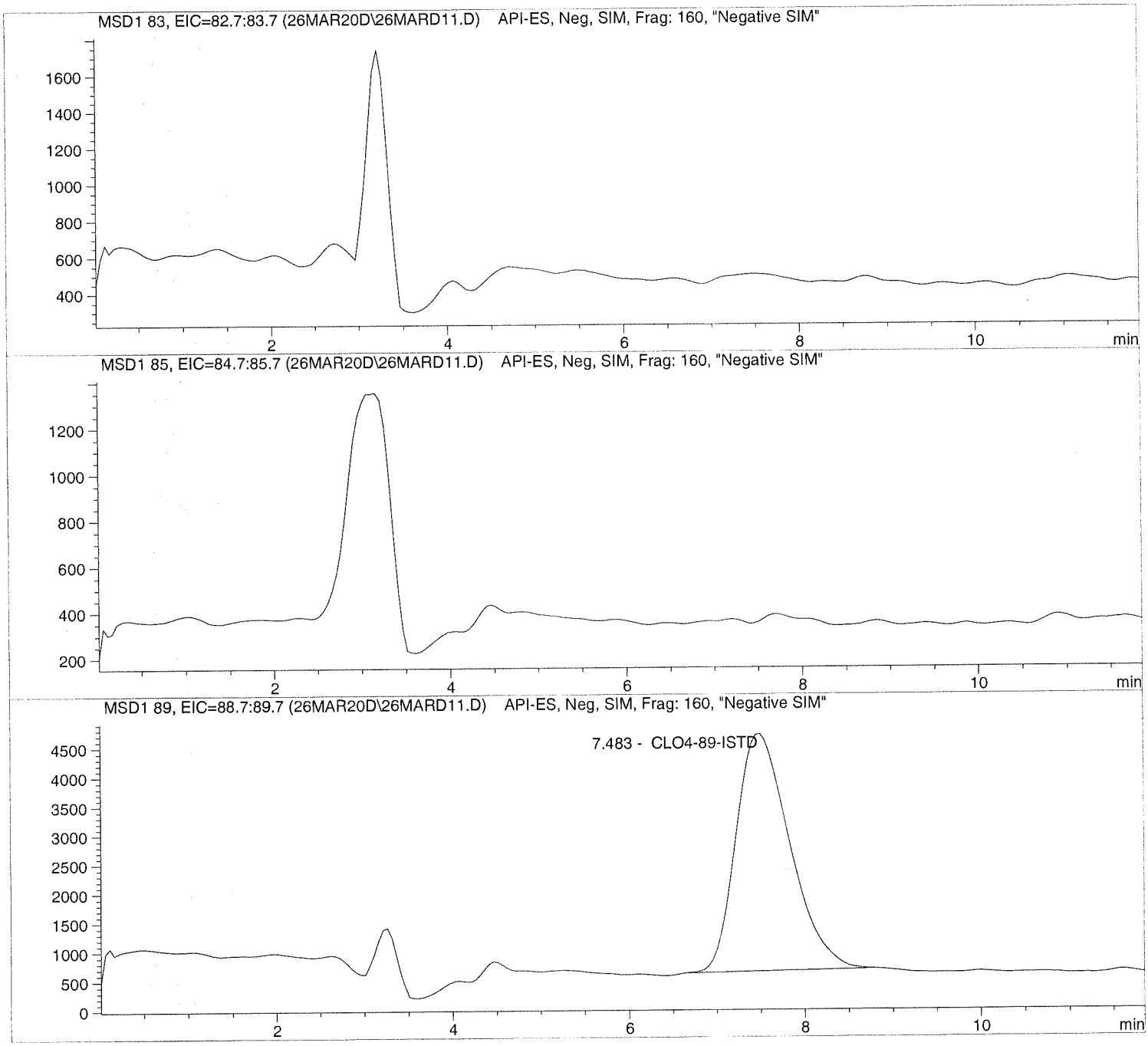
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD11.D Sample Name: 2008062007

Injection Date:	3/26/2020 10:40:42	Seq Line:	11
Sample Name:	2008062007	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD11.D Sample Name: 2008062007

Injection Date:	3/26/2020 10:40:42	Seq Line:	11
Sample Name:	2008062007	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.483	BBA	172495.2	5.0000	CLO4-89-ISTD

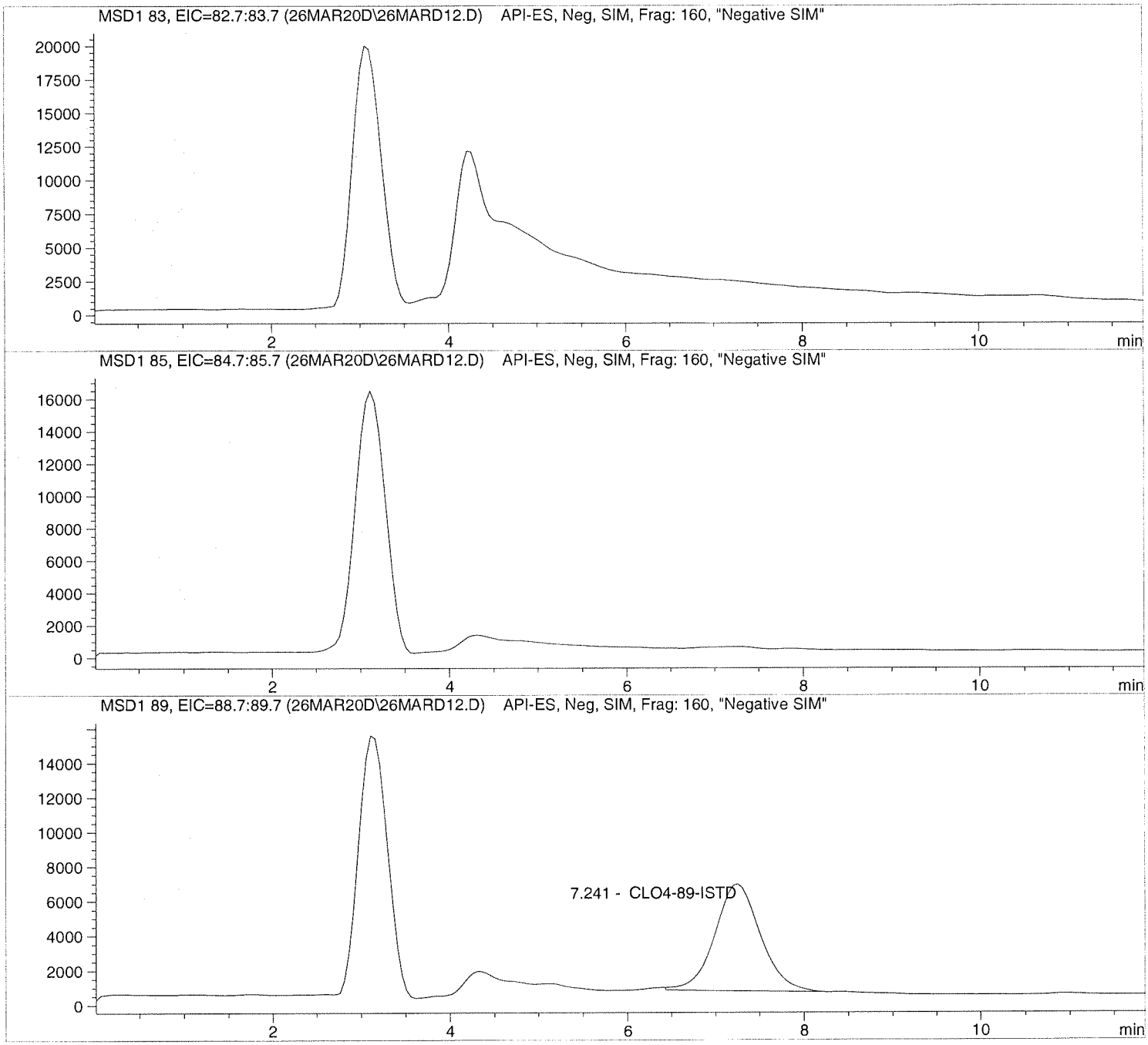
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD12.D Sample Name: 2008062008

Injection Date:	3/26/2020 10:54:39	Seq Line:	12
Sample Name:	2008062008	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD12.D Sample Name: 2008062008

Injection Date:	3/26/2020 10:54:39	Seq Line:	12
Sample Name:	2008062008	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.241	BBA	220984.2	5.0000	CLO4-89-ISTD

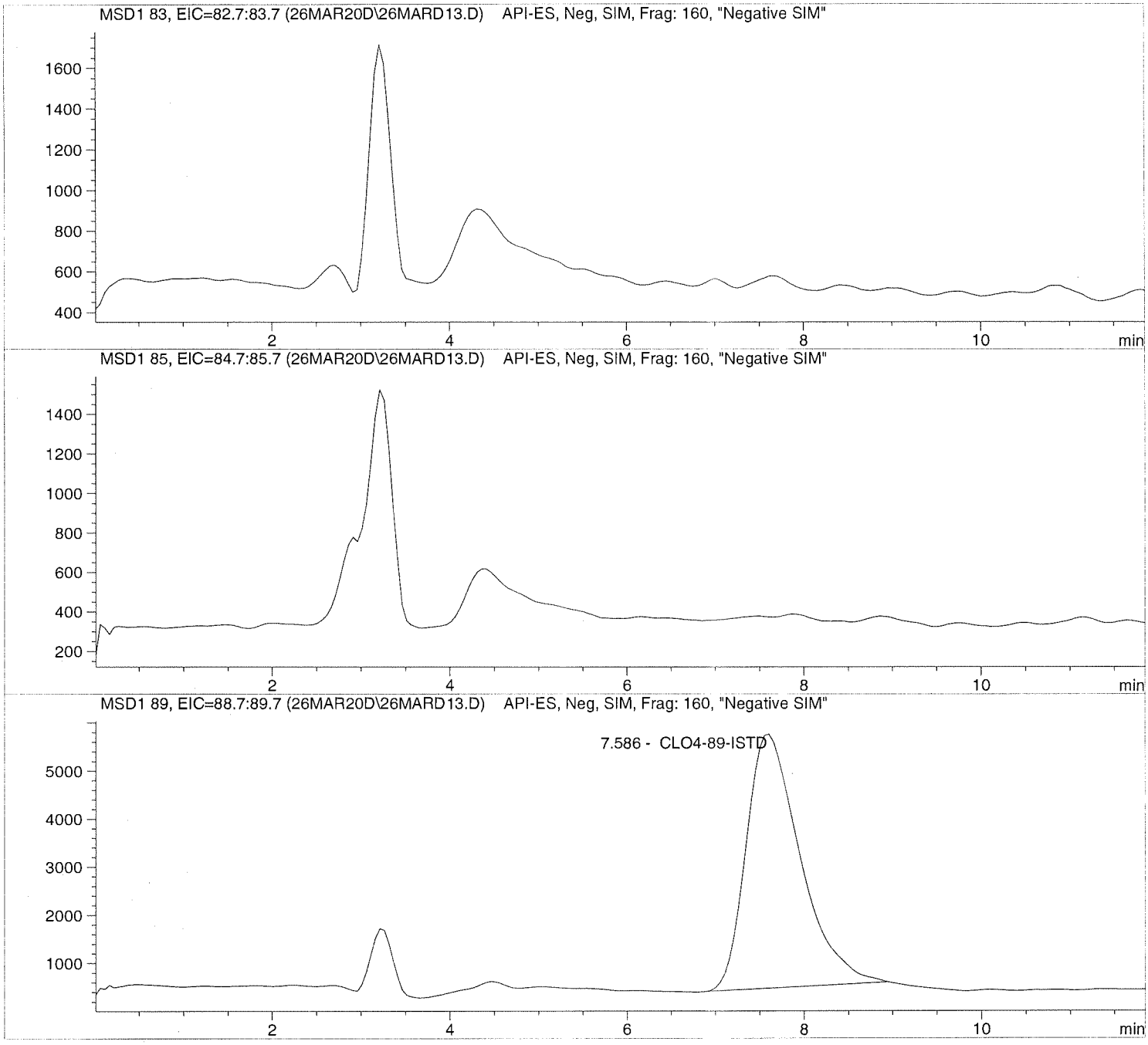
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD13.D Sample Name: 2008310001

Injection Date:	3/26/2020 11:08:35	Seq Line:	13
Sample Name:	2008310001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD13.D Sample Name: 2008310001

Injection Date:	3/26/2020 11:08:35	Seq Line:	13
Sample Name:	2008310001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.586	PBA	223497.3	5.0000	CLO4-89-ISTD

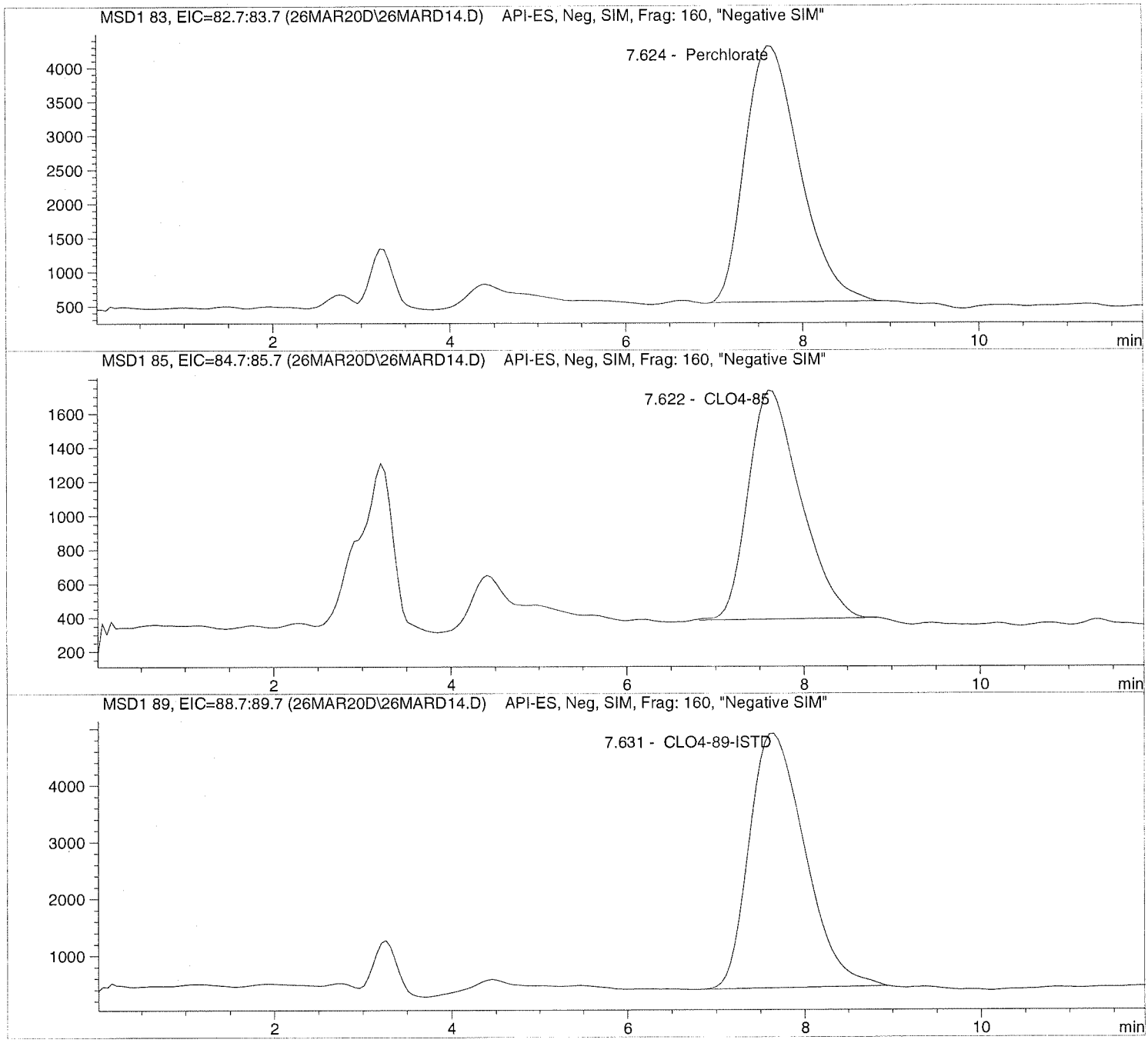
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD14.D Sample Name: 2008310002 MS

Injection Date:	3/26/2020 11:22:32	Seq Line:	14
Sample Name:	2008310002 MS	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD14.D Sample Name: 2008310002 MS

Injection Date:	3/26/2020 11:22:32	Seq Line:	14
Sample Name:	2008310002 MS	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.624	PBA	161578.6	3.0306	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.622	BBA	55538.7	3.3285	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.631	PBA	196195.3	5.0000	CLO4-89-ISTD

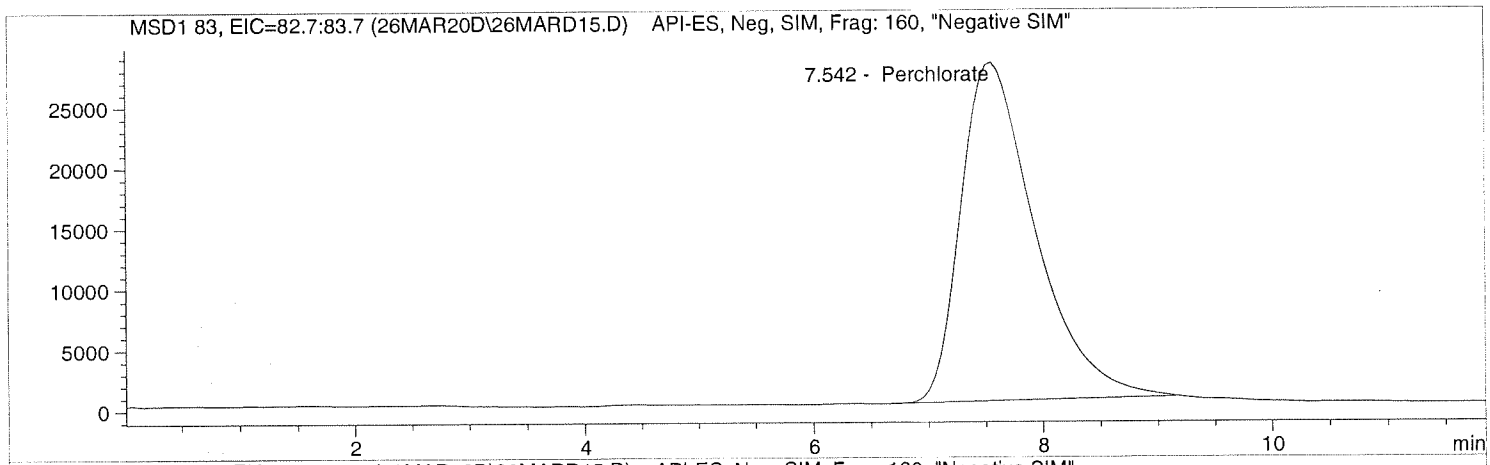
*** End of Report ***

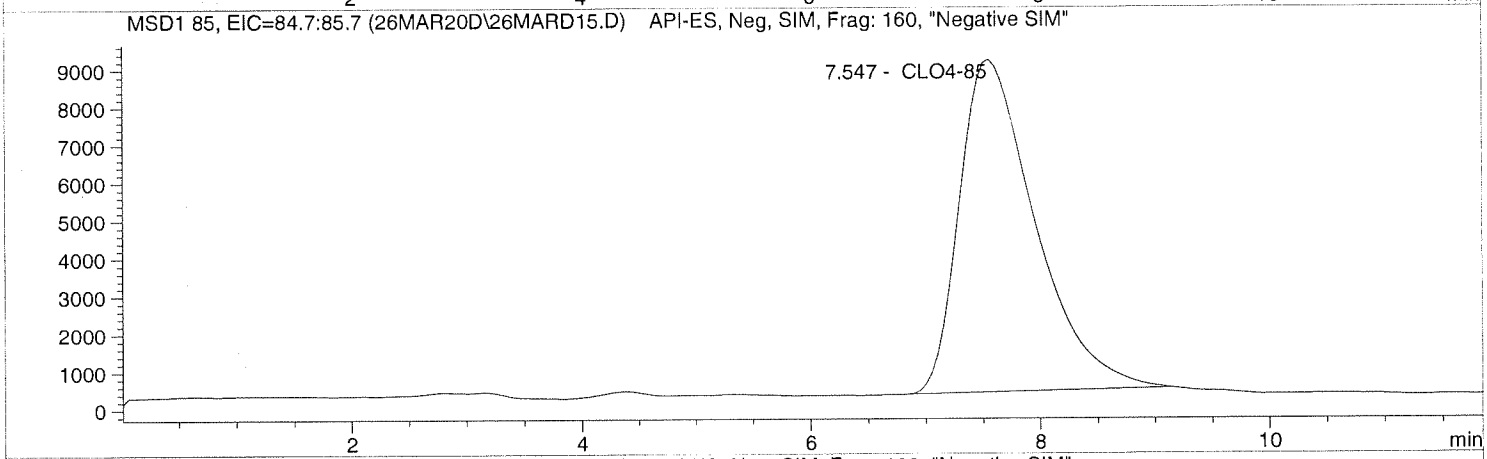
Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD15.D Sample Name: 701042 CCV@25

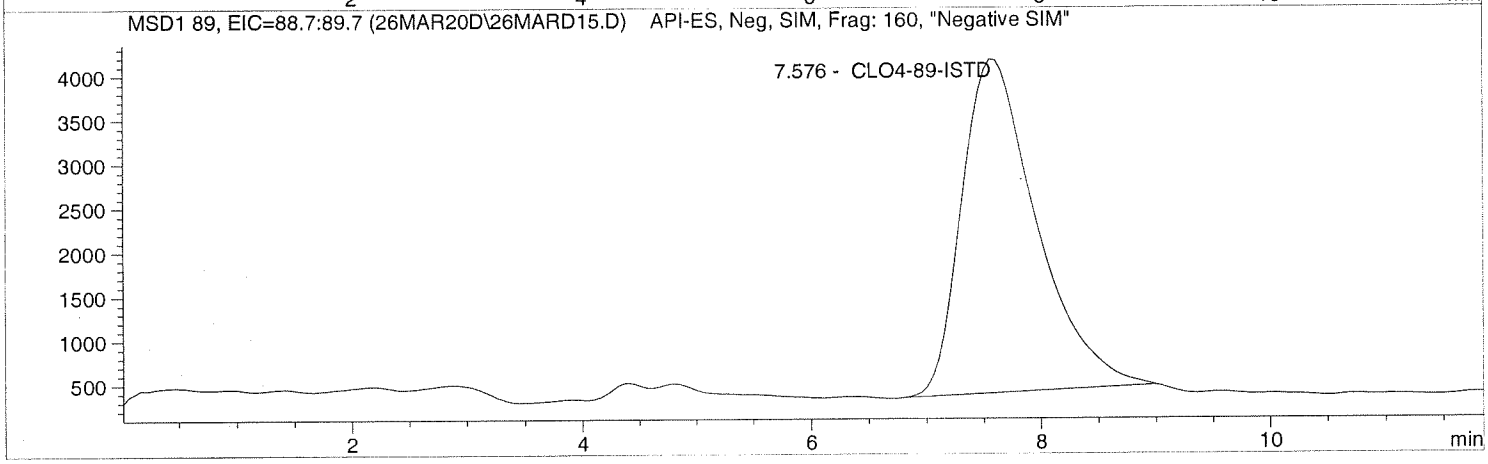
Injection Date:	3/26/2020 11:36:32	Seq Line:	15
Sample Name:	701042 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD15.D Sample Name: 701042 CCV@25

Injection Date:	3/26/2020 11:36:32	Seq Line:	15
Sample Name:	701042 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.542	PBA	1257703.0	25.0421	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.547	PBA	403497.3	26.2306	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.576	PBA	171579.5	5.0000	CLO4-89-ISTD

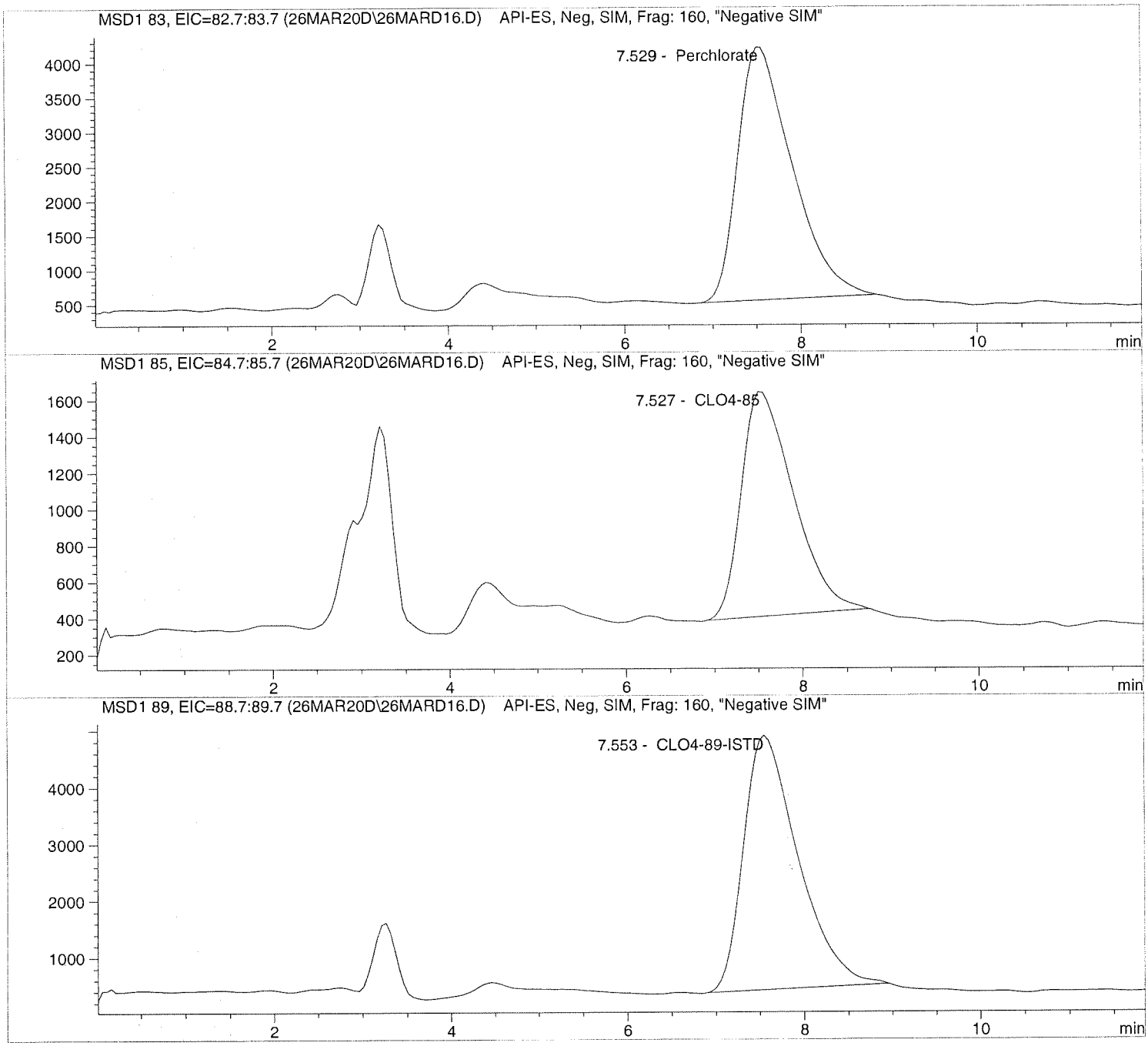
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD16.D Sample Name: 2008310003 MSD

Injection Date:	3/26/2020 11:50:32	Seq Line:	16
Sample Name:	2008310003 MSD	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD16.D Sample Name: 2008310003 MSD

Injection Date:	3/26/2020 11:50:32	Seq Line:	16
Sample Name:	2008310003 MSD	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.529	PBA	156764.3	3.0007	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.527	PBA	50765.7	3.0974	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.553	PBA	192226.0	5.0000	CLO4-89-ISTD

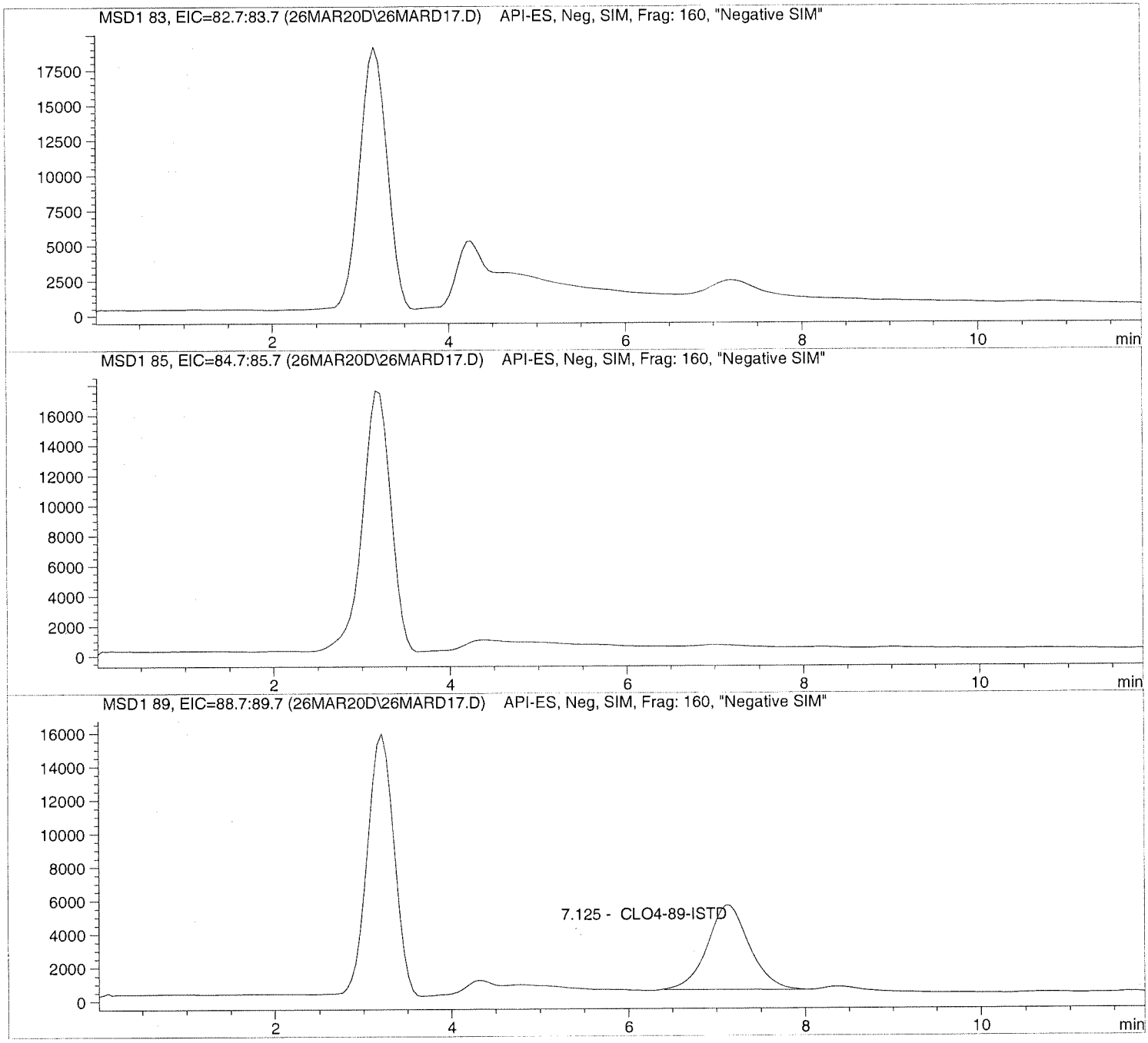
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD17.D Sample Name: 2008310004

Injection Date:	3/26/2020 12:04:29	Seq Line:	17
Sample Name:	2008310004	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD17.D Sample Name: 2008310004

Injection Date:	3/26/2020 12:04:29	Seq Line:	17
Sample Name:	2008310004	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.125	PBA	166041.3	5.0000	CLO4-89-ISTD

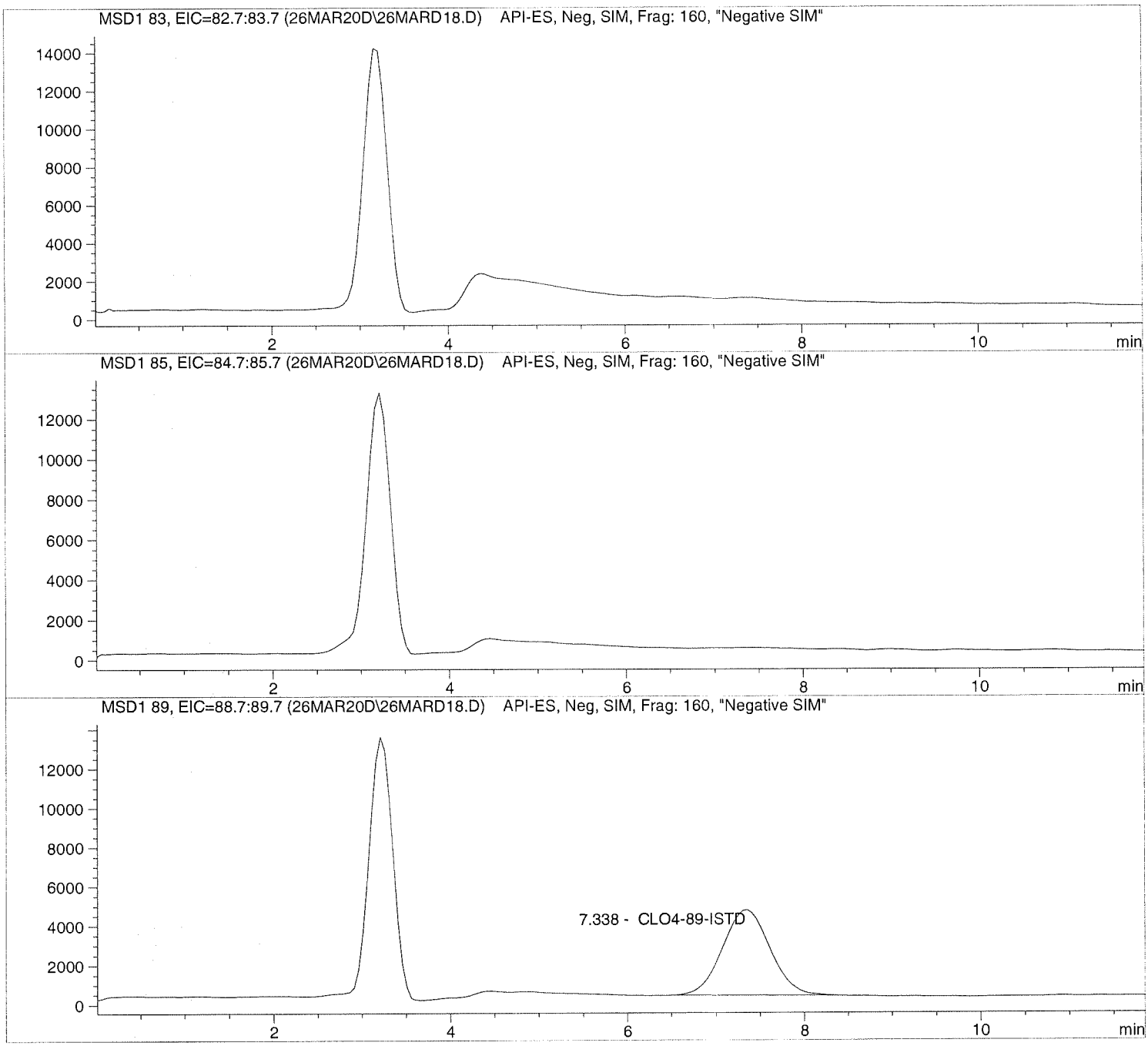
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD18.D Sample Name: 2008310005

Injection Date:	3/26/2020 12:18:26	Seq Line:	18
Sample Name:	2008310005	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD18.D Sample Name: 2008310005

Injection Date:	3/26/2020 12:18:26	Seq Line:	18
Sample Name:	2008310005	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.338	PBA	163139.4	5.0000	CLO4-89-ISTD

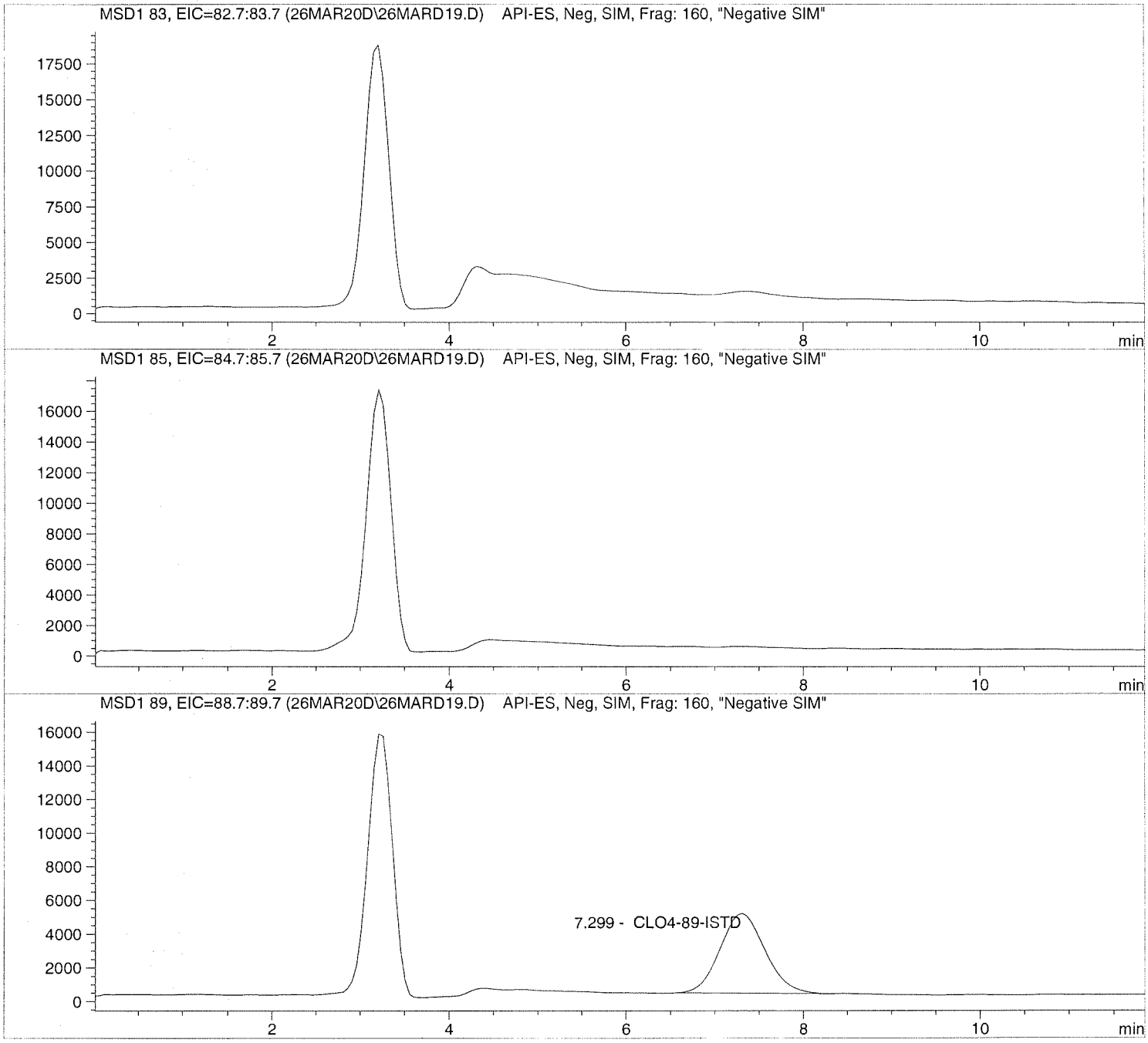
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD19.D Sample Name: 2008310006

Injection Date:	3/26/2020 12:32:24	Seq Line:	19
Sample Name:	2008310006	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD19.D Sample Name: 2008310006

Injection Date:	3/26/2020 12:32:24	Seq Line:	19
Sample Name:	2008310006	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.299	PBA	167930.1	5.0000	CLO4-89-ISTD

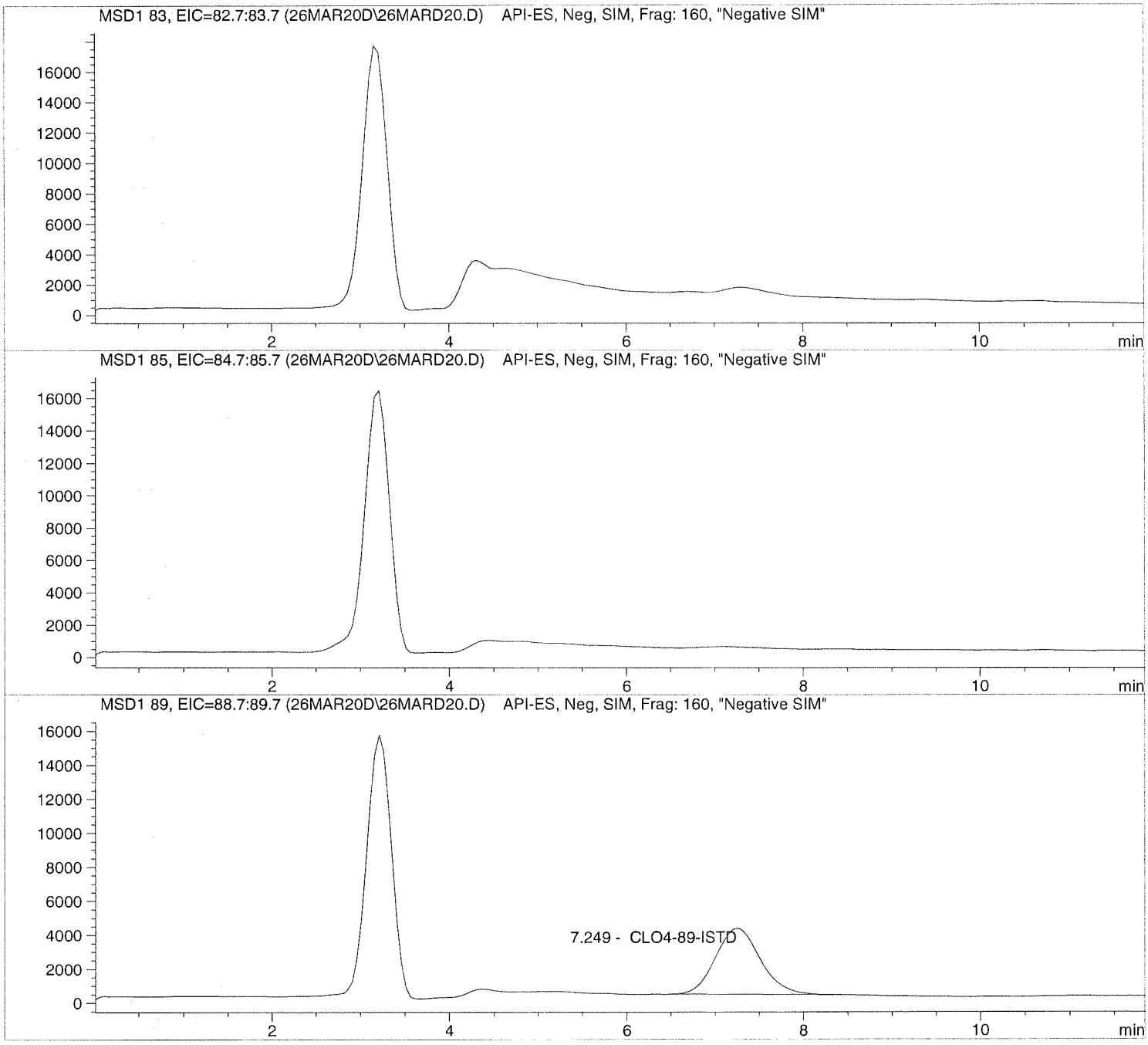
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD20.D Sample Name: 2008310007

Injection Date:	3/26/2020 12:46:26	Seq Line:	20
Sample Name:	2008310007	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD20.D Sample Name: 2008310007

Injection Date:	3/26/2020 12:46:26	Seq Line:	20
Sample Name:	2008310007	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.249	PBA	137319.5	5.0000	CLO4-89-ISTD

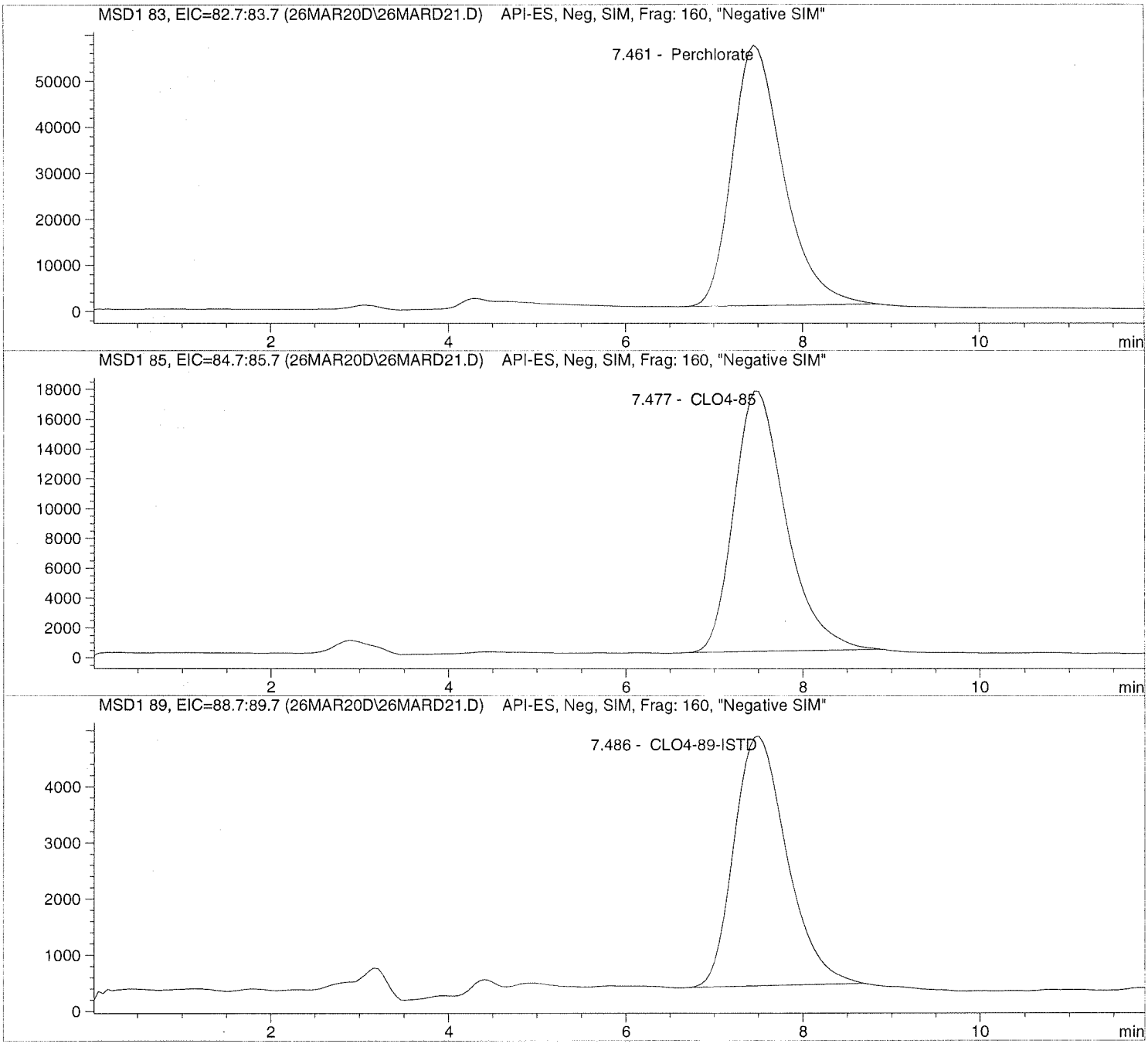
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD21.D Sample Name: 2008310008 10X

Injection Date:	3/26/2020 13:00:24	Seq Line:	21
Sample Name:	2008310008 10X	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD21.D Sample Name: 2008310008 10X

Injection Date:	3/26/2020 13:00:24	Seq Line:	21
Sample Name:	2008310008 10X	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.461	PBA	2264742.3	396.5233	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.477	PBA	708208.9	407.0441	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.486	PBA	183925.3	50.0000	CLO4-89-ISTD

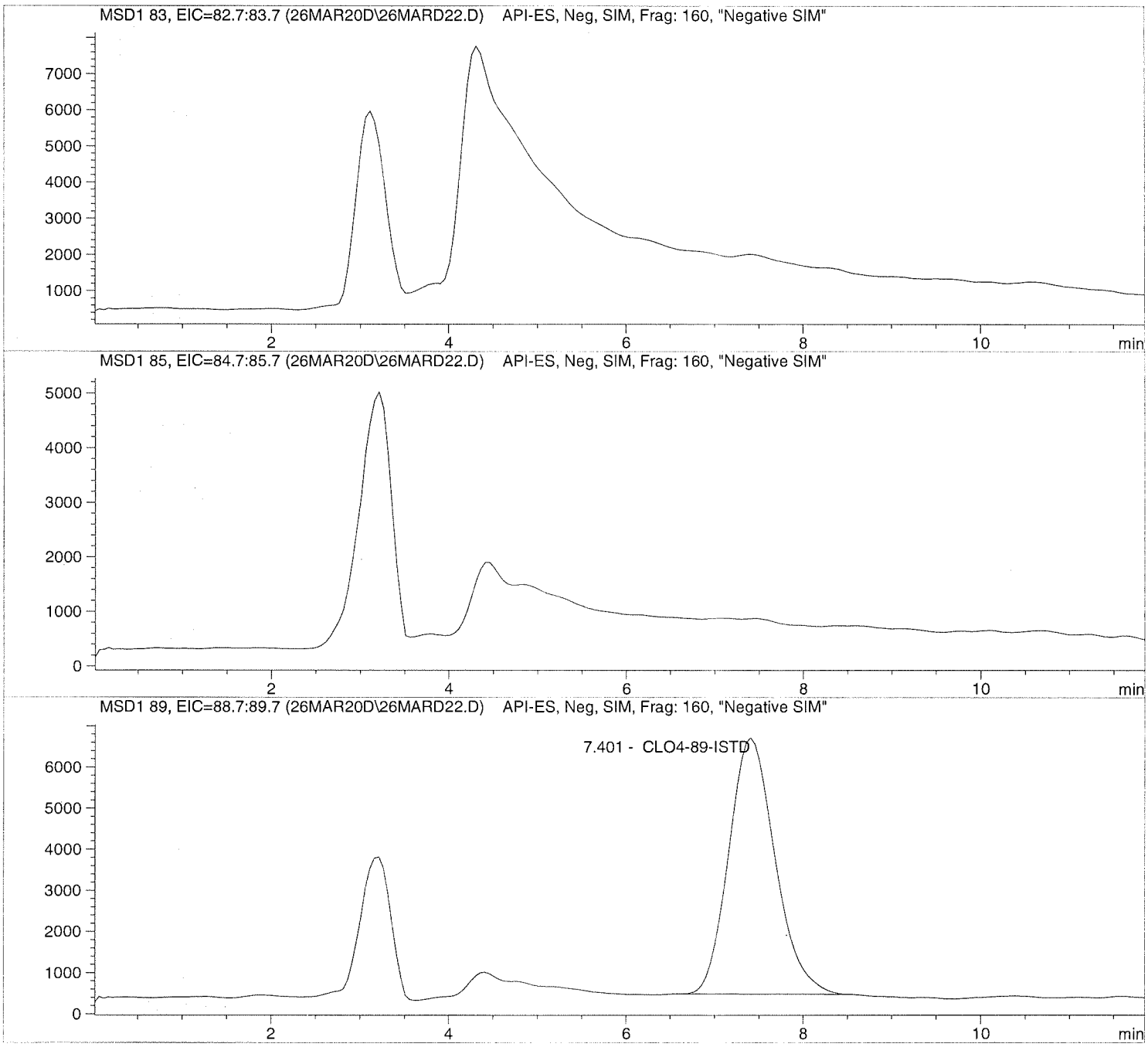
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD22.D Sample Name: 2008310009

Injection Date:	3/26/2020 13:14:36	Seq Line:	22
Sample Name:	2008310009	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD22.D Sample Name: 2008310009

Injection Date:	3/26/2020 13:14:36	Seq Line:	22
Sample Name:	2008310009	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.401	PBA	226092.7	5.0000	CLO4-89-ISTD

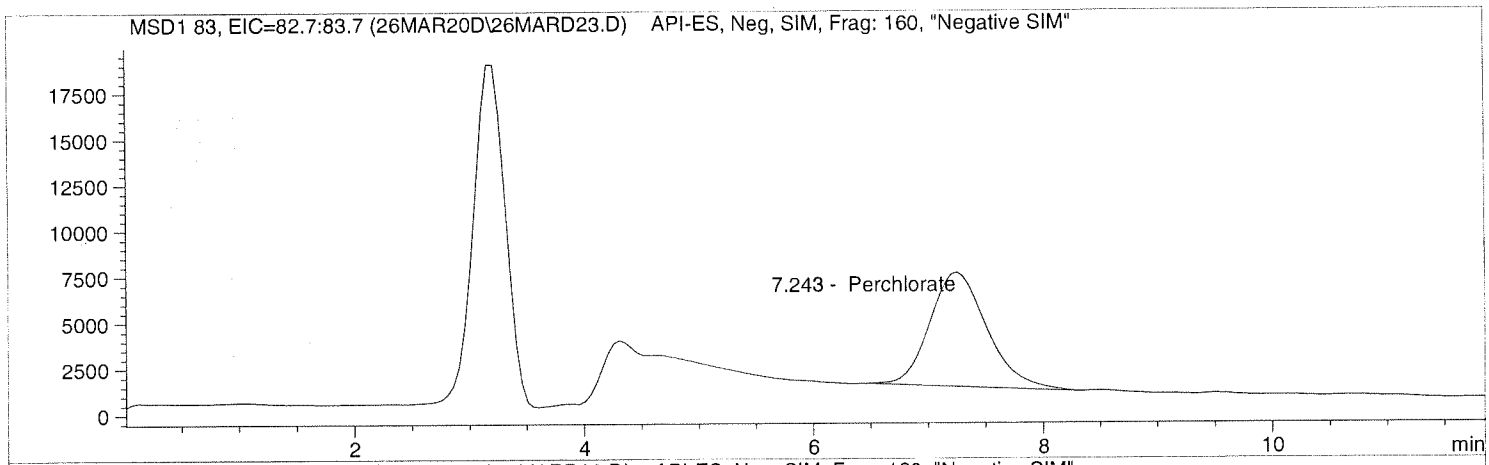
*** End of Report ***

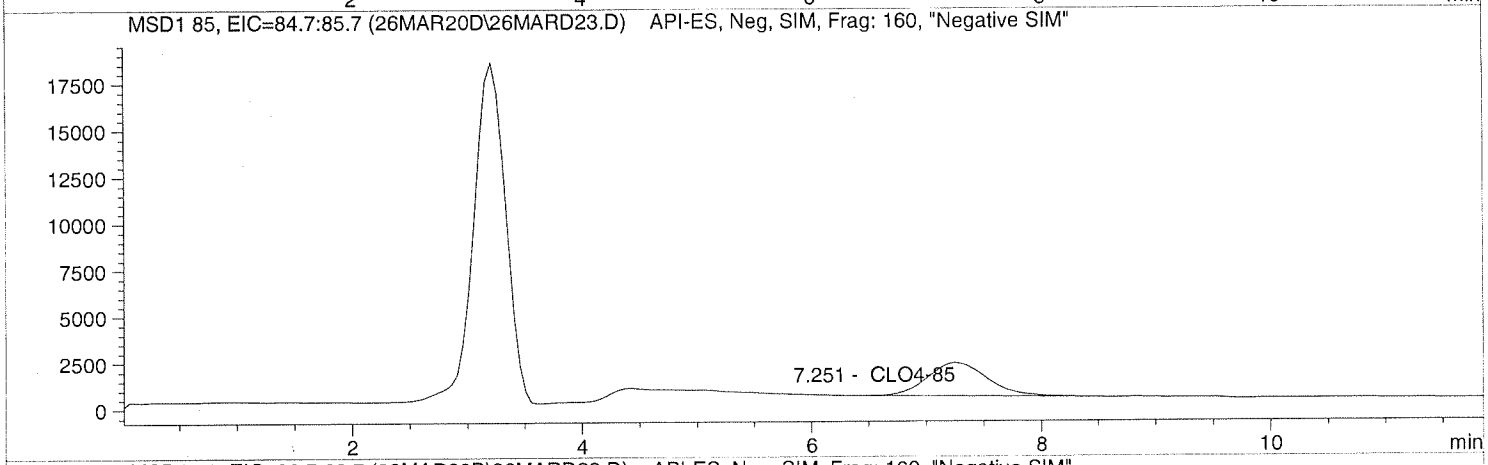
Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD23.D Sample Name: 2008310010

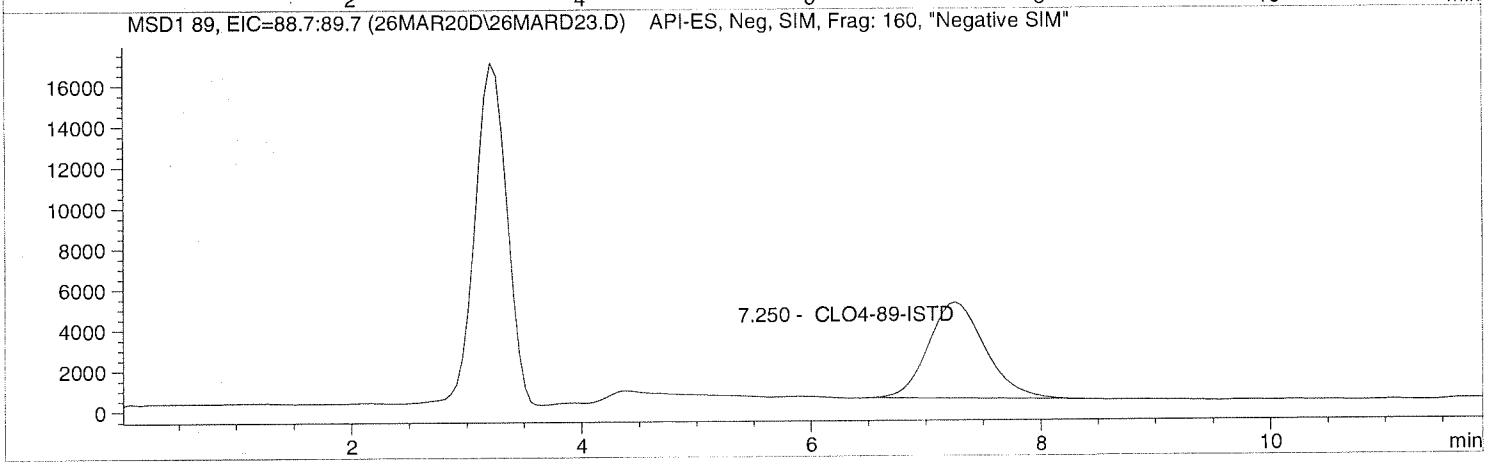
Injection Date:	3/26/2020 13:28:31	Seq Line:	23
Sample Name:	2008310010	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD23.D Sample Name: 2008310010

Injection Date:	3/26/2020 13:28:31	Seq Line:	23
Sample Name:	2008310010	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.243	BBA	213687.0	4.8705	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.251	PBA	64563.9	4.7328	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.250	PBA	161722.0	5.0000	CLO4-89-ISTD

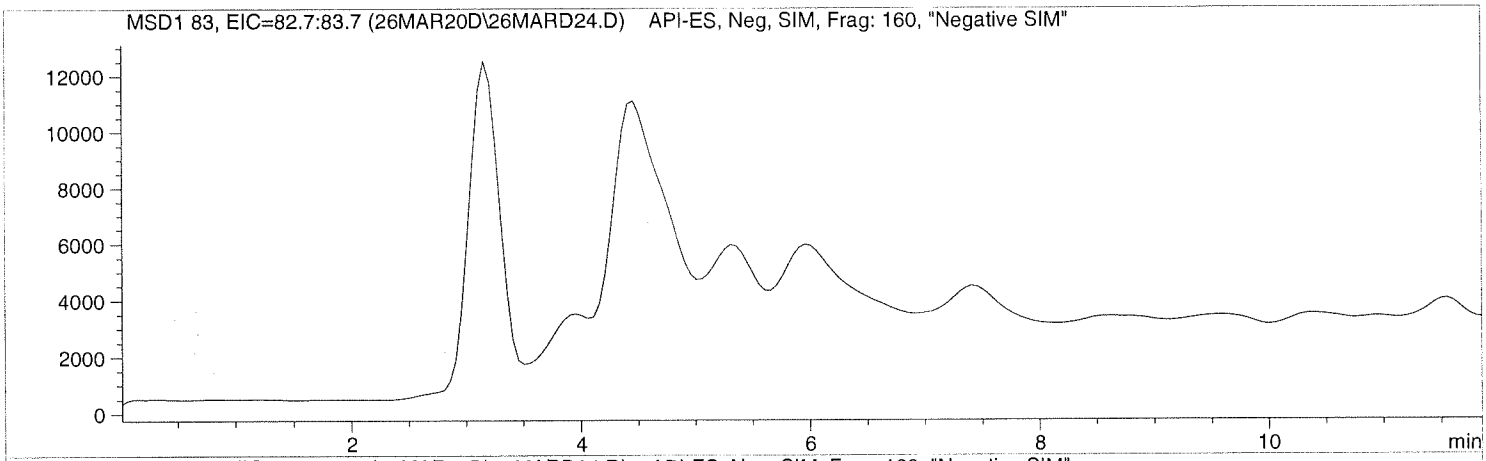
*** End of Report ***

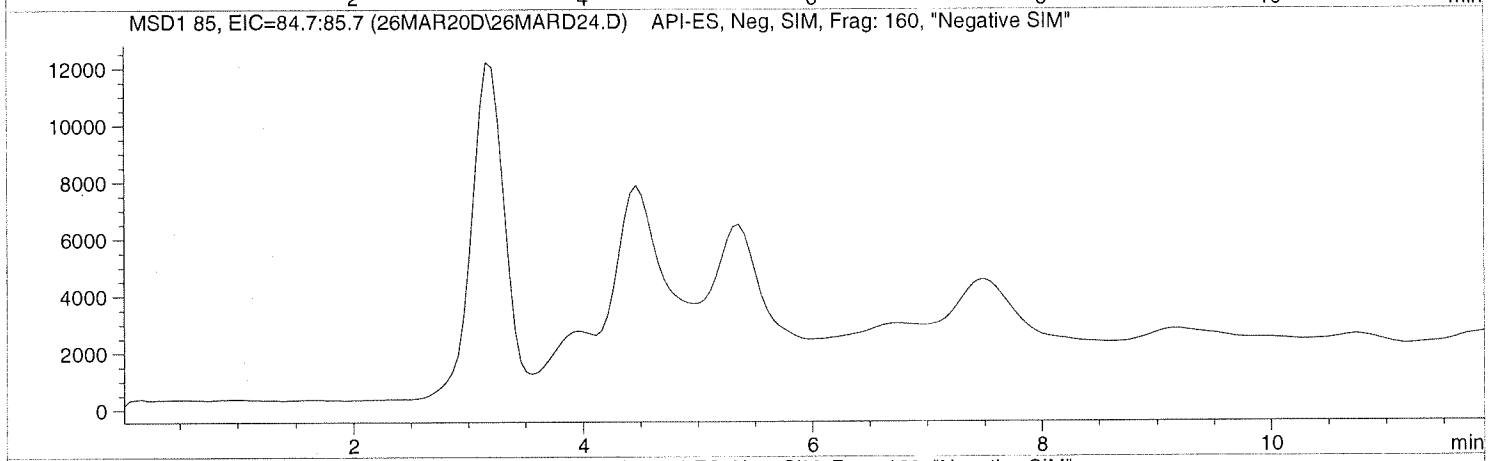
Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD24.D Sample Name: 2008310011

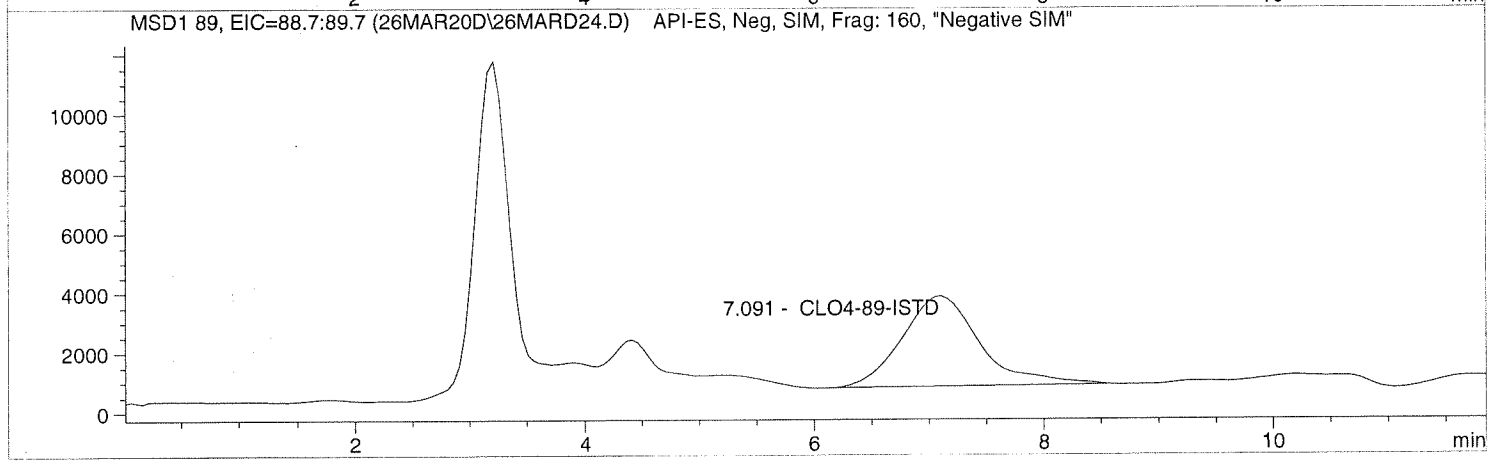
Injection Date:	3/26/2020 13:42:47	Seq Line:	24
Sample Name:	2008310011	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD24.D Sample Name: 2008310011

Injection Date:	3/26/2020 13:42:47	Seq Line:	24
Sample Name:	2008310011	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.091	PBA	141774.2	5.0000	CLO4-89-ISTD

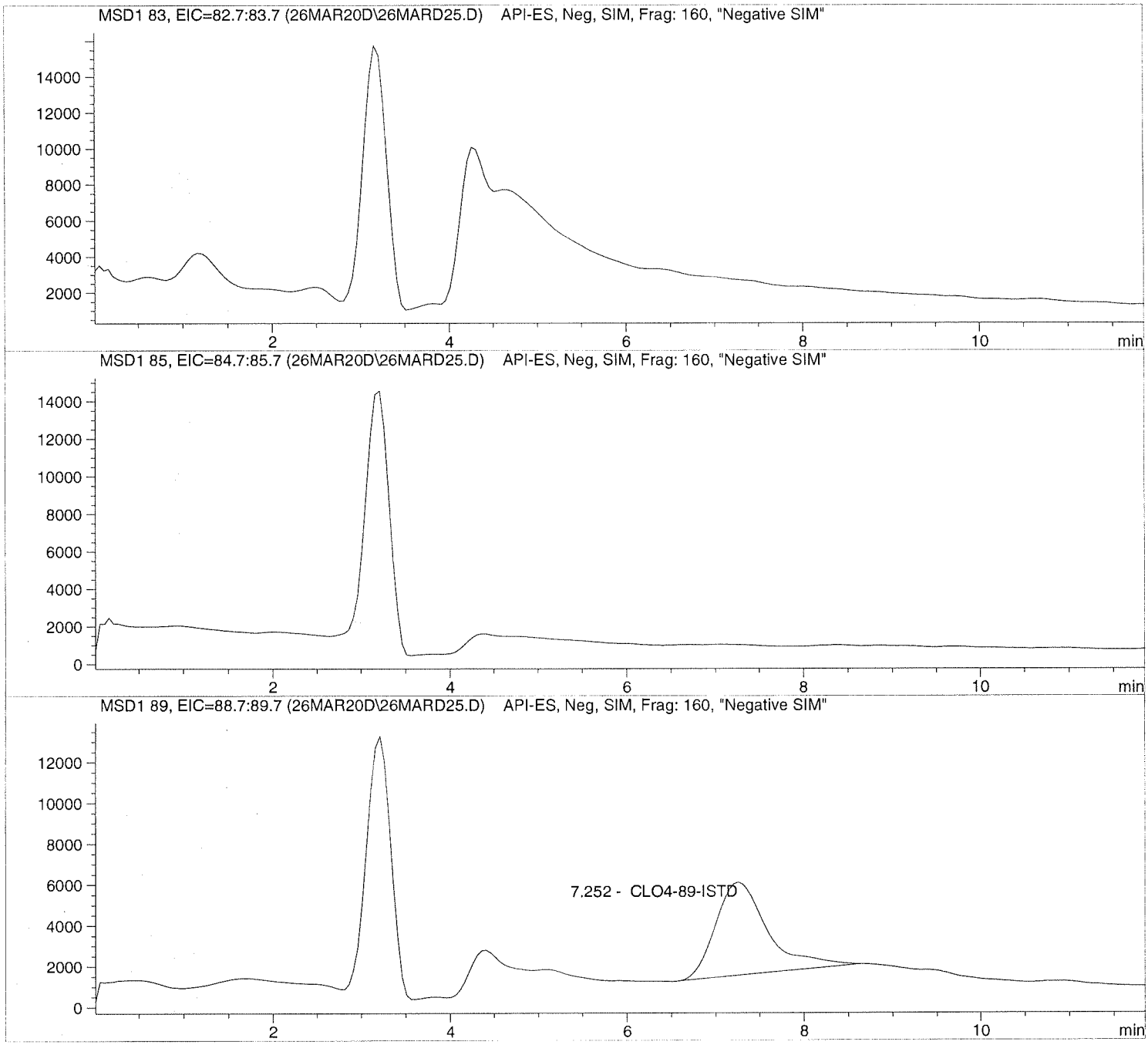
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD25.D Sample Name: 2008310012

Injection Date:	3/26/2020 13:56:46	Seq Line:	25
Sample Name:	2008310012	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD25.D Sample Name: 2008310012

Injection Date:	3/26/2020 13:56:46	Seq Line:	25
Sample Name:	2008310012	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.252	PBA	186601.9	5.0000	CLO4-89-ISTD

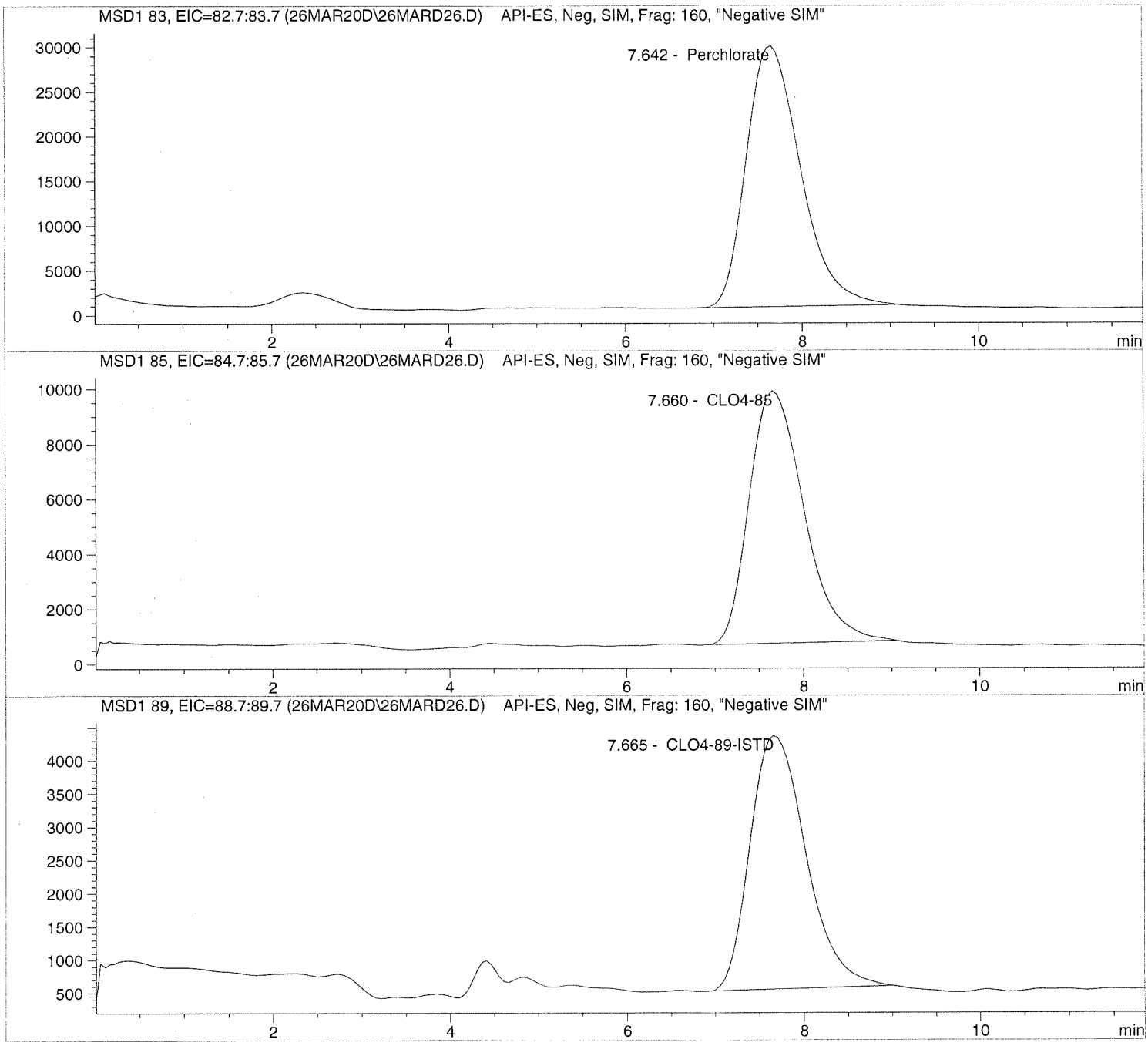
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD26.D Sample Name: 701043 CCV@25

Injection Date:	3/26/2020 14:10:42	Seq Line:	26
Sample Name:	701043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD26.D Sample Name: 701043 CCV@25

Injection Date:	3/26/2020 14:10:42	Seq Line:	26
Sample Name:	701043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.642	PBA	1233054.6	25.2923	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.660	PBA	391623.1	26.2521	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.665	PBA	166381.0	5.0000	CLO4-89-ISTD

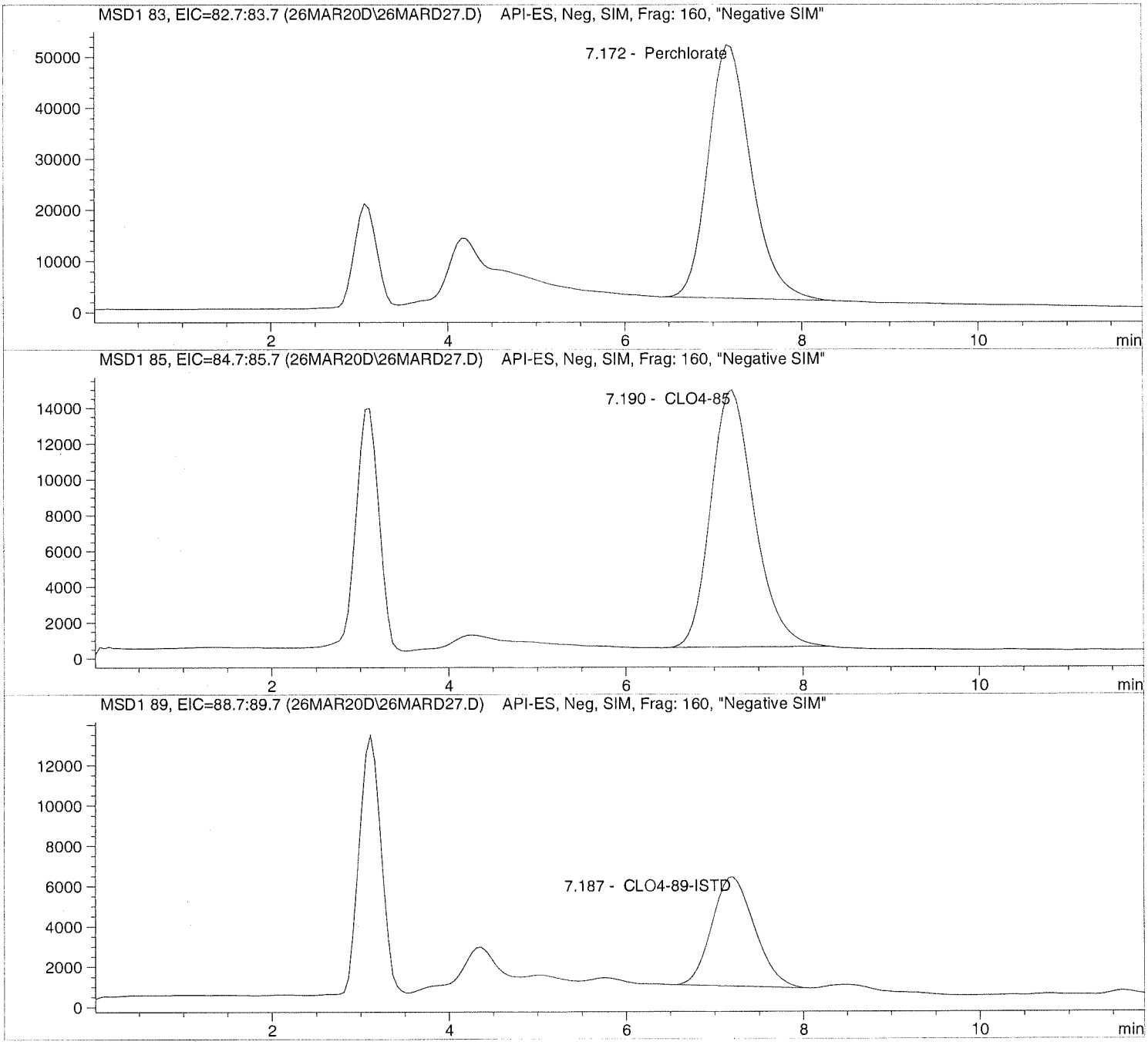
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD27.D Sample Name: 2008062003 10X

Injection Date:	3/26/2020 14:24:42	Seq Line:	27
Sample Name:	2008062003 10X	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD27.D Sample Name: 2008062003 10X

Injection Date:	3/26/2020 14:24:42	Seq Line:	27
Sample Name:	2008062003 10X	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.172	BBA	1661872.5	308.7998	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.190	PBA	489002.0	299.6381	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.187	PBA	179512.0	50.0000	CLO4-89-ISTD

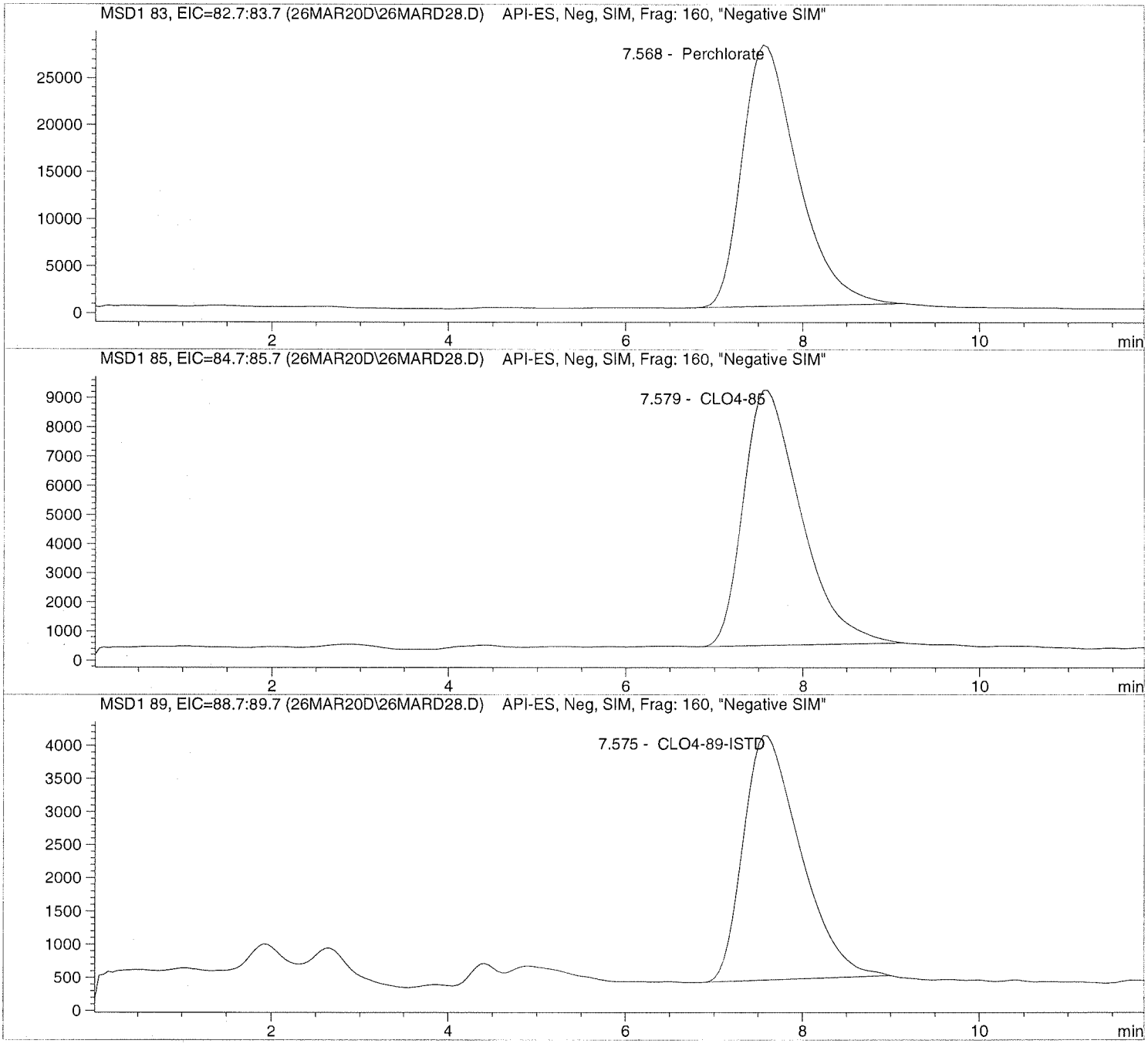
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD28.D Sample Name: 701102 CCV@25

Injection Date:	3/26/2020 14:38:44	Seq Line:	28
Sample Name:	701102 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD28.D Sample Name: 701102 CCV@25

Injection Date:	3/26/2020 14:38:44	Seq Line:	28
Sample Name:	701102 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.568	PBA	1215789.9	25.0215	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.579	PBA	397063.1	26.6375	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.575	PBA	166012.1	5.0000	CLO4-89-ISTD

*** End of Report ***



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

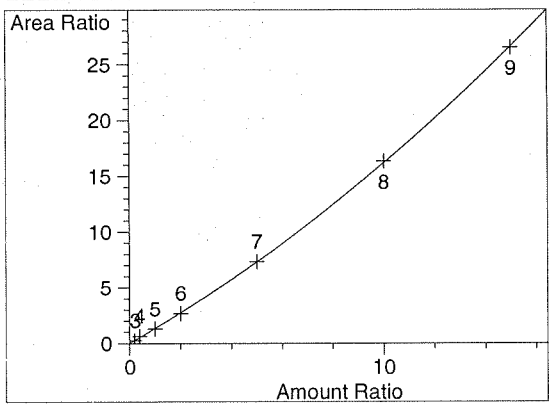
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

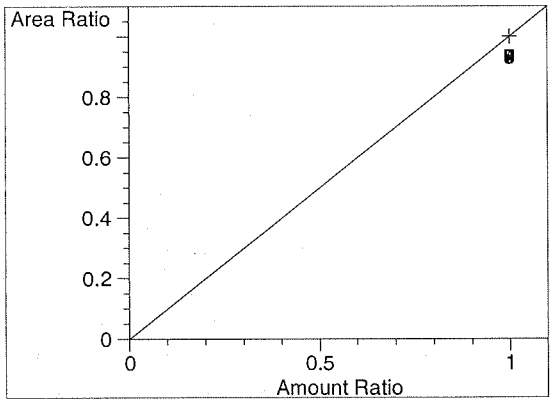
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

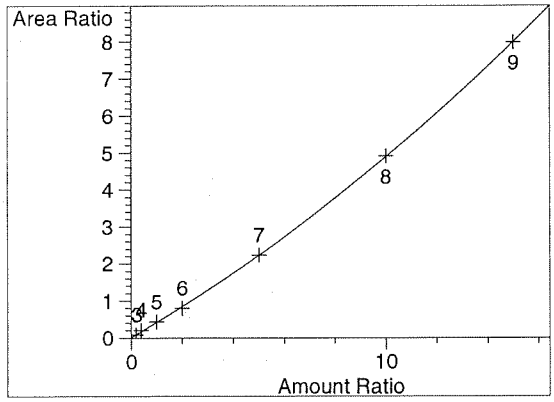
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

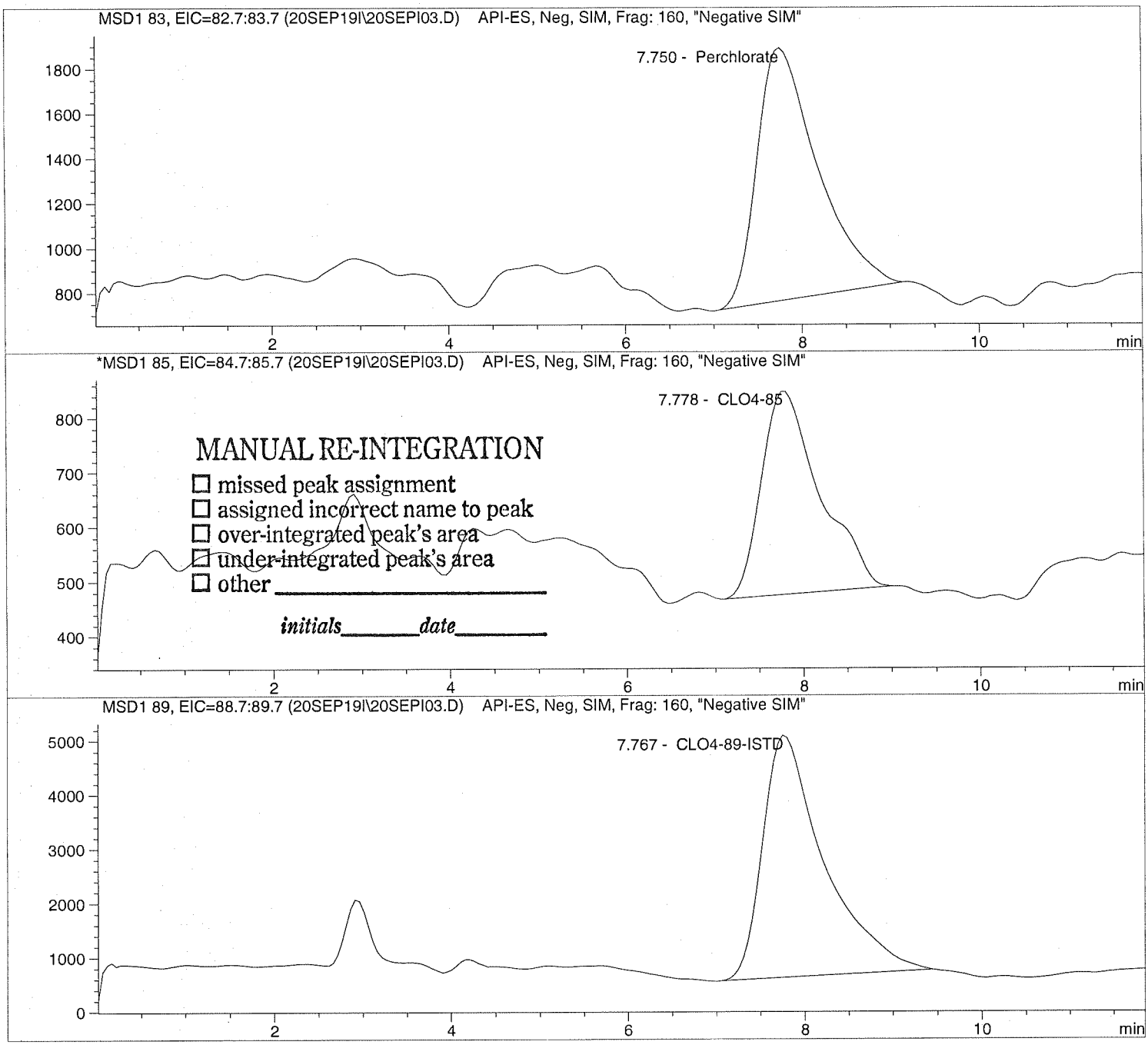
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

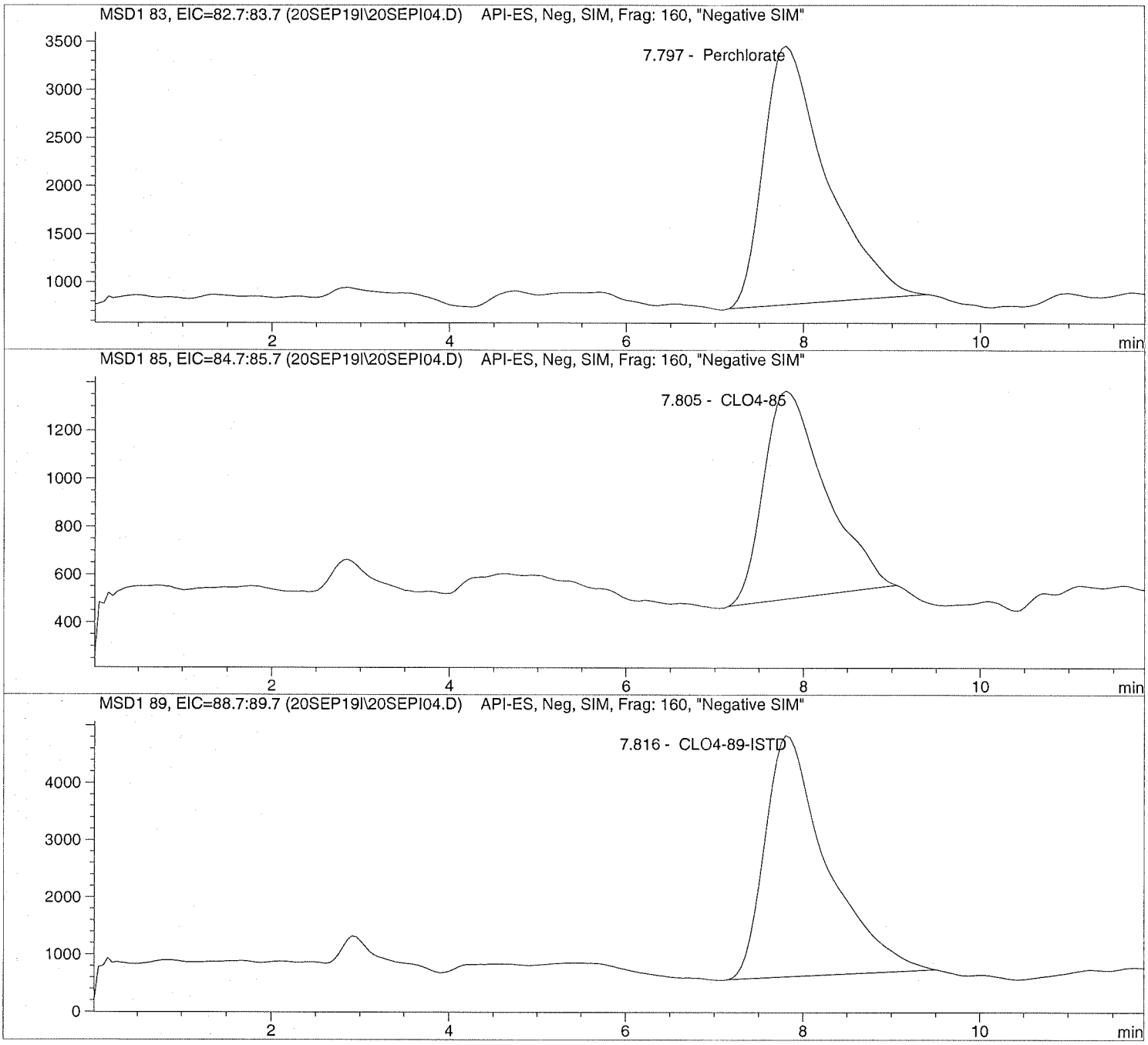
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

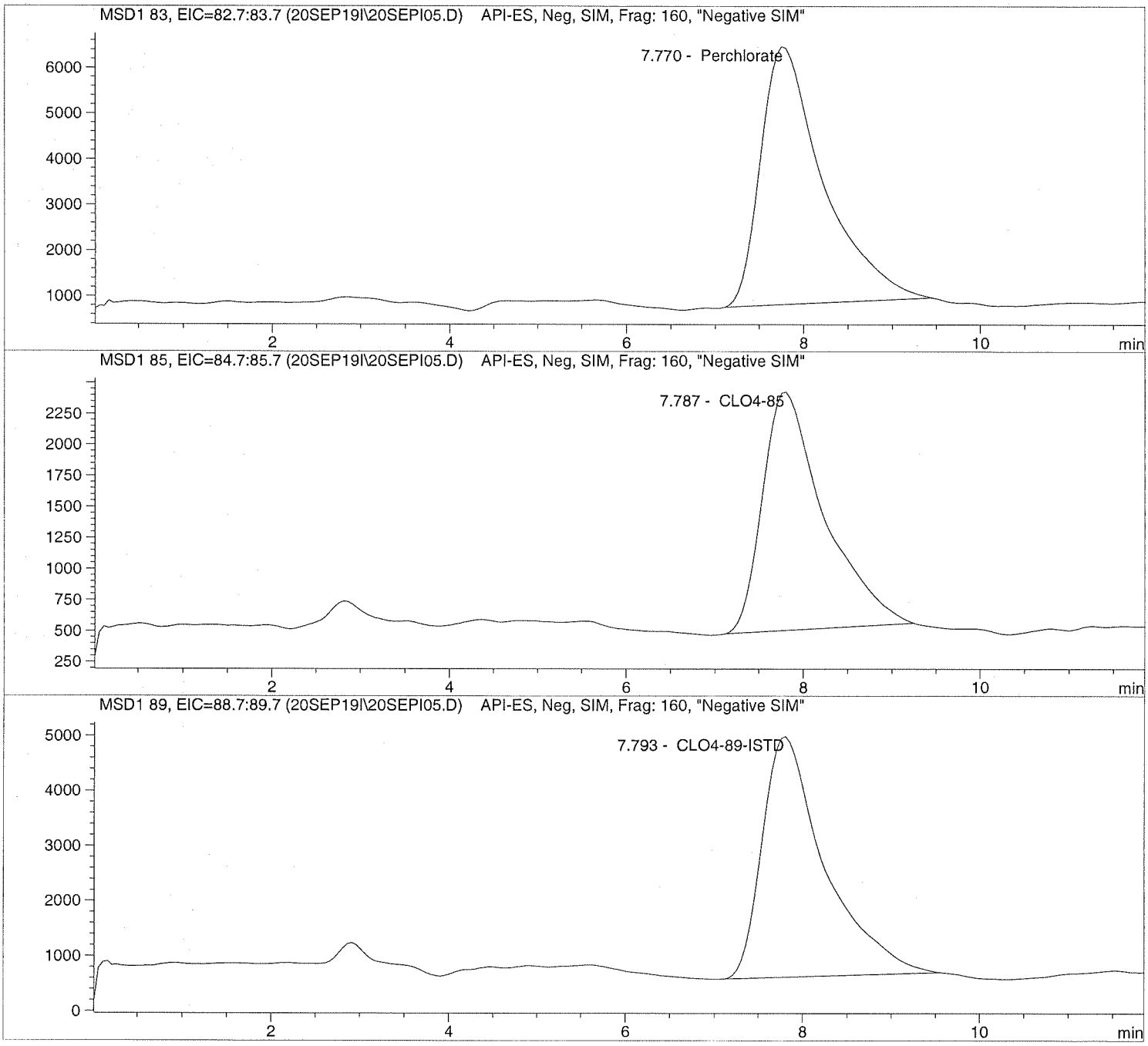
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

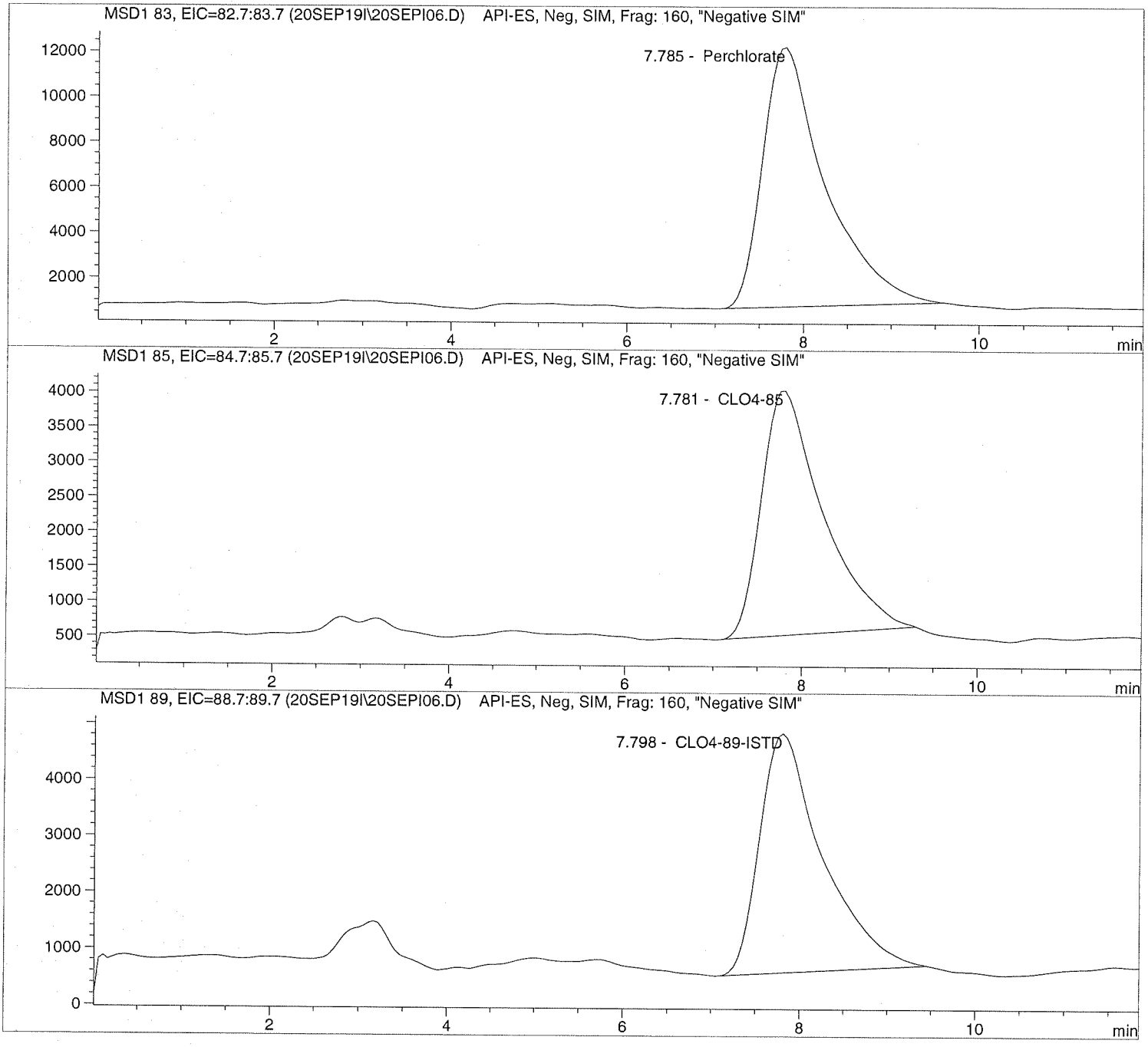
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Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

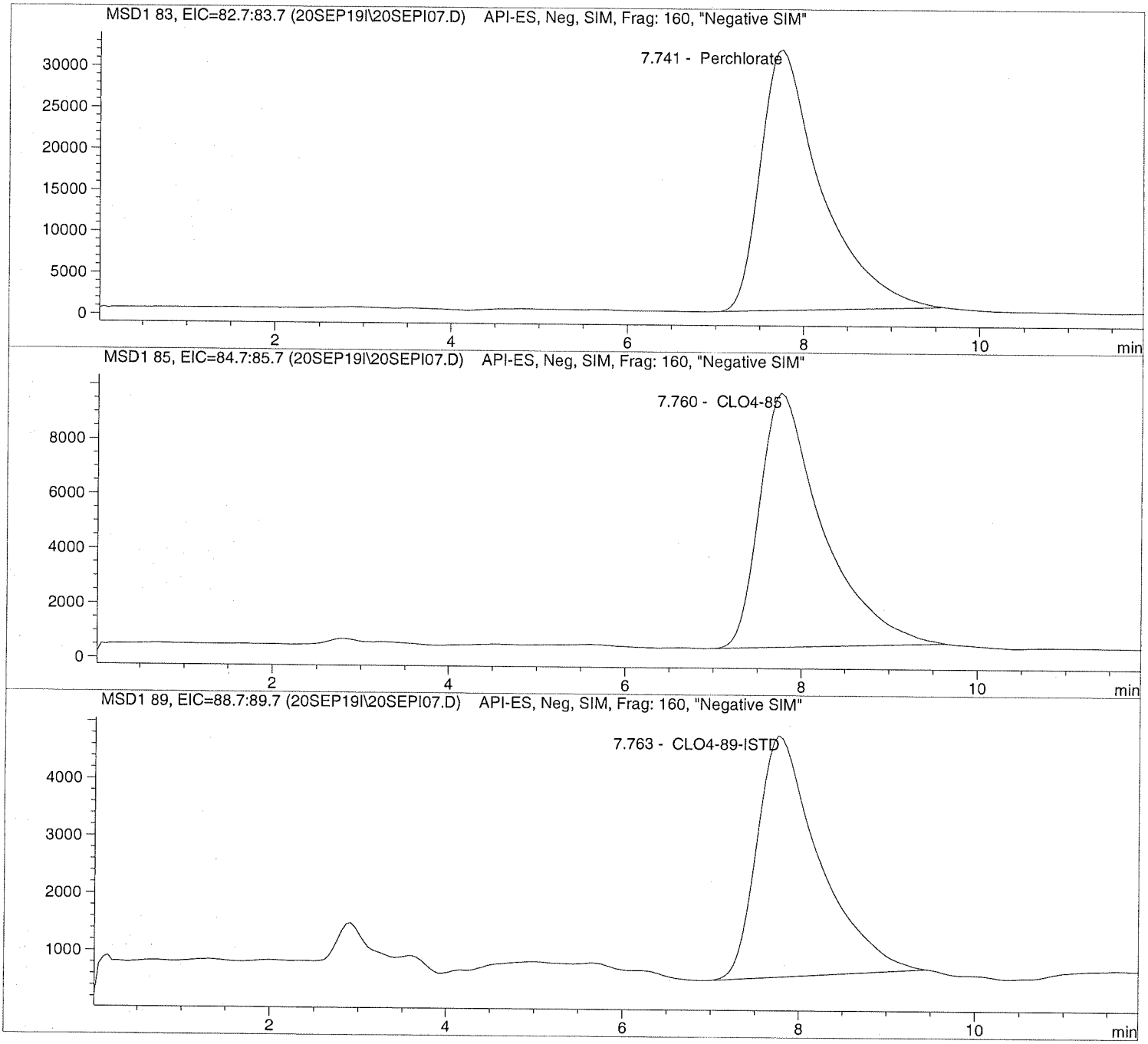
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

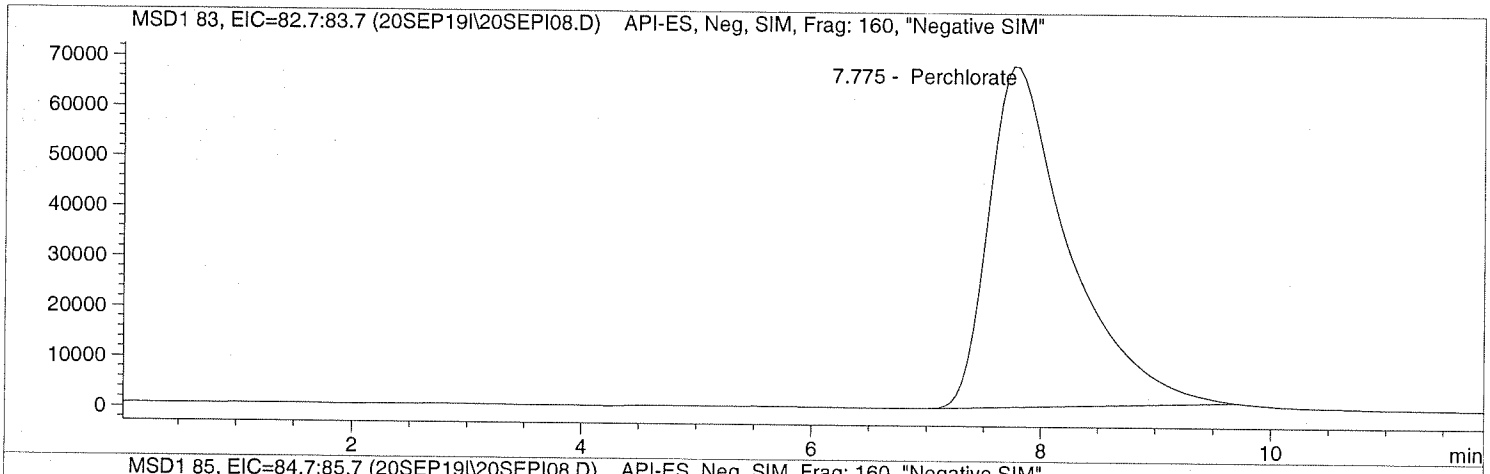
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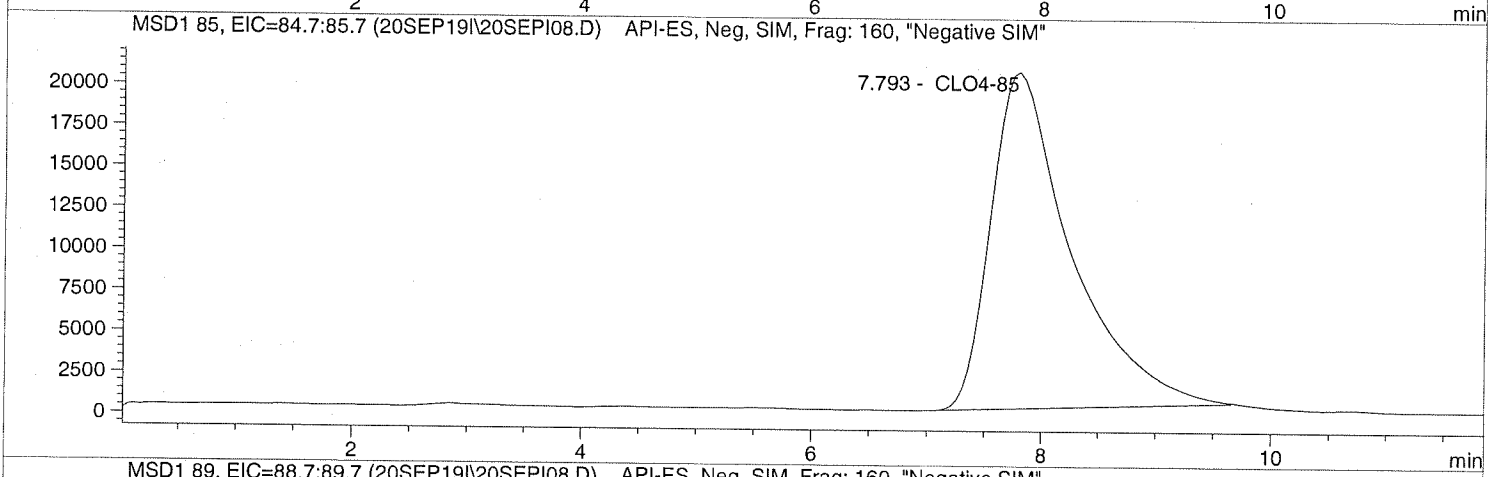
Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

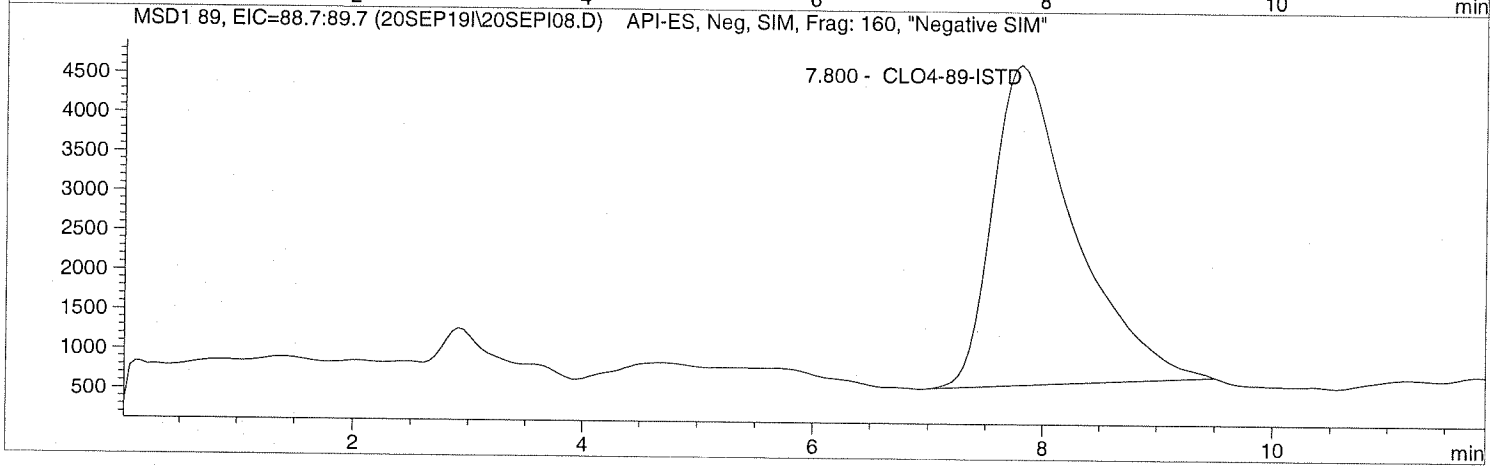
Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

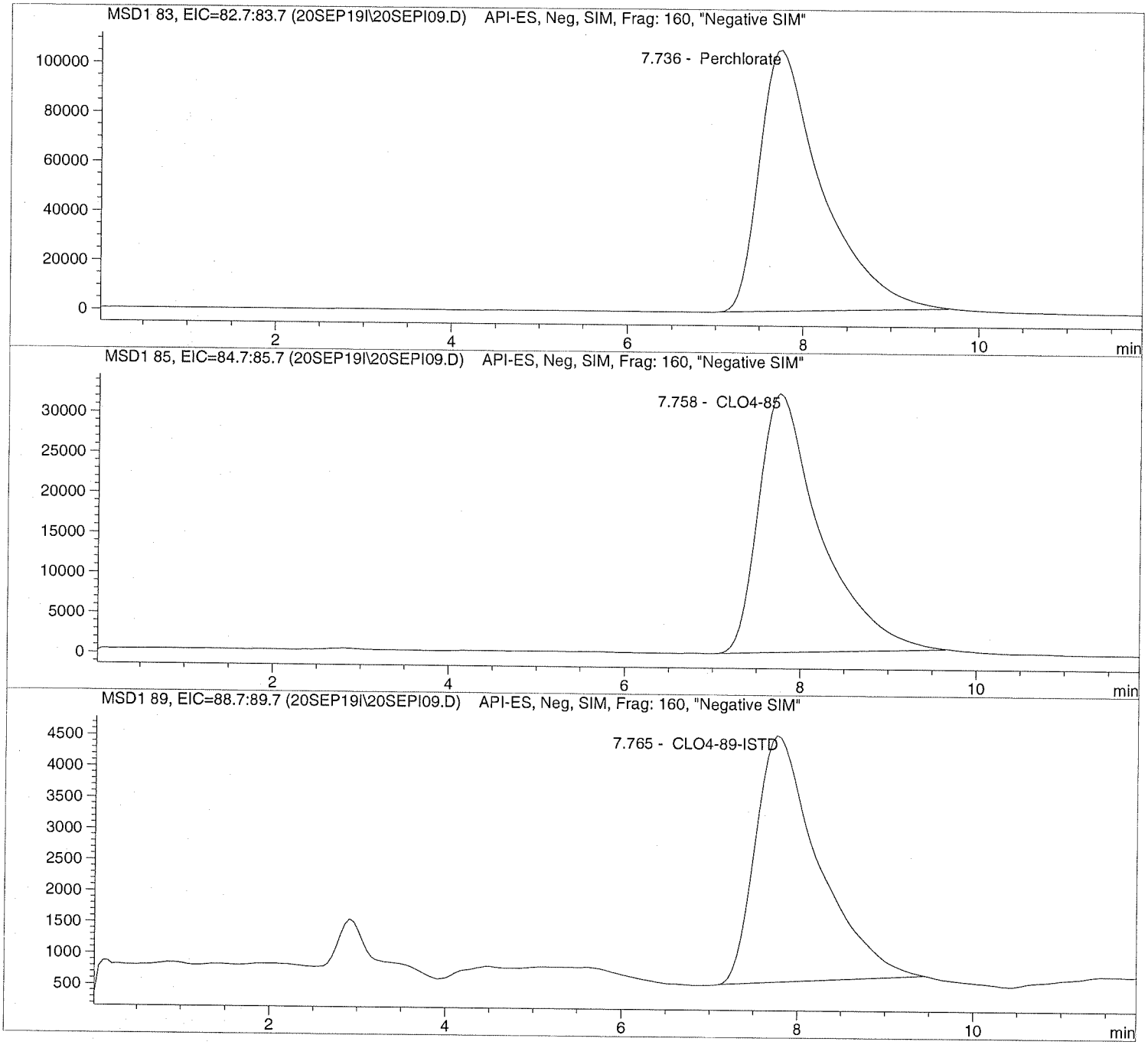
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Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

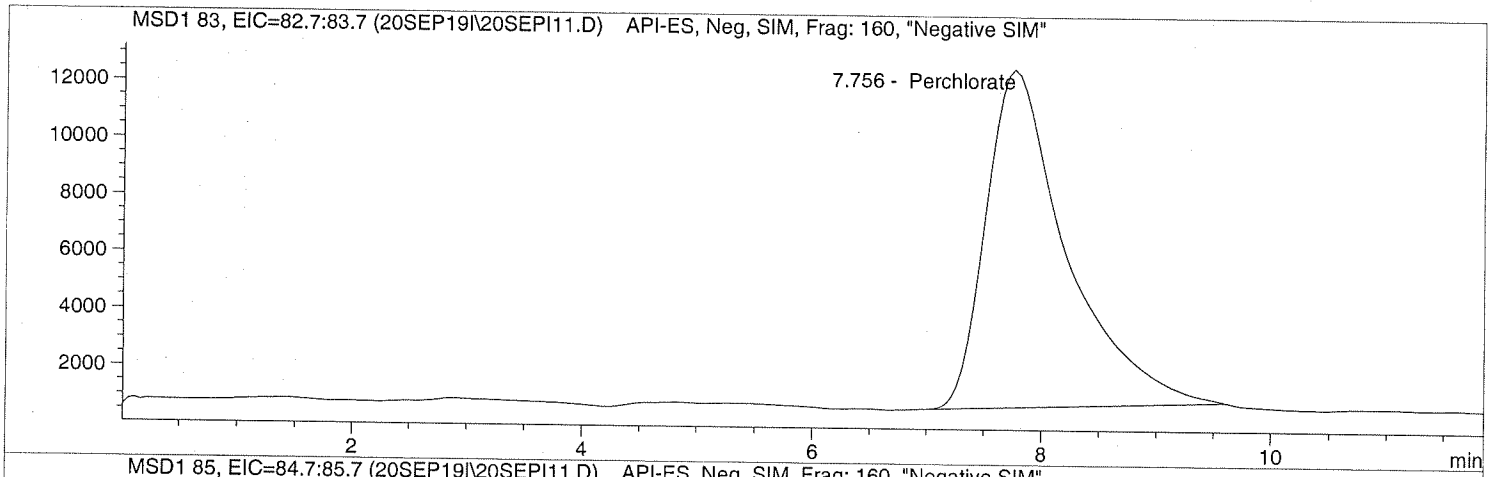
*** End of Report ***

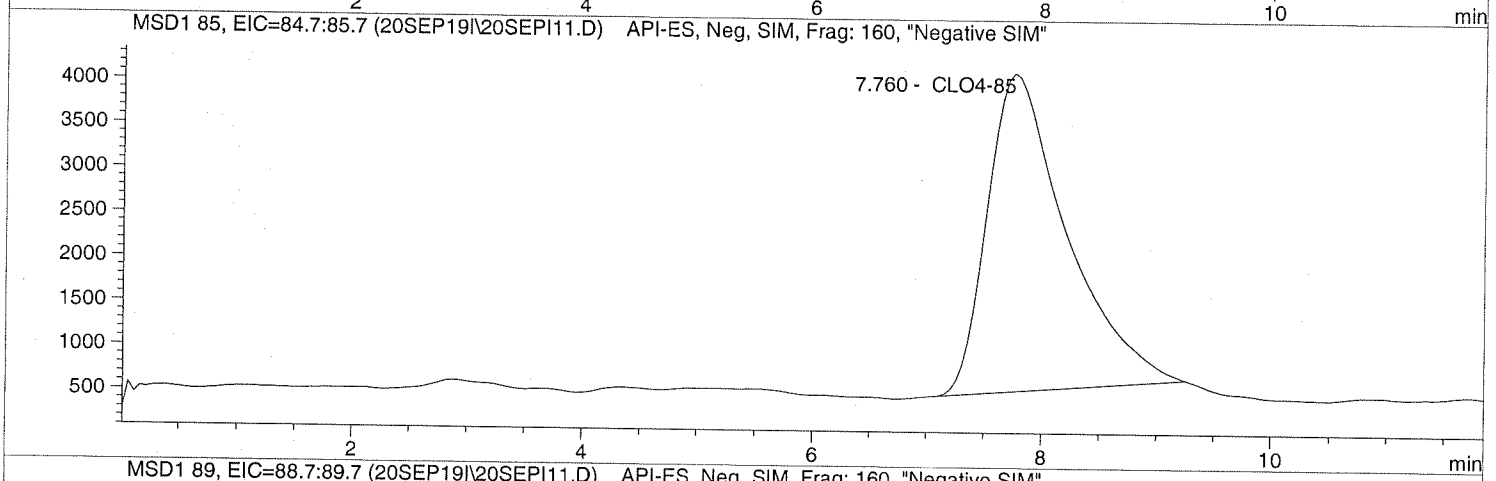
Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

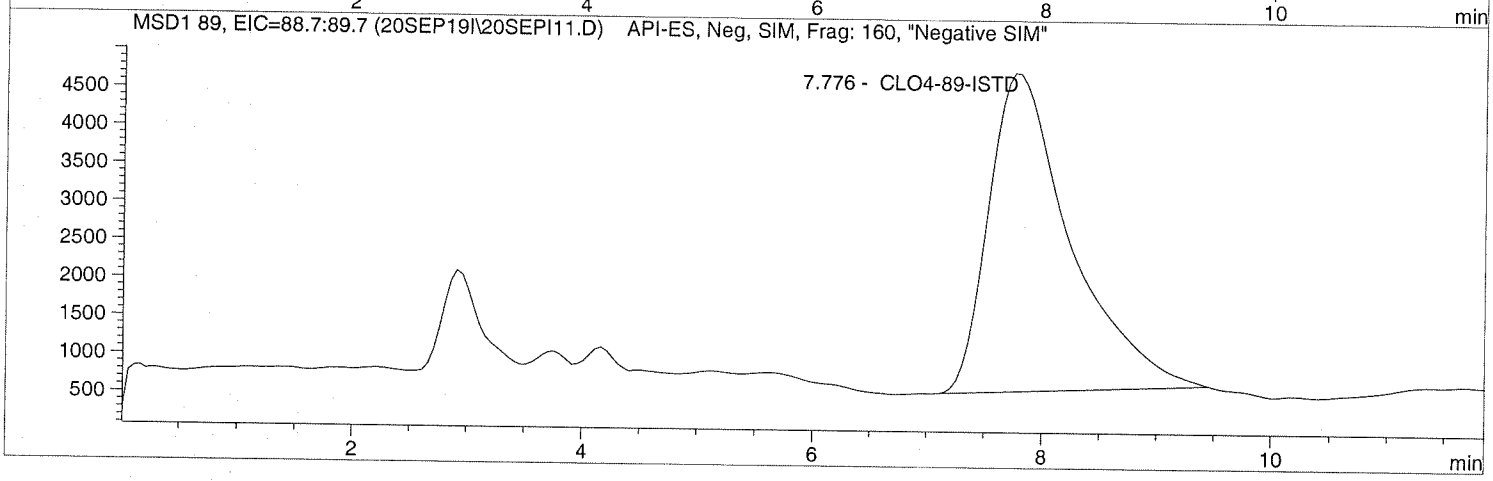
Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

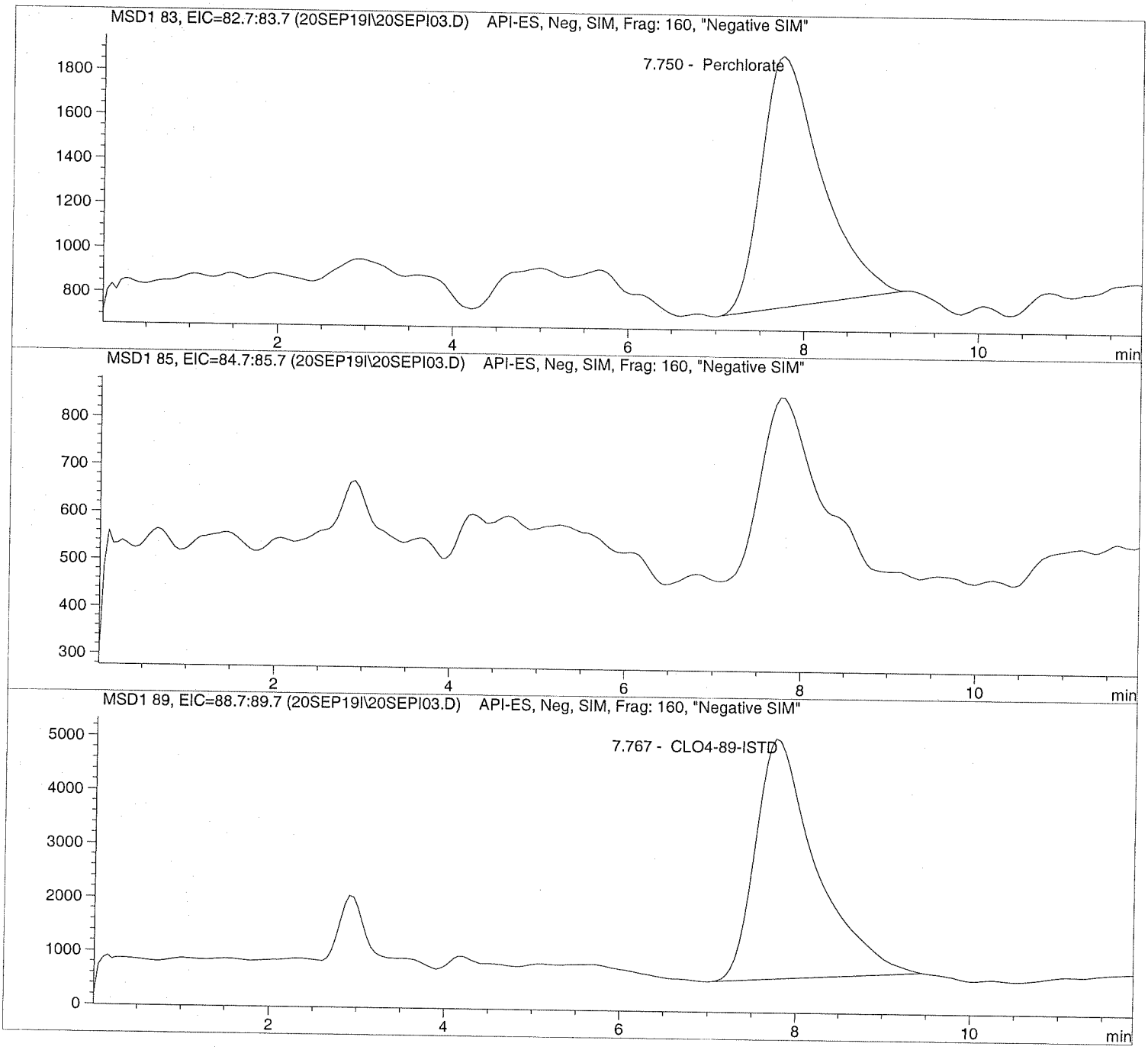
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

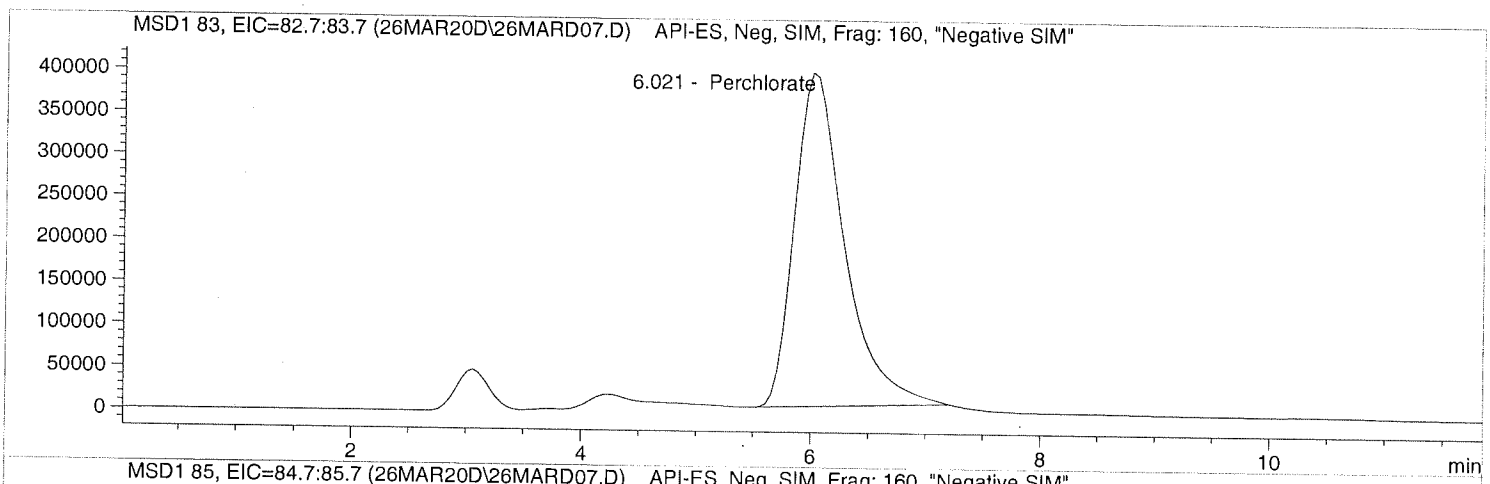
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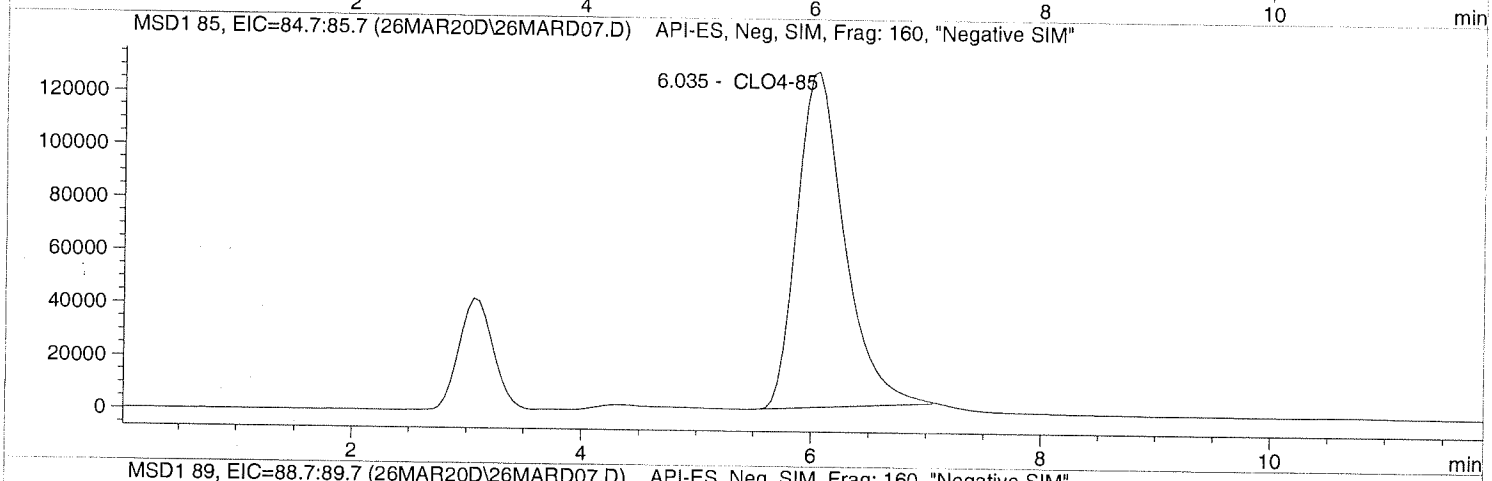
Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD07.D Sample Name: 2008062003

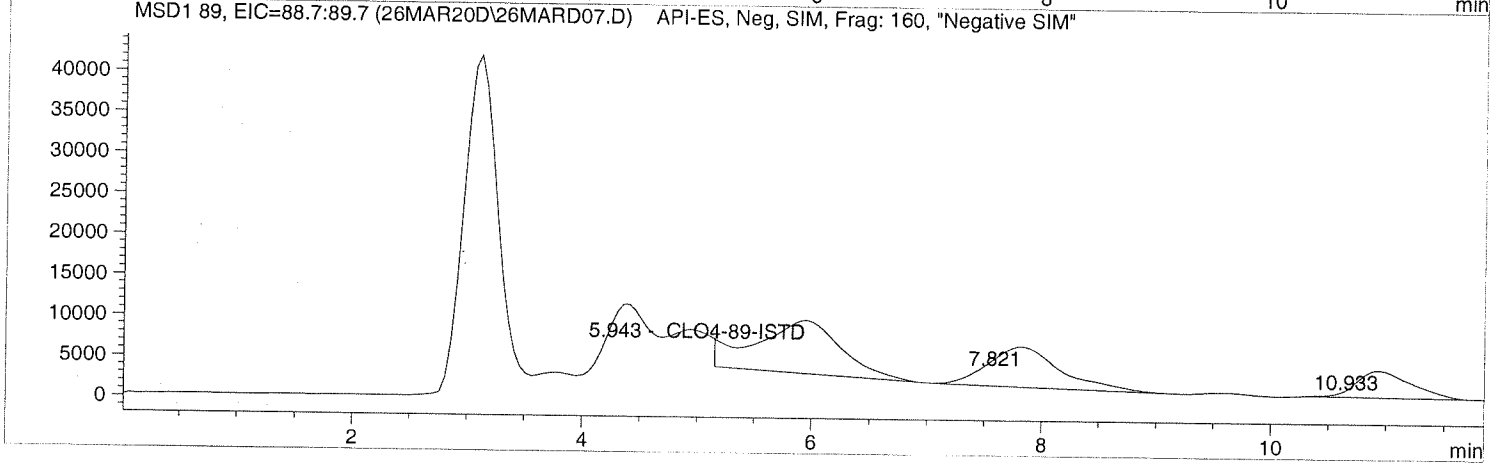
Injection Date:	3/26/2020 09:44:40	Seq Line:	7
Sample Name:	2008062003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD07.D Sample Name: 2008062003

Injection Date:	3/26/2020 09:44:40	Seq Line:	7
Sample Name:	2008062003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.021	PBA	11797552.0	94.0331	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.035	PBA	3623208.0	95.7707	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.943	BB	332132.3	5.0000	CLO4-89-ISTD
7.821	VBA	216345.0	0.0000	
10.933	PPA	109265.2	0.0000	

*** End of Report ***

10450 Stancliff Rd. Suite 210
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April 02, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20030888**

Laboratory Results for: **Longhorn Army Ammunition Plant - 16**

Dear Susan,

ALS Environmental received 11 sample(s) on Mar 19, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Work Order: HS20030888

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20030888-01	16WW44-200317	Groundwater		17-Mar-2020 08:20	19-Mar-2020 08:50	☐
HS20030888-02	16WW37-200317	Groundwater		17-Mar-2020 09:15	19-Mar-2020 08:50	☐
HS20030888-03	16WW38-200317	Groundwater		17-Mar-2020 10:00	19-Mar-2020 08:50	☐
HS20030888-04	16WW14-200317	Groundwater		17-Mar-2020 10:50	19-Mar-2020 08:50	☐
HS20030888-05	16RW06-200317	Groundwater		17-Mar-2020 11:40	19-Mar-2020 08:50	☐
HS20030888-06	16PM03-200317	Groundwater		17-Mar-2020 12:35	19-Mar-2020 08:50	☐
HS20030888-07	16PM02-200317	Groundwater		17-Mar-2020 13:25	19-Mar-2020 08:50	☐
HS20030888-08	16RW07-200317	Groundwater		17-Mar-2020 14:15	19-Mar-2020 08:50	☐
HS20030888-09	16RW11-200317	Groundwater		17-Mar-2020 15:00	19-Mar-2020 08:50	☐
HS20030888-10	16WW51-200317	Groundwater		17-Mar-2020 15:50	19-Mar-2020 08:50	☐
HS20030888-11	Trip Blank	Water	CG-021720-07	17-Mar-2020 00:00	19-Mar-2020 08:50	☐

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant - 16
Work Order: HS20030888

Work Order Comments

- The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached.
- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R358682,R358746,R358758,R358856

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R359369

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW44-200317
Collection Date: 17-Mar-2020 08:20

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	22-Mar-2020 14:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:44
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	22-Mar-2020 14:44
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:44
Surr: 1,2-Dichloroethane-d4	*89.5*			**0**	*81-118*	*%REC*	*1*	*22-Mar-2020 14:44*
Surr: 4-Bromofluorobenzene	*98.0*			**0**	*85-114*	*%REC*	*1*	*22-Mar-2020 14:44*
Surr: Dibromofluoromethane	*95.9*			**0**	*80-119*	*%REC*	*1*	*22-Mar-2020 14:44*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*22-Mar-2020 14:44*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW37-200317
Collection Date: 17-Mar-2020 09:15

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	22-Mar-2020 21:56
1,1-Dichloroethene	**0.82**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 21:56
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 21:56
cis-1,2-Dichloroethene	**6.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 21:56
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	22-Mar-2020 21:56
Trichloroethene	**110**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 21:56
Vinyl chloride	**2.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 21:56
Surr: 1,2-Dichloroethane-d4	*90.5*			**0**	*81-118*	*%REC*	*1*	*22-Mar-2020 21:56*
Surr: 4-Bromofluorobenzene	*96.6*			**0**	*85-114*	*%REC*	*1*	*22-Mar-2020 21:56*
Surr: Dibromofluoromethane	*94.6*			**0**	*80-119*	*%REC*	*1*	*22-Mar-2020 21:56*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*22-Mar-2020 21:56*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW38-200317
Collection Date: 17-Mar-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	24-Mar-2020 03:44
1,1-Dichloroethene	**13**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Mar-2020 03:44
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	24-Mar-2020 03:44
cis-1,2-Dichloroethene	**200**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Mar-2020 03:44
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	24-Mar-2020 03:44
Trichloroethene	**3,000**		**10**	**25**	**50**	**UG/L**	50	24-Mar-2020 04:57
Vinyl chloride	**95**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Mar-2020 03:44
Surr: 1,2-Dichloroethane-d4	*90.4*			**0**	*81-118*	*%REC*	*50*	*24-Mar-2020 04:57*
Surr: 1,2-Dichloroethane-d4	*90.2*			**0**	*81-118*	*%REC*	*5*	*24-Mar-2020 03:44*
Surr: 4-Bromofluorobenzene	*97.6*			**0**	*85-114*	*%REC*	*5*	*24-Mar-2020 03:44*
Surr: 4-Bromofluorobenzene	*96.4*			**0**	*85-114*	*%REC*	*50*	*24-Mar-2020 04:57*
Surr: Dibromofluoromethane	*93.9*			**0**	*80-119*	*%REC*	*5*	*24-Mar-2020 03:44*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*50*	*24-Mar-2020 04:57*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*5*	*24-Mar-2020 03:44*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*50*	*24-Mar-2020 04:57*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW14-200317
Collection Date: 17-Mar-2020 10:50

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	22-Mar-2020 22:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 22:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 22:21
cis-1,2-Dichloroethene	**1.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 22:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	22-Mar-2020 22:21
Trichloroethene	**33**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 22:21
Vinyl chloride	**0.40**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 22:21
Surr: 1,2-Dichloroethane-d4	*91.4*			**0**	*81-118*	*%REC*	*1*	*22-Mar-2020 22:21*
Surr: 4-Bromofluorobenzene	*97.5*			**0**	*85-114*	*%REC*	*1*	*22-Mar-2020 22:21*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*1*	*22-Mar-2020 22:21*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*22-Mar-2020 22:21*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16RW06-200317
Collection Date: 17-Mar-2020 11:40

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	22-Mar-2020 22:45
1,1-Dichloroethene	**0.90**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 22:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 22:45
cis-1,2-Dichloroethene	**1.9**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 22:45
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	22-Mar-2020 22:45
Trichloroethene	**86**		**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 22:45
Vinyl chloride	**0.84**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	22-Mar-2020 22:45
Surr: 1,2-Dichloroethane-d4	*91.5*			**0**	*81-118*	*%REC*	*1*	*22-Mar-2020 22:45*
Surr: 4-Bromofluorobenzene	*98.6*			**0**	*85-114*	*%REC*	*1*	*22-Mar-2020 22:45*
Surr: Dibromofluoromethane	*95.0*			**0**	*80-119*	*%REC*	*1*	*22-Mar-2020 22:45*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*22-Mar-2020 22:45*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16PM03-200317
Collection Date: 17-Mar-2020 12:35

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	UG/L	10	24-Mar-2020 17:29
1,1-Dichloroethene	**66**		**2.0**	**5.0**	**10**	**UG/L**	10	24-Mar-2020 17:29
1,2-Dichloroethane	**21**		**2.0**	**5.0**	**10**	**UG/L**	10	24-Mar-2020 17:29
cis-1,2-Dichloroethene	**6,600**		**10**	**25**	**50**	**UG/L**	50	24-Mar-2020 06:57
Methylene chloride	10	U	4.0	10	20	UG/L	10	24-Mar-2020 17:29
Trichloroethene	**9,700**		**10**	**25**	**50**	**UG/L**	50	24-Mar-2020 06:57
Vinyl chloride	**370**		**2.0**	**5.0**	**10**	**UG/L**	10	24-Mar-2020 17:29
Surr: 1,2-Dichloroethane-d4	*91.8*			**0**	*81-118*	*%REC*	*50*	*24-Mar-2020 06:57*
Surr: 1,2-Dichloroethane-d4	*92.9*			**0**	*81-118*	*%REC*	*10*	*24-Mar-2020 17:29*
Surr: 4-Bromofluorobenzene	*96.0*			**0**	*85-114*	*%REC*	*50*	*24-Mar-2020 06:57*
Surr: 4-Bromofluorobenzene	*98.3*			**0**	*85-114*	*%REC*	*10*	*24-Mar-2020 17:29*
Surr: Dibromofluoromethane	*94.5*			**0**	*80-119*	*%REC*	*50*	*24-Mar-2020 06:57*
Surr: Dibromofluoromethane	*95.3*			**0**	*80-119*	*%REC*	*10*	*24-Mar-2020 17:29*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*50*	*24-Mar-2020 06:57*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*10*	*24-Mar-2020 17:29*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16PM02-200317
Collection Date: 17-Mar-2020 13:25

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	25	U	15	25	50	UG/L	50	24-Mar-2020 07:45
1,1-Dichloroethene	**32**	J	**10**	**25**	**50**	**UG/L**	50	24-Mar-2020 07:45
1,2-Dichloroethane	25	U	10	25	50	UG/L	50	24-Mar-2020 07:45
cis-1,2-Dichloroethene	**3,200**		**10**	**25**	**50**	**UG/L**	50	24-Mar-2020 07:45
Methylene chloride	50	U	20	50	100	UG/L	50	24-Mar-2020 07:45
Trichloroethene	**21,000**		**100**	**250**	**500**	**UG/L**	500	24-Mar-2020 08:09
Vinyl chloride	**51**		**10**	**25**	**50**	**UG/L**	50	24-Mar-2020 07:45
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*81-118*	*%REC*	*50*	*24-Mar-2020 07:45*
Surr: 1,2-Dichloroethane-d4	*90.4*			**0**	*81-118*	*%REC*	*500*	*24-Mar-2020 08:09*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*85-114*	*%REC*	*50*	*24-Mar-2020 07:45*
Surr: 4-Bromofluorobenzene	*96.2*			**0**	*85-114*	*%REC*	*500*	*24-Mar-2020 08:09*
Surr: Dibromofluoromethane	*94.3*			**0**	*80-119*	*%REC*	*50*	*24-Mar-2020 07:45*
Surr: Dibromofluoromethane	*92.8*			**0**	*80-119*	*%REC*	*500*	*24-Mar-2020 08:09*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*50*	*24-Mar-2020 07:45*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*500*	*24-Mar-2020 08:09*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16RW07-200317
Collection Date: 17-Mar-2020 14:15

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	24-Mar-2020 17:05
1,1-Dichloroethene	**12**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Mar-2020 17:05
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	24-Mar-2020 17:05
cis-1,2-Dichloroethene	**120**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Mar-2020 17:05
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	24-Mar-2020 17:05
Trichloroethene	**1,900**		**2.0**	**5.0**	**10**	**UG/L**	10	24-Mar-2020 06:09
Vinyl chloride	**76**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Mar-2020 17:05
Surr: 1,2-Dichloroethane-d4	*90.8*			**0**	*81-118*	*%REC*	*10*	*24-Mar-2020 06:09*
Surr: 1,2-Dichloroethane-d4	*89.8*			**0**	*81-118*	*%REC*	*5*	*24-Mar-2020 17:05*
Surr: 4-Bromofluorobenzene	*97.0*			**0**	*85-114*	*%REC*	*10*	*24-Mar-2020 06:09*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*5*	*24-Mar-2020 17:05*
Surr: Dibromofluoromethane	*95.2*			**0**	*80-119*	*%REC*	*10*	*24-Mar-2020 06:09*
Surr: Dibromofluoromethane	*95.3*			**0**	*80-119*	*%REC*	*5*	*24-Mar-2020 17:05*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*10*	*24-Mar-2020 06:09*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*5*	*24-Mar-2020 17:05*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16RW11-200317
Collection Date: 17-Mar-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-Mar-2020 22:56
1,1-Dichloroethene	**0.56**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	23-Mar-2020 22:56
1,2-Dichloroethane	**1.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	23-Mar-2020 22:56
cis-1,2-Dichloroethene	**73**		**0.20**	**0.50**	**1.0**	**UG/L**	1	23-Mar-2020 22:56
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-Mar-2020 22:56
Trichloroethene	**20**		**0.20**	**0.50**	**1.0**	**UG/L**	1	23-Mar-2020 22:56
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-Mar-2020 22:56
Surr: 1,2-Dichloroethane-d4	*90.1*			**0**	*81-118*	*%REC*	*1*	*23-Mar-2020 22:56*
Surr: 4-Bromofluorobenzene	*99.3*			**0**	*85-114*	*%REC*	*1*	*23-Mar-2020 22:56*
Surr: Dibromofluoromethane	*94.5*			**0**	*80-119*	*%REC*	*1*	*23-Mar-2020 22:56*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*23-Mar-2020 22:56*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW51-200317
Collection Date: 17-Mar-2020 15:50

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-Mar-2020 10:09
1,1-Dichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Mar-2020 10:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-Mar-2020 10:09
cis-1,2-Dichloroethene	**25**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Mar-2020 10:09
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-Mar-2020 10:09
Trichloroethene	**830**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Mar-2020 05:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-Mar-2020 10:09
Surr: 1,2-Dichloroethane-d4	*90.3*			**0**	*81-118*	*%REC*	*5*	*24-Mar-2020 05:21*
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*81-118*	*%REC*	*1*	*24-Mar-2020 10:09*
Surr: 4-Bromofluorobenzene	*95.7*			**0**	*85-114*	*%REC*	*5*	*24-Mar-2020 05:21*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*85-114*	*%REC*	*1*	*24-Mar-2020 10:09*
Surr: Dibromofluoromethane	*94.1*			**0**	*80-119*	*%REC*	*5*	*24-Mar-2020 05:21*
Surr: Dibromofluoromethane	*94.8*			**0**	*80-119*	*%REC*	*1*	*24-Mar-2020 10:09*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*5*	*24-Mar-2020 05:21*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*24-Mar-2020 10:09*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**3.71**		**0.150**	**0.500**	**0.500**	**mg/L**	5	30-Mar-2020 23:03
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Apr-2020 14:16
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	26-Mar-2020 09:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: Trip Blank
Collection Date: 17-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20030888
Lab ID:HS20030888-11
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	22-Mar-2020 14:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	22-Mar-2020 14:20
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	22-Mar-2020 14:20
Surr: 1,2-Dichloroethane-d4	*89.4*			**0**	*81-118*	*%REC*	*1*	*22-Mar-2020 14:20*
Surr: 4-Bromofluorobenzene	*97.0*			**0**	*85-114*	*%REC*	*1*	*22-Mar-2020 14:20*
Surr: Dibromofluoromethane	*95.1*			**0**	*80-119*	*%REC*	*1*	*22-Mar-2020 14:20*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*22-Mar-2020 14:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R358682 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20030888-11	Trip Blank	17 Mar 2020 00:00			22 Mar 2020 14:20	1
Batch ID: R358682 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20030888-01	16WW44-200317	17 Mar 2020 08:20			22 Mar 2020 14:44	1
HS20030888-02	16WW37-200317	17 Mar 2020 09:15			22 Mar 2020 21:56	1
HS20030888-04	16WW14-200317	17 Mar 2020 10:50			22 Mar 2020 22:21	1
HS20030888-05	16RW06-200317	17 Mar 2020 11:40			22 Mar 2020 22:45	1
Batch ID: R358746 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20030888-09	16RW11-200317	17 Mar 2020 15:00			23 Mar 2020 22:56	1
Batch ID: R358758 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20030888-03	16WW38-200317	17 Mar 2020 10:00			24 Mar 2020 04:57	50
HS20030888-03	16WW38-200317	17 Mar 2020 10:00			24 Mar 2020 03:44	5
HS20030888-06	16PM03-200317	17 Mar 2020 12:35			24 Mar 2020 06:57	50
HS20030888-07	16PM02-200317	17 Mar 2020 13:25			24 Mar 2020 08:09	500
HS20030888-07	16PM02-200317	17 Mar 2020 13:25			24 Mar 2020 07:45	50
HS20030888-08	16RW07-200317	17 Mar 2020 14:15			24 Mar 2020 06:09	10
HS20030888-10	16WW51-200317	17 Mar 2020 15:50			24 Mar 2020 10:09	1
HS20030888-10	16WW51-200317	17 Mar 2020 15:50			24 Mar 2020 05:21	5
Batch ID: R358856 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20030888-06	16PM03-200317	17 Mar 2020 12:35			24 Mar 2020 17:29	10
HS20030888-08	16RW07-200317	17 Mar 2020 14:15			24 Mar 2020 17:05	5
Batch ID: R358929 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20030888-10	16WW51-200317	17 Mar 2020 15:50			26 Mar 2020 09:32	1
Batch ID: R359317 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20030888-01	16WW44-200317	17 Mar 2020 08:20			01 Apr 2020 14:16	1
HS20030888-02	16WW37-200317	17 Mar 2020 09:15			01 Apr 2020 14:16	1
HS20030888-03	16WW38-200317	17 Mar 2020 10:00			01 Apr 2020 14:16	1
HS20030888-04	16WW14-200317	17 Mar 2020 10:50			01 Apr 2020 14:16	1
HS20030888-05	16RW06-200317	17 Mar 2020 11:40			01 Apr 2020 14:16	1
HS20030888-06	16PM03-200317	17 Mar 2020 12:35			01 Apr 2020 14:16	1
HS20030888-07	16PM02-200317	17 Mar 2020 13:25			01 Apr 2020 14:16	1
HS20030888-08	16RW07-200317	17 Mar 2020 14:15			01 Apr 2020 14:16	1
HS20030888-09	16RW11-200317	17 Mar 2020 15:00			01 Apr 2020 14:16	1
HS20030888-10	16WW51-200317	17 Mar 2020 15:50			01 Apr 2020 14:16	1
Batch ID: R359369 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20030888-10	16WW51-200317	17 Mar 2020 15:50			30 Mar 2020 23:03	5

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

QC BATCH REPORT

Batch ID: R358682 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW1-200322** Units: **UG/L** Analysis Date: **22-Mar-2020 13:55**
Client ID: Run ID: **VOA6_358682** SeqNo: **5524950** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.31*	*1.0*	*50*	*0*	*90.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.37*	*1.0*	*50*	*0*	*96.7*	*85 - 114*				
Surr: Dibromofluoromethane	*47.15*	*1.0*	*50*	*0*	*94.3*	*80 - 119*				
Surr: Toluene-d8	*52.17*	*1.0*	*50*	*0*	*104*	*89 - 112*				

LCS Sample ID: **VLCSW-200322** Units: **UG/L** Analysis Date: **22-Mar-2020 13:07**
Client ID: Run ID: **VOA6_358682** SeqNo: **5524949** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	18.87	1.0	20	0	94.3	80 - 119				
1,1-Dichloroethene	18.61	1.0	20	0	93.0	71 - 131				
1,2-Dichloroethane	19.63	1.0	20	0	98.1	73 - 128				
cis-1,2-Dichloroethene	20.16	1.0	20	0	101	78 - 123				
Methylene chloride	19.54	2.0	20	0	97.7	74 - 124				
Trichloroethene	19.83	1.0	20	0	99.1	79 - 123				
Vinyl chloride	18.08	1.0	20	0	90.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.29*	*1.0*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.64*	*1.0*	*50*	*0*	*99.3*	*85 - 114*				
Surr: Dibromofluoromethane	*51.88*	*1.0*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*50.26*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

QC BATCH REPORT

Batch ID: R358682 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20030888-01MS** Units: **UG/L** Analysis Date: **22-Mar-2020 15:56**
Client ID: **16WW44-200317** Run ID: **VOA6_358682** SeqNo: **5524955** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.7	1.0	20	0	98.5	80 - 119				
1,1-Dichloroethene	19.41	1.0	20	0	97.0	71 - 131				
1,2-Dichloroethane	19.71	1.0	20	0	98.6	73 - 128				
cis-1,2-Dichloroethene	19.39	1.0	20	0	96.9	78 - 123				
Methylene chloride	18.18	2.0	20	0	90.9	74 - 124				
Trichloroethene	21.91	1.0	20	0	110	79 - 123				
Vinyl chloride	19.26	1.0	20	0	96.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.31*	*1.0*	*50*	*0*	*90.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.99*	*1.0*	*50*	*0*	*98.0*	*85 - 114*				
Surr: Dibromofluoromethane	*47.73*	*1.0*	*50*	*0*	*95.5*	*80 - 119*				
Surr: Toluene-d8	*51.65*	*1.0*	*50*	*0*	*103*	*89 - 112*				

MSD Sample ID: **HS20030888-01MSD** Units: **UG/L** Analysis Date: **22-Mar-2020 16:20**
Client ID: **16WW44-200317** Run ID: **VOA6_358682** SeqNo: **5524956** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.83	1.0	20	0	99.1	80 - 119	19.7	0.625	20	
1,1-Dichloroethene	18.26	1.0	20	0	91.3	71 - 131	19.41	6.08	20	
1,2-Dichloroethane	19.55	1.0	20	0	97.7	73 - 128	19.71	0.835	20	
cis-1,2-Dichloroethene	18.67	1.0	20	0	93.4	78 - 123	19.39	3.76	20	
Methylene chloride	17.4	2.0	20	0	87.0	74 - 124	18.18	4.36	20	
Trichloroethene	20.18	1.0	20	0	101	79 - 123	21.91	8.25	20	
Vinyl chloride	18.09	1.0	20	0	90.4	58 - 137	19.26	6.3	20	
Surr: 1,2-Dichloroethane-d4	*45.14*	*1.0*	*50*	*0*	*90.3*	*81 - 118*	*45.31*	*0.37*	*20*	
Surr: 4-Bromofluorobenzene	*48.67*	*1.0*	*50*	*0*	*97.3*	*85 - 114*	*48.99*	*0.656*	*20*	
Surr: Dibromofluoromethane	*47.96*	*1.0*	*50*	*0*	*95.9*	*80 - 119*	*47.73*	*0.482*	*20*	
Surr: Toluene-d8	*52.32*	*1.0*	*50*	*0*	*105*	*89 - 112*	*51.65*	*1.29*	*20*	

The following samples were analyzed in this batch: HS20030888-01 HS20030888-02 HS20030888-04 HS20030888-05 HS20030888-11

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

QC BATCH REPORT

Batch ID: R358746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200323** Units: **UG/L** Analysis Date: **23-Mar-2020 14:07**
Client ID: Run ID: **VOA6_358746** SeqNo: **5526485** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.1*	*1.0*	*50*	*0*	*90.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.57*	*1.0*	*50*	*0*	*97.1*	*85 - 114*				
Surr: Dibromofluoromethane	*48.06*	*1.0*	*50*	*0*	*96.1*	*80 - 119*				
Surr: Toluene-d8	*52.56*	*1.0*	*50*	*0*	*105*	*89 - 112*				

LCS Sample ID: **VLCSW-200323** Units: **UG/L** Analysis Date: **23-Mar-2020 12:55**
Client ID: Run ID: **VOA6_358746** SeqNo: **5526484** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.96	1.0	20	0	99.8	80 - 119				
1,1-Dichloroethene	19.69	1.0	20	0	98.4	71 - 131				
1,2-Dichloroethane	20.21	1.0	20	0	101	73 - 128				
cis-1,2-Dichloroethene	21.11	1.0	20	0	106	78 - 123				
Methylene chloride	20.36	2.0	20	0	102	74 - 124				
Trichloroethene	21.25	1.0	20	0	106	79 - 123				
Vinyl chloride	18.94	1.0	20	0	94.7	58 - 137				
Surr: 1,2-Dichloroethane-d4	*51.28*	*1.0*	*50*	*0*	*103*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.67*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*52.2*	*1.0*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*50.75*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

QC BATCH REPORT

Batch ID: R358746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20030586-02MS** Units: **UG/L** Analysis Date: **23-Mar-2020 16:56**
Client ID: Run ID: **VOA6_358746** SeqNo: **5526490** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	2069	100	2000	0	103	80 - 119				
1,1-Dichloroethene	1889	100	2000	0	94.5	71 - 131				
1,2-Dichloroethane	2029	100	2000	0	101	73 - 128				
cis-1,2-Dichloroethene	1985	100	2000	0	99.3	78 - 123				
Methylene chloride	1903	200	2000	0	95.2	74 - 124				
Trichloroethene	2109	100	2000	0	105	79 - 123				
Vinyl chloride	1918	100	2000	0	95.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*4522*	*100*	*5000*	*0*	*90.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*4911*	*100*	*5000*	*0*	*98.2*	*85 - 114*				
Surr: Dibromofluoromethane	*4783*	*100*	*5000*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*5254*	*100*	*5000*	*0*	*105*	*89 - 112*				

MSD Sample ID: **HS20030586-02MSD** Units: **UG/L** Analysis Date: **23-Mar-2020 17:20**
Client ID: Run ID: **VOA6_358746** SeqNo: **5526491** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1966	100	2000	0	98.3	80 - 119	2069	5.1	20	
1,1-Dichloroethene	1822	100	2000	0	91.1	71 - 131	1889	3.64	20	
1,2-Dichloroethane	1982	100	2000	0	99.1	73 - 128	2029	2.31	20	
cis-1,2-Dichloroethene	1898	100	2000	0	94.9	78 - 123	1985	4.5	20	
Methylene chloride	1759	200	2000	0	88.0	74 - 124	1903	7.86	20	
Trichloroethene	1941	100	2000	0	97.1	79 - 123	2109	8.28	20	
Vinyl chloride	1755	100	2000	0	87.7	58 - 137	1918	8.89	20	
Surr: 1,2-Dichloroethane-d4	*4513*	*100*	*5000*	*0*	*90.3*	*81 - 118*	*4522*	*0.194*	*20*	
Surr: 4-Bromofluorobenzene	*4868*	*100*	*5000*	*0*	*97.4*	*85 - 114*	*4911*	*0.866*	*20*	
Surr: Dibromofluoromethane	*4825*	*100*	*5000*	*0*	*96.5*	*80 - 119*	*4783*	*0.874*	*20*	
Surr: Toluene-d8	*5246*	*100*	*5000*	*0*	*105*	*89 - 112*	*5254*	*0.167*	*20*	

The following samples were analyzed in this batch: HS20030888-09

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

QC BATCH REPORT

Batch ID: R358758 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW1-200323** Units: **UG/L** Analysis Date: **24-Mar-2020 02:08**
Client ID: Run ID: **VOA6_358758** SeqNo: **5526706** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.53*	*1.0*	*50*	*0*	*91.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.56*	*1.0*	*50*	*0*	*97.1*	*85 - 114*				
Surr: Dibromofluoromethane	*47.72*	*1.0*	*50*	*0*	*95.4*	*80 - 119*				
Surr: Toluene-d8	*52.11*	*1.0*	*50*	*0*	*104*	*89 - 112*				

LCS Sample ID: **VLCSW-200323** Units: **UG/L** Analysis Date: **24-Mar-2020 01:20**
Client ID: Run ID: **VOA6_358758** SeqNo: **5526705** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.65	1.0	20	0	98.3	80 - 119				
1,1-Dichloroethene	18.78	1.0	20	0	93.9	71 - 131				
1,2-Dichloroethane	19.74	1.0	20	0	98.7	73 - 128				
cis-1,2-Dichloroethene	21.03	1.0	20	0	105	78 - 123				
Methylene chloride	20.09	2.0	20	0	100	74 - 124				
Trichloroethene	19.71	1.0	20	0	98.5	79 - 123				
Vinyl chloride	18.69	1.0	20	0	93.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*53.44*	*1.0*	*50*	*0*	*107*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.3*	*1.0*	*50*	*0*	*103*	*85 - 114*				
Surr: Dibromofluoromethane	*54.16*	*1.0*	*50*	*0*	*108*	*80 - 119*				
Surr: Toluene-d8	*50.7*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

QC BATCH REPORT

Batch ID: R358758 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20030771-04MS** Units: **UG/L** Analysis Date: **24-Mar-2020 04:08**
Client ID: Run ID: **VOA6_358758** SeqNo: **5526709** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	18.53	1.0	20	0	92.7	80 - 119				
1,1-Dichloroethene	17.66	1.0	20	0	88.3	71 - 131				
1,2-Dichloroethane	18.29	1.0	20	0	91.4	73 - 128				
cis-1,2-Dichloroethene	18.36	1.0	20	0	91.8	78 - 123				
Methylene chloride	17.68	2.0	20	0	88.4	74 - 124				
Trichloroethene	19.71	1.0	20	0	98.6	79 - 123				
Vinyl chloride	17.51	1.0	20	0	87.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.22*	*1.0*	*50*	*0*	*92.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.61*	*1.0*	*50*	*0*	*97.2*	*85 - 114*				
Surr: Dibromofluoromethane	*47.87*	*1.0*	*50*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*51.38*	*1.0*	*50*	*0*	*103*	*89 - 112*				

MSD Sample ID: **HS20030771-04MSD** Units: **UG/L** Analysis Date: **24-Mar-2020 04:32**
Client ID: Run ID: **VOA6_358758** SeqNo: **5526710** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	18.72	1.0	20	0	93.6	80 - 119	18.53	1.01	20	
1,1-Dichloroethene	17.1	1.0	20	0	85.5	71 - 131	17.66	3.25	20	
1,2-Dichloroethane	17.95	1.0	20	0	89.7	73 - 128	18.29	1.88	20	
cis-1,2-Dichloroethene	17.47	1.0	20	0	87.3	78 - 123	18.36	4.97	20	
Methylene chloride	16.87	2.0	20	0	84.3	74 - 124	17.68	4.72	20	
Trichloroethene	18.42	1.0	20	0	92.1	79 - 123	19.71	6.8	20	
Vinyl chloride	17.04	1.0	20	0	85.2	58 - 137	17.51	2.74	20	
Surr: 1,2-Dichloroethane-d4	*46.73*	*1.0*	*50*	*0*	*93.5*	*81 - 118*	*46.22*	*1.09*	*20*	
Surr: 4-Bromofluorobenzene	*48.64*	*1.0*	*50*	*0*	*97.3*	*85 - 114*	*48.61*	*0.0591*	*20*	
Surr: Dibromofluoromethane	*47.25*	*1.0*	*50*	*0*	*94.5*	*80 - 119*	*47.87*	*1.32*	*20*	
Surr: Toluene-d8	*52.61*	*1.0*	*50*	*0*	*105*	*89 - 112*	*51.38*	*2.36*	*20*	

The following samples were analyzed in this batch: HS20030888-03 HS20030888-06 HS20030888-07 HS20030888-08 HS20030888-10

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

QC BATCH REPORT

Batch ID: R358856 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW1-200324** Units: **UG/L** Analysis Date: **24-Mar-2020 14:17**
Client ID: Run ID: **VOA6_358856** SeqNo: **5529172** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.39*	*1.0*	*50*	*0*	*90.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.06*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*48.02*	*1.0*	*50*	*0*	*96.0*	*80 - 119*				
Surr: Toluene-d8	*52.85*	*1.0*	*50*	*0*	*106*	*89 - 112*				

LCS Sample ID: **VLCSW-200324** Units: **UG/L** Analysis Date: **24-Mar-2020 13:29**
Client ID: Run ID: **VOA6_358856** SeqNo: **5529171** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.49	1.0	20	0	102	80 - 119				
1,1-Dichloroethene	19.58	1.0	20	0	97.9	71 - 131				
1,2-Dichloroethane	20.37	1.0	20	0	102	73 - 128				
cis-1,2-Dichloroethene	20.62	1.0	20	0	103	78 - 123				
Methylene chloride	19.71	2.0	20	0	98.6	74 - 124				
Vinyl chloride	18.73	1.0	20	0	93.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*51.89*	*1.0*	*50*	*0*	*104*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.68*	*1.0*	*50*	*0*	*99.4*	*85 - 114*				
Surr: Dibromofluoromethane	*51.2*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*49.77*	*1.0*	*50*	*0*	*99.5*	*89 - 112*				

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

QC BATCH REPORT

Batch ID: R358856 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20030892-06MS** Units: **UG/L** Analysis Date: **24-Mar-2020 17:53**
Client ID: Run ID: **VOA6_358856** SeqNo: **5529176** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.67	1.0	20	0	103	80 - 119				
1,1-Dichloroethene	19.62	1.0	20	0	98.1	71 - 131				
1,2-Dichloroethane	20.43	1.0	20	0	102	73 - 128				
cis-1,2-Dichloroethene	21.62	1.0	20	0	108	78 - 123				
Methylene chloride	18.26	2.0	20	0	91.3	74 - 124				
Vinyl chloride	19.06	1.0	20	0	95.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.87*	*1.0*	*50*	*0*	*91.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.09*	*1.0*	*50*	*0*	*98.2*	*85 - 114*				
Surr: Dibromofluoromethane	*47.45*	*1.0*	*50*	*0*	*94.9*	*80 - 119*				
Surr: Toluene-d8	*51.18*	*1.0*	*50*	*0*	*102*	*89 - 112*				

MSD Sample ID: **HS20030892-06MSD** Units: **UG/L** Analysis Date: **24-Mar-2020 18:17**
Client ID: Run ID: **VOA6_358856** SeqNo: **5529177** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.03	1.0	20	0	100	80 - 119	20.67	3.15	20	
1,1-Dichloroethene	18.16	1.0	20	0	90.8	71 - 131	19.62	7.72	20	
1,2-Dichloroethane	19.14	1.0	20	0	95.7	73 - 128	20.43	6.53	20	
cis-1,2-Dichloroethene	19.12	1.0	20	0	95.6	78 - 123	21.62	12.3	20	
Methylene chloride	17.86	2.0	20	0	89.3	74 - 124	18.26	2.23	20	
Vinyl chloride	17.57	1.0	20	0	87.9	58 - 137	19.06	8.16	20	
Surr: 1,2-Dichloroethane-d4	*44.83*	*1.0*	*50*	*0*	*89.7*	*81 - 118*	*45.87*	*2.29*	*20*	
Surr: 4-Bromofluorobenzene	*48.59*	*1.0*	*50*	*0*	*97.2*	*85 - 114*	*49.09*	*1.03*	*20*	
Surr: Dibromofluoromethane	*47.35*	*1.0*	*50*	*0*	*94.7*	*80 - 119*	*47.45*	*0.218*	*20*	
Surr: Toluene-d8	*52.4*	*1.0*	*50*	*0*	*105*	*89 - 112*	*51.18*	*2.36*	*20*	

The following samples were analyzed in this batch: HS20030888-06 HS20030888-08

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20030888

QC BATCH REPORT

Batch ID: R359369 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-03.30.20** Units: **mg/L** Analysis Date: **31-Mar-2020 02:41**
Client ID: Run ID: **ICS-Integrion_359369** SeqNo: **5541276** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **31-Mar-2020 02:59**
Client ID: Run ID: **ICS-Integrion_359369** SeqNo: **5541277** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.657	0.100	4	0	91.4	80 - 120				

LCSD Sample ID: **LCSD** Units: **mg/L** Analysis Date: **31-Mar-2020 03:17**
Client ID: Run ID: **ICS-Integrion_359369** SeqNo: **5541278** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.652	0.100	4	0	91.3	80 - 120	3.657	0.137	20	

MS Sample ID: **HS20031096-07MS** Units: **mg/L** Analysis Date: **30-Mar-2020 22:27**
Client ID: Run ID: **ICS-Integrion_359369** SeqNo: **5541271** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	937	50.0	1000	40.65	89.6	80 - 120				

MSD Sample ID: **HS20031096-07MSD** Units: **mg/L** Analysis Date: **30-Mar-2020 22:45**
Client ID: Run ID: **ICS-Integrion_359369** SeqNo: **5541272** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	911	50.0	1000	40.65	87.0	80 - 120	937	2.82	20	

The following samples were analyzed in this batch: HS20030888-10

ALS Houston, US Date: 02-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: **HS20030888**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

ALS Houston, US Date: 02-Apr-20

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS20030888
Date/Time Received: **19-Mar-2020 08:50**
Received by: **AC**

Checklist completed by: *Paresh M. Giga* eSignature 19-Mar-2020 Date
Reviewed by: *RJ Modashia* eSignature 20-Mar-2020 Date

Matrices: **GW/Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.6c U/c	IR25
Cooler(s)/Kit(s):	43903	
Date/Time sample(s) sent to storage:	3/19/2020 17:10	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: LHAAP16 March 2020__-ALS

Page 1 of ____

TURNAROUND TIME: Normal

RUSH:

PROJECT/CLIENT INFO

Facility Name	Longhorn AAP
Project Number	501032
	LHAAP-16
Address	1203-B East Grand Avenue
	PMB 202
City	Marshall
State	TX
Postal Code	75670
Country	USA
Phone Number	713.243.7264
Project Manager	Praveen Srivastav

LABORATORY

Lab Name	ALS Laboratories
Lab Contact	RJ Modashia
Email	RJ.Modashia@alsglobal.com
Address	10450 Stanciff Rd., Suite 210
City	Houston
State	TX
Postal Code	77099
Country	USA
Phone Number	281.575.2279 or 281.530.5656

OTHER INFO

Email Invoice To	FedInvoices@aptim.com
Email Report To	Susan.Huang@aptim.com
Mail Reports To	Susan Huang
Address	4005 Port Chicago Highway, Suite 200
City	Concord
State	CA
Postal Code	94520
Country	USA
Shipping Company	

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	Sample Container and Preservatives	3-40 ml VOA/HCL	3-40 ml VOA/HCL	2-40ml Amber/H2SO4	1-250 ml PE/HNO3	1-250ml PE/Ice	1-250ml PE /Ice	1-250ml PE/Ice	1-125ml PE/Ice		
									ANALYSIS	VOCs by SW8260B	MEE by RSK175	TOC by SM5310C	Metals (arsenic, chromium, manganese, nickel, and thallium) by SW6020	Anions (sulfate/nitrate/bromide) by SW9056	Anions (bromide only) by SW9056	Alkalinity by SM2320	Perchlorate by SW6850		
16ww44-200317	LHAAP16				WG	3/17/20	0820	4		X							X		
16ww44-200317-MS	LHAAP16				WG	3/17/20	0820	4		X							X		
16ww44-200317-MSD	LHAAP16				WG	3/17/20	0820	4		X							X		
16ww37-200317	LHAAP16				WG	3/17/20	0915	4		X							X		
16ww38-200317	LHAAP16				WG	3/17/20	1000	4		X							X		
16ww14-200317	LHAAP16				WG	3/17/20	1050	4		X							X		
16RW06-200317	LHAAP16				WG	3/17/20	1140	4		X							X		
16PM03-200317	LHAAP16				WG	3/17/20	1235	4		X							X		
16PM02-200317	LHAAP16				WG	3/17/20	1325	4		X							X		
16RW07-200317	LHAAP16				WG	3/17/20	1415	4		X							X		
16RW11-200317	LHAAP16				WG	3/17/20	1500	4		X							X		
16WW51-200317	LHAAP16				WG	3/17/20	1550	7		X		X			X		X		
TRIP BLANK	LHAAP16				W	3/17/20		2		X									

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
[illegible] Basu / BHATE	3/17/20 1630	A C /ALS	3/19/2020 08:50

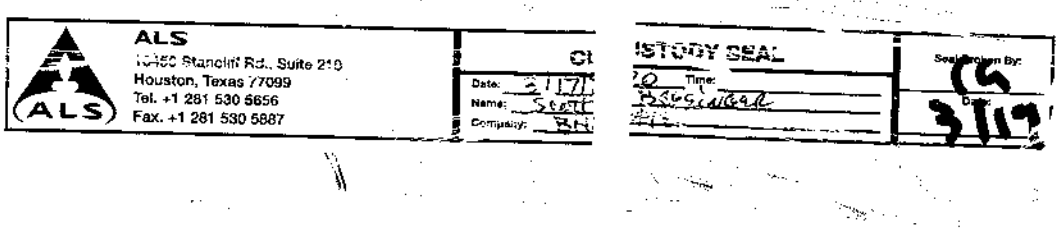
HS20030888

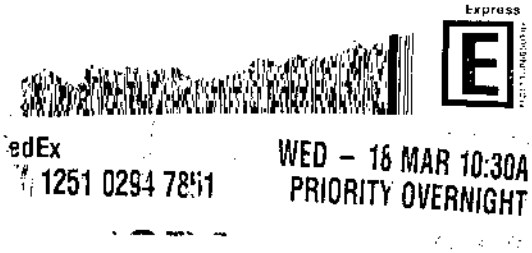
Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant - 16

J/C 1.6 IR#25 CF=1.0 43903

01088950


ALS
10450 Stanolift Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
ALS
Date:
Name:
Company:
ISTODY SEAL
Time:
Seal Broken By:
Date:


Express
edEx
1251 0294 7851
WED – 16 MAR 10:30A
PRIORITY OVERNIGHT

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
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F : +1 360 636 1068
www.alsglobal.com

March 25, 2020

Analytical Report for Service Request No: K2002471

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS20030888

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory March 20, 2020
For your reference, these analyses have been assigned our service request number **K2002471.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
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Acronyms
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Chain of Custody
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Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS20030888
Sample Matrix: Ground Water

Service Request: K2002471
Date Received: 03/20/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One ground water sample was received for analysis at ALS Environmental on 03/20/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 03/25/2020

Chain of Custody

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F: +1 281 530 5887
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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13557**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

R 200247

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20030888
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20030888-10**	**16WW51-200317**	**Groundwater**	**17 Mar 2020 15:50**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			02 Apr 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. Modashia Date/Time: 3/19/20 18:00

Received By: RJ Monroy ALS Date/Time: 3/20/20 0940

Cooler ID(s): Temperature(s):

PC KL

Cooler Receipt and Preservation Form

Client ALS-Houston Service Request *K20* 02471

Received: 3/20/20 Opened: 3/20/20 By: [illegible] Unloaded: 3/20/20 By: [illegible]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 Ea. Side
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID NA	Tracking Number NA	Filed
0.7	—	—	—	—	39800488WS	13557	1251029566639	

4. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2002471
Project:	HS20030888	**Date Collected:**	03/17/20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16WW51-200317	K2002471-001	**4.43**	0.50	0.20	0.07	1	03/22/20 12:54	
Method Blank	K2002471-MB	ND U	0.50	0.20	0.07	1	03/22/20 05:21	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002471
Project	HS20030888	**Date Collected:**	03/17/20
Sample Matrix:	Ground Water	**Date Received:**	03/20/20
		Date Analyzed:	03/22/20

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	16WW51-200317	**Units:**	mg/L
Lab Code:	K2002471-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K2002471-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	4.43	4.30	4.37	3	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002471
Project:	HS20030888	**Date Analyzed:**	03/22/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	674225

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2002471-LCS	24.6	25.0	98	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2002471
Project: HS20030888

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	674225	KQ2004008-17	03/22/20 04:51	25.0	26.5	106	90-110
CCV2	674225	KQ2004008-18	03/22/20 09:35	25.0	25.8	103	90-110
CCV3	674225	KQ2004008-19	03/22/20 14:19	25.0	25.6	102	90-110
CCV4	674225	KQ2004008-20	03/22/20 18:35	25.0	25.3	101	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2002471
Project: HS20030888

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	674225	KQ2004008-21	03/22/20 05:06	0.50	0.20	0.07	ND	U
CCB2	674225	KQ2004008-22	03/22/20 09:49	0.50	0.20	0.07	ND	U
CCB3	674225	KQ2004008-23	03/22/20 14:33	0.50	0.20	0.07	ND	U
CCB4	674225	KQ2004008-24	03/22/20 18:50	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original ( ) K2062276, 2337, 2353, 2365, 2412, 2434, 2416, 2424, 2434, 2462, 2470, 2471, 2489, 2492, 2496, 2432, 2457, 2456, 2422
IV II IV II IV I IV IV I II IV IV II I II IV I IV

Tier:

Date Analyzed: 3/21/20

Analyst: RP

Analysis: TOC/DOC

Run # TOC: 674205, 674225, 674226, TOC: 674227

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K2002416-3/3rd/2412-4/4th, 2412771d report a high %RSD. However, these samples are less than 5x the MRL

Final Approved by: _____ Date: 3/24/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674205 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002276-001	Carbon, Total Organic	N/A		Ground Water	5.85 mg/L	10 mL	58.5 mg/L	10	0.7	5.0			3/22/20 01:06:00	N	IV
K2002337-001	Carbon, Total Organic	N/A		Water	0.92 mg/L	10 mL	0.92 mg/L	1	0.07	0.50			3/21/20 20:51:00	N	II
K2002337-002	Carbon, Total Organic	N/A		Water	0.85 mg/L	10 mL	0.85 mg/L	1	0.07	0.50			3/21/20 21:48:00	N	II
K2002337-003	Carbon, Total Organic	N/A		Water	0.77 mg/L	10 mL	0.77 mg/L	1	0.07	0.50			3/21/20 22:16:00	N	II
K2002337-004	Carbon, Total Organic	N/A		Water	0.68 mg/L	10 mL	0.68 mg/L	1	0.07	0.50			3/21/20 22:44:00	N	II
K2002337-005	Carbon, Total Organic	N/A		Water	0.45 mg/L	10 mL	0.45 mg/L J	1	0.07	0.50			3/21/20 23:12:00	N	II
K2002337-006	Carbon, Total Organic	N/A		Water	1.87 mg/L	10 mL	1.87 mg/L	1	0.07	0.50			3/22/20 00:10:00	N	II
K2002337-007	Carbon, Total Organic	N/A		Water	0.63 mg/L	10 mL	0.63 mg/L	1	0.07	0.50			3/22/20 00:38:00	N	II
K2002353-001	Carbon, Total Organic	N/A		Ground Water	1.25 mg/L	10 mL	500 mg/L	400	30	200			3/22/20 02:03:00	N	IV
K2002365-001	Carbon, Total Organic	N/A		Water	6.75 mg/L	10 mL	6.75 mg/L	1	0.07	0.50			3/22/20 01:34:00	N	II
K2002412-001	Carbon, Total Organic	N/A		Ground Water	10.68 mg/L	10 mL	10.7 mg/L	1	0.07	0.50			3/22/20 02:59:00	N	IV
K2002412-002	Carbon, Total Organic	N/A		Ground Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50			3/22/20 03:27:00	N	IV
K2002412-003	Carbon, Total Organic	N/A		Ground Water	44.83 mg/L	10 mL	44.8 mg/L	1	0.07	0.50			3/22/20 03:55:00	N	IV
K2002412-004	Carbon, Total Organic	N/A		Ground Water	1.20 mg/L	10 mL	1.20 mg/L	1	0.07	0.50			3/22/20 04:23:00	N	IV
K2002412-005	Carbon, Total Organic	N/A		Ground Water	4.57 mg/L	10 mL	4.57 mg/L	1	0.07	0.50			3/22/20 05:50:00	N	IV
K2002412-006	Carbon, Total Organic	N/A		Ground Water	31.25 mg/L	10 mL	31.2 mg/L	1	0.07	0.50			3/22/20 06:18:00	N	IV
K2002412-007	Carbon, Total Organic	N/A		Ground Water	0.78 mg/L	10 mL	0.78 mg/L	1	0.07	0.50			3/22/20 06:46:00	N	IV
K2002412-008	Carbon, Total Organic	N/A		Ground Water	5.22 mg/L	10 mL	5.22 mg/L	1	0.07	0.50			3/22/20 07:14:00	N	IV
K2002434-001	Carbon, Total Organic	N/A		Water	0.24 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 07:42:00	N	I
K2002434-002	Carbon, Total Organic	N/A		Water	0.61 mg/L	10 mL	0.61 mg/L	1	0.07	0.50			3/22/20 08:10:00	N	I
KQ2003999-01	Carbon, Total Organic	CCV		Water	26.33 mg/L	10 mL	26.3 mg/L	1					3/21/20 19:52:00	N	II
KQ2003999-02	Carbon, Total Organic	CCV		Water	26.30 mg/L	10 mL	26.3 mg/L	1					3/21/20 23:40:00	N	II
KQ2003999-03	Carbon, Total Organic	CCV		Water	26.46 mg/L	10 mL	26.5 mg/L	1					3/22/20 04:51:00	N	II
KQ2003999-04	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/21/20 19:37:00	N	II
KQ2003999-05	Carbon, Total Organic	CCB		Water	0.12 mg/L	10 mL	0.12 mg/L J	1	0.07	0.50			3/21/20 23:55:00	N	II
KQ2003999-06	Carbon, Total Organic	CCB		Water	-0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:06:00	N	II
KQ2003999-07	Carbon, Total Organic	MB		Water	0.29 mg/L	10 mL	0.29 mg/L J	1	0.07	0.50			3/21/20 20:07:00	N	II
KQ2003999-08	Carbon, Total Organic	LCS		Water	24.88 mg/L	10 mL	24.9 mg/L	1	0.07	0.50	100		3/21/20 20:21:00	N	II
KQ2003999-09	Carbon, Total Organic	MS	K2002337-001	Water	29.48 mg/L	10 mL	29.5 mg/L	1	0.07	0.50	114		3/21/20 21:19:00	N	II
KQ2003999-10	Carbon, Total Organic	DUP	K2002276-001	Ground Water	5.92 mg/L	10 mL	59.2 mg/L	10	0.7	5.0		1	3/22/20 01:06:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674205 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2003999-11	Carbon, Total Organic	DUP	K2002337-001	Water	0.91 mg/L	10 mL	0.91 mg/L	1	0.07	0.50		1	3/21/20 20:51:00	N	II
KQ2003999-12	Carbon, Total Organic	DUP	K2002337-002	Water	0.79 mg/L	10 mL	0.79 mg/L	1	0.07	0.50		7	3/21/20 21:48:00	N	II
KQ2003999-13	Carbon, Total Organic	DUP	K2002337-003	Water	0.70 mg/L	10 mL	0.70 mg/L	1	0.07	0.50		10	3/21/20 22:16:00	N	II
KQ2003999-14	Carbon, Total Organic	DUP	K2002337-004	Water	0.67 mg/L	10 mL	0.67 mg/L	1	0.07	0.50		2	3/21/20 22:44:00	N	II
KQ2003999-15	Carbon, Total Organic	DUP	K2002337-005	Water	0.46 mg/L	10 mL	0.46 mg/L J	1	0.07	0.50		3	3/21/20 23:12:00	N	II
KQ2003999-16	Carbon, Total Organic	DUP	K2002337-006	Water	1.85 mg/L	10 mL	1.85 mg/L	1	0.07	0.50		1	3/22/20 00:10:00	N	II
KQ2003999-17	Carbon, Total Organic	DUP	K2002337-007	Water	0.58 mg/L	10 mL	0.58 mg/L	1	0.07	0.50		9	3/22/20 00:38:00	N	II
KQ2003999-18	Carbon, Total Organic	DUP	K2002353-001	Ground Water	1.19 mg/L	10 mL	480 mg/L	400	30	200		4	3/22/20 02:03:00	N	IV
KQ2003999-19	Carbon, Total Organic	DUP	K2002365-001	Water	6.74 mg/L	10 mL	6.74 mg/L	1	0.07	0.50		<1	3/22/20 01:34:00	N	II
KQ2003999-20	Carbon, Total Organic	DUP	K2002434-001	Water	0.19 mg/L	10 mL	0.19 mg/L J	1	0.07	0.50		NC	3/22/20 07:42:00	N	I
KQ2003999-21	Carbon, Total Organic	DUP	K2002434-002	Water	0.60 mg/L	10 mL	0.60 mg/L	1	0.07	0.50		2	3/22/20 08:10:00	N	I
KQ2003999-22	Carbon, Total Organic	DUP	K2002412-002	Ground Water	2.15 mg/L	10 mL	2.15 mg/L	1	0.07	0.50		9	3/22/20 03:27:00	N	IV
KQ2003999-23	Carbon, Total Organic	DUP	K2002412-001	Ground Water	10.27 mg/L	10 mL	10.3 mg/L	1	0.07	0.50		4	3/22/20 02:59:00	N	IV
KQ2003999-24	Carbon, Total Organic	DUP	K2002412-003	Ground Water	44.51 mg/L	10 mL	44.5 mg/L	1	0.07	0.50		<1	3/22/20 03:55:00	N	IV
KQ2003999-25	Carbon, Total Organic	DUP	K2002412-004	Ground Water	0.91 mg/L	10 mL	0.91 mg/L	1	0.07	0.50		27*	3/22/20 04:23:00	N	IV
KQ2003999-26	Carbon, Total Organic	DUP	K2002412-005	Ground Water	4.41 mg/L	10 mL	4.41 mg/L	1	0.07	0.50		4	3/22/20 05:50:00	N	IV
KQ2003999-27	Carbon, Total Organic	DUP	K2002412-006	Ground Water	30.72 mg/L	10 mL	30.7 mg/L	1	0.07	0.50		2	3/22/20 06:18:00	N	IV
KQ2003999-28	Carbon, Total Organic	DUP	K2002412-007	Ground Water	0.58 mg/L	10 mL	0.58 mg/L	1	0.07	0.50		30*	3/22/20 06:46:00	N	IV
KQ2003999-29	Carbon, Total Organic	DUP	K2002412-008	Ground Water	5.27 mg/L	10 mL	5.27 mg/L	1	0.07	0.50		<1	3/22/20 07:14:00	N	IV
KQ2003999-30	Carbon, Total Organic	CCV		Water	25.76 mg/L	10 mL	25.8 mg/L	1					3/22/20 09:35:00	N	II
KQ2003999-31	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:49:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674225 **Method/Testcode:** 415.1/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002416-001	Carbon, Total Organic	N/A		Ground Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:07:00	Y	IV
K2002416-002	Carbon, Total Organic	N/A		Ground Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 10:33:00	N	IV
K2002416-003	Carbon, Total Organic	N/A		Ground Water	0.19 mg/L	10 mL	0.19 mg/L J	1	0.07	0.50			3/22/20 11:01:00	N	IV
K2002416-004	Carbon, Total Organic	N/A		Ground Water	0.54 mg/L	10 mL	0.54 mg/L	1	0.07	0.50			3/22/20 11:29:00	N	IV
K2002421-001	Carbon, Total Organic	N/A		Water	1.53 mg/L	10 mL	1.53 mg/L	1	0.07	0.50			3/22/20 15:45:00	N	IV
K2002421-002	Carbon, Total Organic	N/A		Water	0.79 mg/L	10 mL	0.79 mg/L	1	0.07	0.50			3/22/20 16:14:00	N	IV
K2002421-003	Carbon, Total Organic	N/A		Water	1.69 mg/L	10 mL	1.69 mg/L	1	0.07	0.50			3/22/20 16:42:00	N	IV
K2002421-004	Carbon, Total Organic	N/A		Water	0.82 mg/L	10 mL	0.82 mg/L	1	0.07	0.50			3/22/20 17:10:00	N	IV
K2002434-003	Carbon, Total Organic	N/A		Water	0.11 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 08:39:00	N	I
K2002462-001	Carbon, Total Organic	N/A		Water	2.96 mg/L	10 mL	2.96 mg/L	1	0.07	0.50			3/22/20 11:58:00	N	II
K2002470-001	Carbon, Total Organic	N/A		Water	2.07 mg/L	10 mL	2.07 mg/L	1	0.07	0.50			3/22/20 12:26:00	N	IV
K2002471-001	Carbon, Total Organic	N/A		Ground Water	4.43 mg/L	10 mL	4.43 mg/L	1	0.07	0.50			3/22/20 12:54:00	N	IV
K2002489-001	Carbon, Total Organic	N/A		Water	4.72 mg/L	10 mL	4.72 mg/L	1	0.07	0.50			3/22/20 13:22:00	N	II
K2002492-002	Carbon, Total Organic	N/A		Drinking Water	0.37 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 13:50:00	N	I
K2002496-001	Carbon, Total Organic	N/A		Water	14.38 mg/L	10 mL	14.4 mg/L	1	0.07	0.50			3/22/20 15:17:00	N	II
KQ2004008-01	Carbon, Total Organic	MS	K2002416-001	Ground Water	27.78 mg/L	10 mL	27.8 mg/L	1	0.07	0.50	111		3/22/20 10:04:00	N	IV
KQ2004008-02	Carbon, Total Organic	DUP	K2002416-001	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	3/22/20 09:07:00	N	IV
KQ2004008-03	Carbon, Total Organic	DUP	K2002416-002	Ground Water	0.01 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	3/22/20 10:33:00	N	IV
KQ2004008-04	Carbon, Total Organic	DUP	K2002416-003	Ground Water	0.16 mg/L	10 mL	0.16 mg/L J	1	0.07	0.50		21*	3/22/20 11:01:00	N	IV
KQ2004008-05	Carbon, Total Organic	DUP	K2002416-004	Ground Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50		2	3/22/20 11:29:00	N	IV
KQ2004008-06	Carbon, Total Organic	DUP	K2002421-001	Water	1.47 mg/L	10 mL	1.47 mg/L	1	0.07	0.50		4	3/22/20 15:45:00	N	IV
KQ2004008-07	Carbon, Total Organic	DUP	K2002421-002	Water	0.76 mg/L	10 mL	0.76 mg/L	1	0.07	0.50		3	3/22/20 16:14:00	N	IV
KQ2004008-08	Carbon, Total Organic	DUP	K2002421-003	Water	1.71 mg/L	10 mL	1.71 mg/L	1	0.07	0.50		1	3/22/20 16:42:00	N	IV
KQ2004008-09	Carbon, Total Organic	DUP	K2002421-004	Water	0.78 mg/L	10 mL	0.78 mg/L	1	0.07	0.50		5	3/22/20 17:10:00	N	IV
KQ2004008-10	Carbon, Total Organic	DUP	K2002434-003	Water	0.18 mg/L	10 mL	0.18 mg/L J	1	0.07	0.50		NC	3/22/20 08:39:00	N	I
KQ2004008-11	Carbon, Total Organic	DUP	K2002462-001	Water	2.96 mg/L	10 mL	2.96 mg/L	1	0.07	0.50		<1	3/22/20 11:58:00	N	II
KQ2004008-12	Carbon, Total Organic	DUP	K2002470-001	Water	1.98 mg/L	10 mL	1.98 mg/L	1	0.07	0.50		4	3/22/20 12:26:00	N	IV
KQ2004008-13	Carbon, Total Organic	DUP	K2002471-001	Ground Water	4.30 mg/L	10 mL	4.30 mg/L	1	0.07	0.50		3	3/22/20 12:54:00	N	IV
KQ2004008-14	Carbon, Total Organic	DUP	K2002489-001	Water	4.65 mg/L	10 mL	4.65 mg/L	1	0.07	0.50		2	3/22/20 13:22:00	N	II
KQ2004008-15	Carbon, Total Organic	DUP	K2002492-002	Drinking Water	0.40 mg/L	10 mL	0.40 mg/L J	1	0.07	0.50		NC	3/22/20 13:50:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674225 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2004008-16	Carbon, Total Organic	DUP	K2002496-001	Water	13.50 mg/L	10 mL	13.5 mg/L	1	0.07	0.50		6	3/22/20 15:17:00	N	II
KQ2004008-17	Carbon, Total Organic	CCV		Water	26.46 mg/L	10 mL	26.5 mg/L	1					3/22/20 04:51:00	N	I
KQ2004008-17	Carbon, Total Organic	CCV		Water	26.46 mg/L	10 mL	26.5 mg/L	1					3/22/20 04:51:00	N	I
KQ2004008-18	Carbon, Total Organic	CCV		Water	25.76 mg/L	10 mL	25.8 mg/L	1					3/22/20 09:35:00	N	I
KQ2004008-18	Carbon, Total Organic	CCV		Water	25.76 mg/L	10 mL	25.8 mg/L	1					3/22/20 09:35:00	N	I
KQ2004008-19	Carbon, Total Organic	CCV		Water	25.62 mg/L	10 mL	25.6 mg/L	1					3/22/20 14:19:00	N	I
KQ2004008-19	Carbon, Total Organic	CCV		Water	25.62 mg/L	10 mL	25.6 mg/L	1					3/22/20 14:19:00	N	I
KQ2004008-20	Carbon, Total Organic	CCV		Water	25.34 mg/L	10 mL	25.3 mg/L	1					3/22/20 18:35:00	N	I
KQ2004008-20	Carbon, Total Organic	CCV		Water	25.34 mg/L	10 mL	25.3 mg/L	1					3/22/20 18:35:00	N	I
KQ2004008-21	Carbon, Total Organic	CCB		Water	-0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:06:00	N	I
KQ2004008-21	Carbon, Total Organic	CCB		Water	-0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:06:00	N	I
KQ2004008-22	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:49:00	N	I
KQ2004008-22	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:49:00	N	I
KQ2004008-23	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 14:33:00	N	I
KQ2004008-23	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 14:33:00	N	I
KQ2004008-24	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 18:50:00	N	I
KQ2004008-24	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 18:50:00	N	I
KQ2004008-25	Carbon, Total Organic	MB		Water	0.06 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:21:00	N	I
KQ2004008-25	Carbon, Total Organic	MB		Water	0.06 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 05:21:00	N	I
KQ2004008-26	Carbon, Total Organic	LCS		Water	24.62 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		3/22/20 05:35:00	N	I
KQ2004008-26	Carbon, Total Organic	LCS		Water	24.62 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		3/22/20 05:35:00	N	I
KQ2004008-27	Carbon, Total Organic	N/A		Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 09:07:00	N	IV
KQ2004008-28	Carbon, Total Organic	MS	KQ2004008-27	Water	27.78 mg/L	10 mL	27.8 mg/L	1	0.07	0.50	111		3/22/20 10:04:00	N	IV
KQ2004008-29	Carbon, Total Organic	DUP	KQ2004008-27	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	3/22/20 09:07:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674226 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002432-001	Carbon, Total Organic	N/A		Water	0.03 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 17:38:00	N	IV
K2002437-001	Carbon, Total Organic	N/A		Water	1.83 mg/L	10 mL	1.83 mg/L	1	0.07	0.50			3/22/20 19:04:00	N	I
K2002437-002	Carbon, Total Organic	N/A		Water	0.72 mg/L	10 mL	0.72 mg/L	1	0.07	0.50			3/22/20 19:33:00	N	I
K2002437-003	Carbon, Total Organic	N/A		Water	3.10 mg/L	10 mL	3.10 mg/L	1	0.07	0.50			3/22/20 20:00:00	N	I
K2002437-004	Carbon, Total Organic	N/A		Water	0.71 mg/L	10 mL	0.71 mg/L	1	0.07	0.50			3/22/20 20:29:00	N	I
K2002437-005	Carbon, Total Organic	N/A		Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50			3/22/20 20:57:00	N	I
K2002456-001	Carbon, Total Organic	N/A		Water	1.07 mg/L	10 mL	1.07 mg/L	1	0.07	0.50			3/22/20 21:25:00	N	IV
K2002456-002	Carbon, Total Organic	N/A		Water	0.72 mg/L	10 mL	0.72 mg/L	1	0.07	0.50			3/22/20 21:53:00	N	IV
K2002456-003	Carbon, Total Organic	N/A		Water	1.35 mg/L	10 mL	1.35 mg/L	1	0.07	0.50			3/22/20 22:21:00	N	IV
K2002456-004	Carbon, Total Organic	N/A		Water	1.35 mg/L	10 mL	1.35 mg/L	1	0.07	0.50			3/22/20 22:49:00	N	IV
KQ2004009-01	Carbon, Total Organic	CCV		Water	25.62 mg/L	10 mL	25.6 mg/L	1					3/22/20 14:19:00	N	IV
KQ2004009-02	Carbon, Total Organic	CCV		Water	25.34 mg/L	10 mL	25.3 mg/L	1					3/22/20 18:35:00	N	IV
KQ2004009-03	Carbon, Total Organic	CCV		Water	25.05 mg/L	10 mL	25.1 mg/L	1					3/23/20 00:13:00	N	IV
KQ2004009-04	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 14:33:00	N	IV
KQ2004009-05	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 18:50:00	N	IV
KQ2004009-06	Carbon, Total Organic	CCB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:27:00	N	IV
KQ2004009-07	Carbon, Total Organic	MB		Water	-0.08 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/22/20 14:48:00	N	IV
KQ2004009-08	Carbon, Total Organic	LCS		Water	24.66 mg/L	10 mL	24.7 mg/L	1	0.07	0.50	99		3/22/20 15:03:00	N	IV
KQ2004009-09	Carbon, Total Organic	MS	K2002432-001	Water	26.30 mg/L	10 mL	26.3 mg/L	1	0.07	0.50	105		3/22/20 18:06:00	N	IV
KQ2004009-10	Carbon, Total Organic	DUP	K2002432-001	Water	0.06 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	3/22/20 17:38:00	N	IV
KQ2004009-11	Carbon, Total Organic	DUP	K2002437-001	Water	1.78 mg/L	10 mL	1.78 mg/L	1	0.07	0.50		3	3/22/20 19:04:00	N	I
KQ2004009-12	Carbon, Total Organic	DUP	K2002437-002	Water	0.71 mg/L	10 mL	0.71 mg/L	1	0.07	0.50		2	3/22/20 19:33:00	N	I
KQ2004009-13	Carbon, Total Organic	DUP	K2002437-003	Water	3.13 mg/L	10 mL	3.13 mg/L	1	0.07	0.50		<1	3/22/20 20:00:00	N	I
KQ2004009-14	Carbon, Total Organic	DUP	K2002437-004	Water	0.64 mg/L	10 mL	0.64 mg/L	1	0.07	0.50		10	3/22/20 20:29:00	N	I
KQ2004009-15	Carbon, Total Organic	DUP	K2002437-005	Water	0.56 mg/L	10 mL	0.56 mg/L	1	0.07	0.50		4	3/22/20 20:57:00	N	I
KQ2004009-16	Carbon, Total Organic	DUP	K2002456-001	Water	1.04 mg/L	10 mL	1.04 mg/L	1	0.07	0.50		2	3/22/20 21:25:00	N	IV
KQ2004009-17	Carbon, Total Organic	DUP	K2002456-002	Water	0.66 mg/L	10 mL	0.66 mg/L	1	0.07	0.50		9	3/22/20 21:53:00	N	IV
KQ2004009-18	Carbon, Total Organic	DUP	K2002456-003	Water	1.35 mg/L	10 mL	1.35 mg/L	1	0.07	0.50		<1	3/22/20 22:21:00	N	IV
KQ2004009-19	Carbon, Total Organic	DUP	K2002456-004	Water	1.30 mg/L	10 mL	1.30 mg/L	1	0.07	0.50		4	3/22/20 22:49:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 674227 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002422-001	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	9.45 mg/L	10 mL	9.45 mg/L	1	0.07	0.50			3/23/20 02:23:00	N	III
K2002462-002	Carbon, Dissolved Organic	N/A		Water	4.12 mg/L	10 mL	4.12 mg/L	1	0.07	0.50			3/23/20 01:11:00	N	II
KQ2004010-01	Carbon, Dissolved Organic	CCV		Water	25.13 mg/L	10 mL	25.1 mg/L	1					3/23/20 00:13:00	N	II
KQ2004010-01	Carbon, Dissolved Organic (DOC)	CCV		Water	25.13 mg/L	10 mL	25.1 mg/L	1					3/23/20 00:13:00	N	II
KQ2004010-02	Carbon, Dissolved Organic	CCV		Water	25.06 mg/L	10 mL	25.1 mg/L	1					3/23/20 03:20:00	N	II
KQ2004010-02	Carbon, Dissolved Organic (DOC)	CCV		Water	25.06 mg/L	10 mL	25.1 mg/L	1					3/23/20 03:20:00	N	II
KQ2004010-03	Carbon, Dissolved Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:27:00	N	II
KQ2004010-03	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:27:00	N	II
KQ2004010-04	Carbon, Dissolved Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 03:35:00	N	II
KQ2004010-04	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 03:35:00	N	II
KQ2004010-05	Carbon, Dissolved Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:42:00	N	II
KQ2004010-05	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/23/20 00:42:00	N	II
KQ2004010-06	Carbon, Dissolved Organic	LCS		Water	24.20 mg/L	10 mL	24.2 mg/L	1	0.07	0.50	97		3/23/20 00:57:00	N	II
KQ2004010-06	Carbon, Dissolved Organic (DOC)	LCS		Water	24.20 mg/L	10 mL	24.2 mg/L	1	0.07	0.50	97		3/23/20 00:57:00	N	II
KQ2004010-07	Carbon, Dissolved Organic	MS	K2002462-002	Water	32.05 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	112		3/23/20 01:40:00	N	II
KQ2004010-08	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	4.12 mg/L	10 mL	4.12 mg/L	1	0.07	0.50			3/23/20 01:11:00	N	III
KQ2004010-09	Carbon, Dissolved Organic (DOC)	MS	KQ2004010-08	Surface Water	32.05 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	112		3/23/20 01:40:00	N	III
KQ2004010-10	Carbon, Dissolved Organic (DOC)	DUP	K2002422-001	Surface Water	9.61 mg/L	10 mL	9.61 mg/L	1	0.07	0.50		2	3/23/20 02:23:00	N	III
KQ2004010-11	Carbon, Dissolved Organic	DUP	K2002462-002	Water	4.07 mg/L	10 mL	4.07 mg/L	1	0.07	0.50		1	3/23/20 01:11:00	N	II
KQ2004010-12	Carbon, Dissolved Organic (DOC)	DUP	KQ2004010-08	Surface Water	4.07 mg/L	10 mL	4.07 mg/L	1	0.07	0.50		1	3/23/20 01:11:00	N	III

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

0.043	0.043			OBSERVATIONS	12	0.0432
0.366				STD Deviation	0.11429	ABOVE
0.200				AVERAGE	0.06658	ABOVE
0.055	0.055	0.055	######	UCL	0.18087	0.0545
0.136	0.136			LCL	-0.04772	0.1357
0.000						0
0.000						0
0.000				OBSERVATIONS	3	0
0.000				STD Deviation	0.02578	0
0.000				AVERAGE	0.07780	0
0.000				UCL	0.10358	0
0.000				LCL	0.05202	0
						0
						0
				OBSERVATIONS	1	0
				STD Deviation	#DIV/0!	0
				AVERAGE	0.05450	0
				UCL	#DIV/0!	0
				LCL	#DIV/0!	0
						0
						0
				OBSERVATIONS	0	0
				STD Deviation	#DIV/0!	0
				AVERAGE	#DIV/0!	0
						0
						0
						0
						0
						0

BLP 3/24/20

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccb	1	0.043	0.0778	-0.0346	-0.0346	<0.5	3/21/2020
3	ccv	1	26.406	0.0778	26.3280	26.328	26.3	3/21/2020
4	mb	1	0.366	0.0778	0.2878	0.2878	<0.5	3/21/2020
5	lcs	1	24.954	0.0778	24.8758	24.8758	24.9	3/21/2020
6	K2002337-001	1	0.994	0.0778	0.9162	0.9162	0.92	3/21/2020
7	K2002337-001	1	0.983	0.0778	0.9055	0.9055	0.9	3/21/2020
8	KQ2003999-09	1	29.561	0.0778	29.4834	29.4834	29	3/21/2020
9	K2002337-002	1	0.927	0.0778	0.8490	0.849	0.85	3/21/2020
10	K2002337-002	1	0.868	0.0778	0.7902	0.7902	0.79	3/21/2020
11	K2002337-003	1	0.851	0.0778	0.7733	0.7733	0.8	3/21/2020
12	K2002337-003	1	0.778	0.0778	0.6997	0.6997	0.70	3/21/2020
13	K2002337-004	1	0.759	0.0778	0.6814	0.6814	0.68	3/21/2020
14	K2002337-004	1	0.748	0.0778	0.6704	0.6704	0.67	3/21/2020
15	K2002337-005	1	0.530	0.0778	0.4518	0.4518	<0.5	3/21/2020
16	K2002337-005	1	0.543	0.0778	0.4649	0.4649	<0.5	3/21/2020
17	ccv	1	26.379	0.0778	26.3014	26.3014	26.30	3/21/2020
18	ccb	1	0.200	0.0778	0.1221	0.1221	<0.5	3/21/2020
19	K2002337-006	1	1.952	0.0778	1.8738	1.8738	1.9	3/22/2020
20	K2002337-006	1	1.929	0.0778	1.8513	1.8513	1.85	3/22/2020
21	K2002337-007	1	0.710	0.0778	0.6317	0.6317	0.63	3/22/2020
22	K2002337-007	1	0.658	0.0778	0.5798	0.5798	0.6	3/22/2020
23	K2002276-001	10	5.931	0.0778	5.8531	58.531	58.5	3/22/2020
24	K2002276-001	10	5.997	0.0778	5.9193	59.193	59.19	3/22/2020
25	K2002365-001	1	6.825	0.0778	6.7471	6.7471	6.75	3/22/2020

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

	date	time
Analyzed By: KD	Date Analyzed 3/21/20	
Reviewed By:	Date Reviewed	

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K2002365-001	1	6.814	0.0778	6.7366	6.7366	6.74	3/22/2020
27	K2002353-001	400	1.325	0.0778	1.2473	498.92	498.92	3/22/2020
28	K2002353-001	400	1.272	0.0778	1.1941	477.64	477.6	3/22/2020
29	K2002412-001	1	10.758	0.0778	10.6798	10.6798	10.7	3/22/2020
30	K2002412-001	1	10.352	0.0778	10.2738	10.2738	10.3	3/22/2020
31	K2002412-002	1	2.431	0.0778	2.3535	2.3535	2.4	3/22/2020
32	K2002412-002	1	2.226	0.0778	2.1484	2.1484	2.1	3/22/2020
33	K2002412-003	1	44.908	0.0778	44.8304	44.8304	44.8	3/22/2020
34	K2002412-003	1	44.589	0.0778	44.5114	44.5114	44.5	3/22/2020
35	K2002412-004	1	1.276	0.0778	1.1981	1.1981	1.2	3/22/2020
36	K2002412-004	1	0.987	0.0778	0.9096	0.9096	0.9	3/22/2020
37	ccv	1	26.538	0.0778	26.4599	26.4599	26.5	3/22/2020
38	ccb	1	0.055	0.0778	-0.0233	-0.0233	<0.5	3/22/2020
39	K2002412-005	1	4.650	0.0778	4.5720	4.572	4.6	3/22/2020
40	K2002412-005	1	4.487	0.0778	4.4096	4.4096	4.4	3/22/2020
41	K2002412-006	1	31.326	0.0778	31.2482	31.2482	31.2	3/22/2020
42	K2002412-006	1	30.802	0.0778	30.7243	30.7243	30.7	3/22/2020
43	K2002412-007	1	0.861	0.0778	0.7828	0.7828	0.8	3/22/2020
44	K2002412-007	1	0.659	0.0778	0.5810	0.581	0.6	3/22/2020
45	K2002412-008	1	5.297	0.0778	5.2192	5.2192	5.2	3/22/2020
46	K2002412-008	1	5.349	0.0778	5.2707	5.2707	5.3	3/22/2020
47	K2002434-001	1	0.318	0.0778	0.2402	0.2402	<0.5	3/22/2020
48	K2002434-001	1	0.271	0.0778	0.1933	0.1933	<0.5	3/22/2020
49	K2002434-002	1	0.689	0.0778	0.6116	0.6116	0.6	3/22/2020
50	K2002434-002	1	0.674	0.0778	0.5965	0.5965	0.6	3/22/2020

Analyzed By: BCD	Date Analyzed 3/24/20
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccv	1	25.843	0.0778	25.7647	25.7647	25.76	3/22/2020
52	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: BKP	Date Analyzed 3/24/20
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	26.538	0.0778	26.4599	26.4599	26.5	3/22/2020
3	ccb	1	0.055	0.0778	-0.0233	-0.0233	<0.5	3/22/2020
4	mb	1	0.136	0.0778	0.0579	0.0579	<0.5	3/22/2020
5	lcs	1	24.698	0.0778	24.6205	24.6205	24.6	3/22/2020
6	K2002434-003	1	0.192	0.0778	0.1139	0.1139	<0.5	3/22/2020
7	K2002434-003	1	0.258	0.0778	0.1797	0.1797	<0.5	3/22/2020
8	K2002416-001	1	0.099	0.0778	0.0207	0.0207	<0.5	3/22/2020
9	K2002416-001	1	0.083	0.0778	0.0048	0.0048	<0.5	3/22/2020
10	ccv	1	25.843	0.0778	25.7647	25.7647	25.76	3/22/2020
11	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
12	KQ2004008-01	1	27.862	0.0778	27.7842	27.7842	27.78	3/22/2020
13	K2002416-002	1	0.099	0.0778	0.0210	0.021	<0.5	3/22/2020
14	K2002416-002	1	0.085	0.0778	0.0067	0.0067	<0.5	3/22/2020
15	K2002416-003	1	0.271	0.0778	0.1932	0.1932	<0.5	3/22/2020
16	K2002416-003	1	0.235	0.0778	0.1572	0.1572	<0.5	3/22/2020
17	K2002416-004	1	1.615	0.0778	1.5370	1.537	1.54	3/22/2020
18	K2002416-004	1	1.605	0.0778	1.5267	1.5267	1.5	3/22/2020
19	K2002462-001	1	3.041	0.0778	2.9627	2.9627	3.0	3/22/2020
20	K2002462-001	1	3.038	0.0778	2.9600	2.96	2.96	3/22/2020
21	K2002470-001	1	2.148	0.0778	2.0704	2.0704	2.07	3/22/2020
22	K2002470-001	1	2.061	0.0778	1.9828	1.9828	2.0	3/22/2020
23	K2002471-001	1	4.509	0.0778	4.4308	4.4308	4.4	3/22/2020
24	K2002471-001	1	4.381	0.0778	4.3030	4.303	4.30	3/22/2020
25	K2002489-001	1	4.801	0.0778	4.7227	4.7227	4.72	3/22/2020

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

date time

Analyzed By: [signature]	Date Analyzed 3/22/20
Reviewed By:	Date Reviewed

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K2002489-001	1	4.724	0.0778	4.6460	4.646	4.65	3/22/2020
27	K2002492-002	1	0.452	0.0778	0.3746	0.3746	<0.5	3/22/2020
28	K2002492-002	1	0.479	0.0778	0.4014	0.4014	<0.5	3/22/2020
29	ccv	1	25.695	0.0778	25.6168	25.6168	25.6	3/22/2020
30	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
31	K2002496-001	1	14.459	0.0778	14.3812	14.3812	14.4	3/22/2020
32	K2002496-001	1	13.578	0.0778	13.5000	13.5	13.5	3/22/2020
33	K2002421-001	1	1.605	0.0778	1.5272	1.5272	1.5	3/22/2020
34	K2002421-001	1	1.548	0.0778	1.4705	1.4705	1.5	3/22/2020
35	K2002421-002	1	0.866	0.0778	0.7878	0.7878	0.8	3/22/2020
36	K2002421-002	1	0.842	0.0778	0.7645	0.7645	0.8	3/22/2020
37	K2002421-003	1	1.766	0.0778	1.6881	1.6881	1.7	3/22/2020
38	K2002421-003	1	1.790	0.0778	1.7125	1.7125	1.7	3/22/2020
39	K2002421-004	1	0.896	0.0778	0.8180	0.818	0.8	3/22/2020
40	K2002421-004	1	0.859	0.0778	0.7812	0.7812	0.8	3/22/2020
41	ccv	1	25.418	0.0778	25.3398	25.3398	25.3	3/22/2020
42	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: KP	Date Analyzed 3/22/20
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.695	0.0778	25.6168	25.6168	25.6	3/22/2020
3	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
4	mb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
5	lcs	1	24.742	0.0778	24.6645	24.6645	24.7	3/22/2020
6	K2002432-001	1	0.108	0.0778	0.0305	0.0305	<0.5	3/22/2020
7	K2002432-001	1	0.143	0.0778	0.0649	0.0649	<0.5	3/22/2020
8	KQ2004009-09	1	26.380	0.0778	26.3020	26.302	26	3/22/2020
9	ccv	1	25.418	0.0778	25.3398	25.3398	25.34	3/22/2020
10	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/22/2020
11	K2002437-001	1	1.911	0.0778	1.8331	1.8331	1.8	3/22/2020
12	K2002437-001	1	1.853	0.0778	1.7754	1.7754	1.78	3/22/2020
13	K2002437-002	1	0.802	0.0778	0.7246	0.7246	0.72	3/22/2020
14	K2002437-002	1	0.788	0.0778	0.7099	0.7099	0.71	3/22/2020
15	K2002437-003	1	3.181	0.0778	3.1028	3.1028	3.1	3/22/2020
16	K2002437-003	1	3.208	0.0778	3.1306	3.1306	3.1	3/22/2020
17	K2002437-004	1	0.783	0.0778	0.7056	0.7056	0.71	3/22/2020
18	K2002437-004	1	0.715	0.0778	0.6372	0.6372	0.6	3/22/2020
19	K2002437-005	1	0.665	0.0778	0.5874	0.5874	0.6	3/22/2020
20	K2002437-005	1	0.641	0.0778	0.5633	0.5633	0.56	3/22/2020
21	K2002456-001	1	1.145	0.0778	1.0675	1.0675	1.07	3/22/2020
22	K2002456-001	1	1.122	0.0778	1.0438	1.0438	1.0	3/22/2020
23	K2002456-002	1	0.794	0.0778	0.7165	0.7165	0.7	3/22/2020
24	K2002456-002	1	0.735	0.0778	0.6568	0.6568	0.66	3/22/2020
25	K2002456-003	1	1.431	0.0778	1.3528	1.3528	1.35	3/22/2020

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

date time

Analyzed By: BDP	Date Analyzed 3/12/20
Reviewed By:	Date Reviewed

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K2002456-003	1	1.431	0.0778	1.3528	1.3528	1.35	3/22/2020
27	K2002456-004	1	1.433	0.0778	1.3548	1.3548	1.35	3/22/2020
28	K2002456-004	1	1.375	0.0778	1.2971	1.2971	1.3	3/22/2020
29	ccv	1	25.130	0.0778	25.0525	25.0525	25.1	3/23/2020
30	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/23/2020
31		1		0.0000	0.0000	0	<0.5	
32		1		0.0000	0.0000	0	<0.5	
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: BCP	Date Analyzed 3/21/20
Reviewed By:	Date Reviewed

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.130	0.0778	25.0525	25.0525	25.1	3/23/2020
3	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/23/2020
4	mb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/23/2020
5	lcs	1	24.199	0.0778	24.1209	24.1209	24.1	3/23/2020
6	K2002462-002	1	4.117	0.0778	4.0393	4.0393	4.04	3/23/2020
7	K2002462-002	1	4.067	0.0778	3.9892	3.9892	4.0	3/23/2020
8	KQ2004010-07	1	32.047	0.0778	31.9695	31.9695	32	3/23/2020
9	K2002422-001	1	9.445	0.0778	9.3675	9.3675	9.37	3/23/2020
10	K2002422-001	1	9.612	0.0778	9.5338	9.5338	9.53	3/23/2020
11	ccv	1	25.060	0.0778	24.9820	24.982	25.0	3/23/2020
12	ccb	1	0.000	0.0778	-0.0778	-0.0778	<0.5	3/23/2020
13		1		0.0000	0.0000	0	<0.5	
14		1		0.0000	0.0000	0	<0.5	
15		1		0.0000	0.0000	0	<0.5	
16		1		0.0000	0.0000	0	<0.5	
17		1		0.0000	0.0000	0	<0.5	
18		1		0.0000	0.0000	0	<0.5	
19		1		0.0000	0.0000	0	<0.5	
20		1		0.0000	0.0000	0	<0.5	
21		1		0.0000	0.0000	0	<0.5	
22		1		0.0000	0.0000	0	<0.5	
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

date time

Analyzed By: BCP	Date Analyzed 3/21/20
Reviewed By:	Date Reviewed

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

TOC: 674205, 674225, 674226
DOC: 674227

Schedule: 03212020

Version: 4
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/03/21 21:07 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
74	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2002337-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2002337-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K2002337-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2002337-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2002337-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2002337-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2002337-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2002337-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2002276-001.01 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2002365-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2002353-001.01 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2002412-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2002412-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2002412-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K2002412-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K2002412-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K2002412-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2002412-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2002412-008.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2002434-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2002434-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2002434-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2002416-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2002416-001.02 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
30	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
31	Sample	K2002416-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K2002416-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2002416-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K2002462-001.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K2002470-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K2002471-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K2002489-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K2002492-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 03212020

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K2002496-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K2002421-001.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K2002421-002.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K2002421-003.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K2002421-004.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K2002432-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K2002432-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
47	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K2002437-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K2002437-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K2002437-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K2002437-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K2002437-005.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K2002456-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K2002456-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K2002456-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K2002456-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K2002462-002.04 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K2002462-002.04 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
61	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
62	Sample	FB 3/19/20 1619	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
63	Sample	K2002422-001.04 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
64	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 03212020
Saturday, March 21, 2020 04:44 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/03/24 09:26 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	03212020	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/03/21 16:44

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.01	16.15	4.14	49.81	08:01
2	TC Clean	18.09	21.86	3.77	49.56	07:17
3	TC Clean	6.93	10.79	3.86	49.61	07:02
4	TC Clean	5.02	8.90	3.88	49.63	07:01

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	74	TOC	RB	0.4528 ppm	0.0533 ppm	11.7700%	2020/03/21 17:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4804	4.8037	10.62	14.37	3.75	49.71	10:29
2	TOC	0.4973	4.9732	10.74	14.56	3.82	49.67	10:29
3	TOC	0.4567	4.5672	10.46	14.14	3.68	49.67	10:27
4	TOC	0.3769	3.7687	9.93	13.76	3.83	49.65	10:29

Dilution **Blank Contribution** **Method** **Calibration**

1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/03/21 18:14

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	9.17	13.91	4.74	49.79	07:59
2	TC Clean	6.79	10.62	3.83	49.55	07:20
3	TC Clean	4.32	8.23	3.91	49.61	07:00
4	TC Clean	3.54	7.40	3.86	49.60	07:01

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/03/21 18:48

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.92	4.73	3.81	49.82	07:59
2	TC Clean	8.57	12.40	3.83	49.62	07:17
3	TC Clean	4.30	8.10	3.80	49.63	07:00
4	TC Clean	3.55	7.36	3.81	49.65	07:03

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.2621 ppm	0.0000 ppm	0.0000%	2020/03/21 19:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2621	2.6207	9.15	12.95	3.80	49.69	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0432 ppm (PASS)	0.0000 ppm	0%	2020/03/21 19:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0432	0.4318	8.11	11.92	3.82	49.72	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.4058 ppm (PASS)	0.0000 ppm	0%	2020/03/21 19:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.4058	264.0582	185.40	189.22	3.82	49.75	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Sample

From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.3656 ppm	0.0000 ppm	0.0000%	2020/03/21 20:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3656	3.6557	9.85	13.62	3.77	49.76	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS

From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.9536 ppm (PASS)	0.0000 ppm	0%	2020/03/21 20:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.9536	249.5362	175.63	179.68	4.05	49.79	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	2.0813 ppm	0.0000 ppm	0.0000%	2020/03/21 20:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0813	20.8126	21.39	25.32	3.93	49.83	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K2002337-001.01	0.9886 ppm	0.0076 ppm	0.7700%	2020/03/21 20:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9940	9.9397	14.08	17.85	3.78	49.85	10:28
2	TOC	0.9833	9.8327	14.00	17.80	3.80	49.88	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K2002337-001.01 ms	29.5612 ppm	0.0000 ppm	0.0000%	2020/03/21 21:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.5612	295.6123	206.19	209.98	3.79	49.90	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	RB	0.2728 ppm	0.0000 ppm	0.0000%	2020/03/21 21:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2728	2.7278	9.23	12.95	3.72	49.94	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K2002337-002.01	0.8974 ppm	0.0415 ppm	4.6300%	2020/03/21 21:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9268	9.2676	13.62	17.26	3.63	49.95	10:26
2	TOC	0.8680	8.6802	13.23	17.12	3.89	49.98	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K2002337-003.01	0.8143 ppm	0.0520 ppm	6.3900%	2020/03/21 22:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8511	8.5107	13.12	16.70	3.59	49.97	10:27
2	TOC	0.7775	7.7747	12.62	16.55	3.93	50.00	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2002337-004.01	0.7537 ppm	0.0078 ppm	1.0300%	2020/03/21 22:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7592	7.5918	12.50	16.55	4.05	50.01	10:30
2	TOC	0.7482	7.4817	12.42	16.32	3.90	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K2002337-005.01	0.5361 ppm	0.0093 ppm	1.7300%	2020/03/21 23:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5296	5.2958	10.95	14.68	3.72	49.98	10:30
2	TOC	0.5427	5.4267	11.04	14.79	3.75	49.99	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.3792 ppm	0.0000 ppm	0%	2020/03/21 23:40

						(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.3792	263.7921	185.22	188.92	3.71	50.01	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.1999 ppm (PASS)	0.0000 ppm	0%	2020/03/21 23:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.1999	1.9991	9.16	12.96	3.80	50.00	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K2002337-006.01	1.9404 ppm	0.0159 ppm	0.8200%	2020/03/22 00:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9516	19.5160	20.52	24.28	3.76	50.01	10:33
2	TOC	1.9291	19.2914	20.37	24.25	3.89	49.98	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K2002337-007.01	0.6836 ppm	0.0367 ppm	5.3700%	2020/03/22 00:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7095	7.0951	12.16	15.91	3.75	49.97	10:25
2	TOC	0.6576	6.5762	11.81	15.68	3.87	49.95	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
◆	12	TOC	K2002276-001.01 10x	5.9640 ppm	0.0468 ppm	0.7800%	2020/03/22 01:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.9309	59.3095	47.28	51.18	3.91	49.95	10:27
2	TOC	5.9971	59.9712	47.72	51.51	3.79	49.96	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	K2002365-001.01	6.8196 ppm	0.0075 ppm	0.1100%	2020/03/22 01:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.8249	68.2493	53.29	57.25	3.96	49.94	10:26
2	TOC	6.8144	68.1437	53.22	57.13	3.91	49.94	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	K2002353-001.01 400x	1.2985 ppm	0.0376 ppm	2.9000%	2020/03/22 02:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3251	13.2513	16.30	20.20	3.90	49.93	10:28
2	TOC	1.2719	12.7189	15.94	19.92	3.97	49.90	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	RB	0.0981 ppm	0.0036 ppm	3.6500%	2020/03/22 02:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1006	1.0059	8.07	11.84	3.77	49.88	10:26
2	TOC	0.0955	0.9553	8.03	12.08	4.05	49.88	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K2002412-001.01	10.5546 ppm	0.2870 ppm	2.7200%	2020/03/22 02:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.7576	107.5758	79.74	83.68	3.95	49.85	10:29
2	TOC	10.3516	103.5163	77.01	80.95	3.94	49.85	10:26

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K2002412-002.01	2.3288 ppm	0.1450 ppm	6.2300%	2020/03/22 03:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4313	24.3130	23.74	27.73	3.98	49.85	10:28
2	TOC	2.2262	22.2625	22.36	26.60	4.24	49.85	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K2002412-003.01	44.7487 ppm	0.2255 ppm	0.5000%	2020/03/22 03:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	44.9082	449.0821	309.40	313.24	3.84	49.85	10:30
2	TOC	44.5892	445.8925	307.25	311.28	4.03	49.85	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K2002412-004.01	1.1317 ppm	0.2040 ppm	18.0300%	2020/03/22 04:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2759	12.7591	15.97	20.08	4.10	49.87	10:27
2	TOC	0.9874	9.8743	14.03	18.07	4.04	49.92	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.5377 ppm (PASS)	0.0000 ppm	0%	2020/03/22 04:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.5377	265.3772	186.28	190.22	3.94	49.88	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria	Do Nothing	CAS_salt_010711	CAS_salt_010711	50 ppmC

met.	(v4)	(v32)

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0545 ppm (PASS)	0.0000 ppm	0%	2020/03/22 05:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0545	0.5449	8.18	12.24	4.06	49.92	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.1357 ppm	0.0000 ppm	0.0000%	2020/03/22 05:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1357	1.3568	8.30	12.27	3.97	49.92	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.6983 ppm (PASS)	0.0000 ppm	0%	2020/03/22 05:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.6983	246.9831	173.91	177.85	3.94	49.91	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

21	TOC	K2002412-005.01	4.5686 ppm	0.1148 ppm	2.5100%	2020/03/22 05:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6498	46.4975	38.66	42.58	3.92	49.92	10:28
2	TOC	4.4874	44.8737	37.57	41.59	4.02	49.93	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
22	TOC	K2002412-006.01	31.0641 ppm	0.3704 ppm	1.1900%	2020/03/22 06:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.3260	313.2600	218.06	222.06	4.00	49.92	10:27
2	TOC	30.8021	308.0213	214.54	218.63	4.09	49.93	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
23	TOC	K2002412-007.01	0.7597 ppm	0.1427 ppm	18.7800%	2020/03/22 06:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8606	8.6059	13.18	17.31	4.14	49.93	10:28
2	TOC	0.6588	6.5880	11.82	15.93	4.11	49.94	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
24	TOC	K2002412-008.01	5.3228 ppm	0.0364 ppm	0.6800%	2020/03/22 07:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2970	52.9704	43.01	47.07	4.06	49.93	10:27
2	TOC	5.3485	53.4849	43.36	47.40	4.04	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
25	TOC	K2002434-001.01	0.2946 ppm	0.0331 ppm	11.2400%	2020/03/22 07:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3180	3.1799	9.53	13.49	3.96	49.96	10:27
2	TOC	0.2711	2.7115	9.22	13.14	3.93	49.95	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K2002434-002.01	0.6819 ppm	0.0107 ppm	1.5700%	2020/03/22 08:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6894	6.8944	12.03	15.93	3.91	49.95	10:31
2	TOC	0.6743	6.7427	11.93	15.87	3.94	49.94	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K2002434-003.01	0.2246 ppm	0.0465 ppm	20.6900%	2020/03/22 08:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1917	1.9174	8.68	12.65	3.97	49.94	10:25
2	TOC	0.2575	2.5746	9.12	13.14	4.02	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K2002416-001.02	0.0905 ppm	0.0113 ppm	12.4200%	2020/03/22 09:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0985	0.9850	8.05	11.97	3.92	49.94	10:26
2	TOC	0.0826	0.8259	7.95	11.91	3.97	49.95	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.8425 ppm (PASS)	0.0000 ppm	0%	2020/03/22 09:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.8425	258.4255	181.61	185.65	4.04	49.95	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria	Do Nothing	CAS_salt_010711	CAS_salt_010711	50 ppmC

met.	(v4)	(v32)

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/22 09:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.06	10.95	3.89	49.94	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2002416-001.02 ms	27.8620 ppm	0.0000 ppm	0.0000%	2020/03/22 10:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.8620	278.6204	194.76	198.67	3.91	49.95	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/22 10:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.09	11.09	4.00	49.95	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	31	TOC	K2002416-002.02	0.0917 ppm	0.0101 ppm	11.0100%	2020/03/22 10:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0988	0.9880	8.06	12.13	4.08	49.96	10:26
2	TOC	0.0845	0.8453	7.96	12.11	4.15	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2002416-003.02	0.2530 ppm	0.0254 ppm	10.0600%	2020/03/22 11:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2710	2.7100	9.21	13.27	4.06	49.93	10:29
2	TOC	0.2350	2.3501	8.97	12.92	3.95	49.92	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2002416-004.02	1.6097 ppm	0.0073 ppm	0.4500%	2020/03/22 11:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6148	16.1479	18.25	22.09	3.84	49.94	10:26
2	TOC	1.6045	16.0453	18.18	22.08	3.90	49.92	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K2002462-001.06	3.0392 ppm	0.0019 ppm	0.0600%	2020/03/22 11:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0405	30.4052	27.84	31.73	3.89	49.91	10:31
2	TOC	3.0378	30.3785	27.82	31.60	3.78	49.91	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K2002470-001.01	2.1044 ppm	0.0619 ppm	2.9400%	2020/03/22 12:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1482	21.4818	21.84	25.60	3.76	49.92	10:27
2	TOC	2.0606	20.6059	21.25	25.19	3.94	49.92	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K2002471-001.01	4.4447 ppm	0.0904 ppm	2.0300%	2020/03/22 12:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.5086	45.0863	37.71	41.74	4.03	49.90	10:29

2	TOC	4.3808	43.8075	36.85	40.81	3.96	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	K2002489-001.01	4.7622 ppm	0.0543 ppm	1.1400%	2020/03/22 13:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.8005	48.0053	39.67	43.66	3.99	49.91	10:29
2	TOC	4.7238	47.2380	39.16	43.00	3.84	49.91	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K2002492-002.01	0.4658 ppm	0.0189 ppm	4.0600%	2020/03/22 13:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4524	4.5241	10.43	14.40	3.97	49.90	10:27
2	TOC	0.4792	4.7918	10.61	14.28	3.66	49.89	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.6946 ppm (PASS)	0.0000 ppm	0%	2020/03/22 14:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.6946	256.9459	180.61	184.49	3.88	49.89	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/22 14:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.32	10.16	3.85	49.87	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/22 14:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.92	9.75	3.83	49.87	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.7423 ppm (PASS)	0.0000 ppm	0%	2020/03/22 15:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7423	247.4232	174.21	178.06	3.85	49.87	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K2002496-001.01	14.0184 ppm	0.6231 ppm	4.4400%	2020/03/22 15:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.4590	144.5901	104.63	108.44	3.81	49.85	10:28
2	TOC	13.5778	135.7782	98.70	102.54	3.83	49.84	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K2002421-001.12	1.5767 ppm	0.0401 ppm	2.5400%	2020/03/22 15:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6050	16.0498	18.18	22.01	3.83	49.82	10:28
2	TOC	1.5483	15.4833	17.80	21.76	3.95	49.80	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K2002421-002.12	0.8540 ppm	0.0165 ppm	1.9300%	2020/03/22 16:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8656	8.6565	13.21	17.17	3.96	49.80	10:29
2	TOC	0.8423	8.4230	13.06	16.87	3.81	49.81	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K2002421-003.12	1.7781 ppm	0.0172 ppm	0.9700%	2020/03/22 16:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7659	17.6587	19.27	23.22	3.95	49.79	10:29
2	TOC	1.7903	17.9026	19.43	23.24	3.81	49.77	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K2002421-004.12	0.8774 ppm	0.0261 ppm	2.9700%	2020/03/22 17:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8958	8.9583	13.42	17.18	3.76	49.77	10:27
2	TOC	0.8590	8.5895	13.17	16.92	3.75	49.78	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K2002432-001.01	0.1255 ppm	0.0243 ppm	19.3500%	2020/03/22 17:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1083	1.0832	8.12	11.94	3.82	49.80	10:28

2	TOC	0.1427	1.4267	8.35	12.16	3.81	49.84	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	K2002432-001.01 ms	26.3798 ppm	0.0000 ppm	0.0000%	2020/03/22 18:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.3798	263.7980	184.80	188.75	3.96	49.85	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/22 18:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.97	9.86	3.88	49.86	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4176 ppm (PASS)	0.0000 ppm	0%	2020/03/22 18:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4176	254.1757	178.75	182.64	3.89	49.88	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/22 18:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

D	TOC	0 ppm	1	0.0000	0.0000	6.08	9.82	3.74	49.92	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K2002437-001.03	1.8820 ppm	0.0408 ppm	2.1700%	2020/03/22 19:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9109	19.1085	20.24	24.02	3.78	49.93	10:29
2	TOC	1.8532	18.5316	19.85	23.57	3.71	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K2002437-002.03	0.7951 ppm	0.0104 ppm	1.3100%	2020/03/22 19:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8024	8.0245	12.79	16.50	3.71	50.00	10:24
2	TOC	0.7877	7.8773	12.69	16.46	3.77	49.99	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K2002437-003.03	3.1945 ppm	0.0197 ppm	0.6200%	2020/03/22 20:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1806	31.8060	28.78	32.47	3.69	50.00	10:30
2	TOC	3.2084	32.0841	28.97	32.65	3.68	50.00	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K2002437-004.03	0.7492 ppm	0.0484 ppm	6.4600%	2020/03/22 20:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7834	7.8341	12.66	16.42	3.76	50.00	10:32
2	TOC	0.7150	7.1501	12.20	15.91	3.71	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC)	CAS_salt_010711	CAS_salt_010711

(v1364) (v4) (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	52	TOC	K2002437-005.03	0.6532 ppm	0.0170 ppm	2.6100%	2020/03/22 20:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6652	6.6520	11.86	15.62	3.76	50.00	10:25
2	TOC	0.6411	6.4111	11.70	15.67	3.96	50.03	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	53	TOC	K2002456-001.01	1.1335 ppm	0.0168 ppm	1.4800%	2020/03/22 21:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1453	11.4535	15.09	18.93	3.84	50.00	10:25
2	TOC	1.1216	11.2156	14.93	18.88	3.94	50.02	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	54	TOC	K2002456-002.01	0.7645 ppm	0.0422 ppm	5.5200%	2020/03/22 21:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7943	7.9427	12.73	16.72	3.99	50.05	10:29
2	TOC	0.7346	7.3464	12.33	16.17	3.83	50.01	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	55	TOC	K2002456-003.01	1.4306 ppm	0.0000 ppm	0.0000%	2020/03/22 22:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4306	14.3056	17.01	21.07	4.05	50.03	10:28
2	TOC	1.4306	14.3056	17.01	20.90	3.89	50.04	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	56	TOC	K2002456-004.01	1.4038 ppm	0.0408 ppm	2.9100%	2020/03/22 22:49

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	1.4326	14.3264	17.03	21.09	4.07	50.03	10:26
2	TOC	1.3749	13.7494	16.64	20.59	3.96	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/22 23:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.12	9.08	3.96	50.08	10:29
2	TOC	0.0000	0.0000	5.08	8.91	3.83	50.03	10:26
3	TOC	0.0000	0.0000	4.92	8.74	3.82	50.02	10:27
4	TOC	0.0000	0.0000	4.82	8.59	3.76	50.04	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1303 ppm (PASS)	0.0000 ppm	0%	2020/03/23 00:13

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1303	251.3028	176.82	180.56	3.74	50.04	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/23 00:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.42	9.22	3.80	50.03	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/23 00:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.04	8.76	3.72	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.1987 ppm (PASS)	0.0000 ppm	0%	2020/03/23 00:57

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.1987	241.9868	170.55	174.42	3.87	50.01	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K2002462-002.04 doc	4.0921 ppm	0.0354 ppm	0.8700%	2020/03/23 01:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1171	41.1711	35.08	38.88	3.80	50.00	10:29
2	TOC	4.0670	40.6700	34.74	38.61	3.87	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	K2002462-002.04 ms doc	32.0473 ppm	0.0000 ppm	0.0000%	2020/03/23 01:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.0473	320.4734	222.91	226.80	3.89	50.01	10:31

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/23 01:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.10	10.11	4.00	50.00	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	FB 3/19/20 1619	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/23 02:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.24	9.23	4.00	49.99	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K2002422-001.04 doc	9.5284 ppm	0.1176 ppm	1.2300%	2020/03/23 02:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.4453	94.4531	70.91	74.94	4.03	50.01	10:29
2	TOC	9.6116	96.1156	72.03	75.73	3.70	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/23 02:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.59	9.48	3.89	49.99	10:29
2	TOC	0.0000	0.0000	5.25	9.15	3.90	49.99	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.3916 (IC) (v1364)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25	0 / infinity	25.0598	0.0000	0%	2020/03/23 03:20

					ppm [25 ppm]	(NA / NA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0598	250.5980	176.34	180.27	3.92	49.97	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/23 03:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.46	9.42	3.96	50.00	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1364	1.7787	1.3950	0.0000	0.0000	0.0000	2020/03/19 15:10	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v32	Calibration curve formula:	TOC: y = 6.725x + 7.818
Ver Creation:	2020/03/11 15:55	r^2 value:	TOC: r^2 = 0.99921
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	5.8640	0.0000		2020/03/11 14:28
0.500 ppm	9.5210	0.5000		2020/03/11 14:42
1.0 ppm	12.5930	1.0000		2020/03/11 14:56
5.0 ppm	40.5270	5.0000		2020/03/11 15:10
10 ppm	79.5310	10.0000		2020/03/11 15:25
25 ppm	181.4610	25.0000		2020/03/11 15:39
50 ppm	340.5610	50.0000		2020/03/11 15:53

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)

Ver Creation: 2019/02/21 17:57

Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/03/23 03:50

ALS Environmental

StarLIMS Run: 674205, 674225, 674226, 674227

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/11/2020

ICAL ID: 19-GEN-8-7-E->J

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-9-H

21 % H3PO4: 19-GEN-08-8-K

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

21 BKD 3/24/20

Analyzed By: BKP	Date Analyzed: 3/24/20
Reviewed By:	Date Reviewed: 3/24/20

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 2008062; 2008310

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2362 (259687)

General Set Information: There were twenty field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: NA

Method QC data: The method blank (LMB 701041) was less than 1/2 the CRDL. The recovery for the LCS (701038) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on samples 2008310002/03 (Client ID: 16WW44-200317). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. Field sample 2008062001 had a positive result for perchlorate. However, because the 83/85 ion ratio failed, the result was not reported. The Reporting Limit Verification Standard (RLVS – 701039) is reported from the analysis of the Laboratory Control Sample (LCS – 701038) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafiles 26MARD07.

Thomas Bosch — Analyst
March 29, 2020 — Date

ANALYTICAL REPORT

Report Date: March 31, 2020

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-2008310**
Project ID: HS20030888
Purchase Order: HS20030888
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
16WW44-200317	2008310001	03/17/20	03/20/20	
16WW37-200317	2008310004	03/17/20	03/20/20	
16WW38-200317	2008310005	03/17/20	03/20/20	
16WW14-200317	2008310006	03/17/20	03/20/20	
16RW06-200317	2008310007	03/17/20	03/20/20	
16PM03-200317	2008310008	03/17/20	03/20/20	
16PM02-200317	2008310009	03/17/20	03/20/20	
16RW07-200317	2008310010	03/17/20	03/20/20	
16RW11-200317	2008310011	03/17/20	03/20/20	
16WW51-200317	2008310012	03/17/20	03/20/20	

Client QC ID *	Lab ID	Collect Date	Receive Date	Sampling Site
16WW44-200317MS	2008310002	03/17/20	03/20/20	
16WW44-200317MSD	2008310003	03/17/20	03/20/20	

***Client QC is reported as part of the Quality Control results report, if requested.**

ANALYTICAL REPORT

Workorder: 34-2008310
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16WW44-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310001 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 11:08 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW37-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310004 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 12:04 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW38-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310005 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 12:18 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW14-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310006 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 12:32 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-2008310
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16RW06-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310007 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 12:46 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16PM03-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310008 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 13:00 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**400**	10	20	40	10	

Sample ID: **16PM02-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310009 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 13:14 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16RW07-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310010 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 13:28 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**4.9**	1.0	2.0	4.0	1	

ANALYTICAL REPORT

Workorder: 34-2008310
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16RW11-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310011 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 13:42 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW51-200317** | Sampling Site: NA | Collected: 03/17/2020
Lab ID: 2008310012 | Media: 125 mL Nalgene | Received: 03/20/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2362 (HBN: 259687) | **%Solids:** NA
Analyzed: 03/26/2020 13:56 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 03/27/2020 11:27	/S/ Stephen Brose 03/31/2020 15:31

Laboratory Contact Information

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ANALYTICAL REPORT

Workorder: 34-2008310
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
The following was provided by the client: Sample ID, Collection Date, Sampling Location, Media Type, Sampling Parameter.
Collection Date, Media Type, and Sampling Parameter can potentially affect the validity of the results.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 2008310

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2362 (HBN: 259687)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 701041
Analyzed: 03/26/2020 09:02
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 701038
Analyzed: 03/26/2020 08:34
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.07	3.00	102	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 2008310001	**MS:** 2008310002	**MSD:** 2008310003
Analyzed: 03/26/2020 11:08	**Analyzed:** 03/26/2020 11:22	**Analyzed:** 03/26/2020 11:50
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	3.03	3	101	78.8	123.8	3	100	0.991	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
03/29/2020 11:11	03/31/2020 15:31

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- ◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
- ● - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable





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Subcontract Chain of Custody

18698 / #2

SAMPLING STATE: **Dept of Defense** **COC ID: 13558**

2008310

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
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Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20030888
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20030888-01**	**16WW44-200317** μshw50	**Groundwater**	**17 Mar 2020 08:20**
	SUB_Perch-6850			02 Apr 2020
2.	**HS20030888-02**	**16WW37-200317**	**Groundwater**	**17 Mar 2020 09:15**
	SUB_Perch-6850			02 Apr 2020
3.	**HS20030888-03**	**16WW38-200317**	**Groundwater**	**17 Mar 2020 10:00**
	SUB_Perch-6850			02 Apr 2020
4.	**HS20030888-04**	**16WW14-200317**	**Groundwater**	**17 Mar 2020 10:50**
	SUB_Perch-6850			02 Apr 2020
5.	**HS20030888-05**	**16RW06-200317**	**Groundwater**	**17 Mar 2020 11:40**
	SUB_Perch-6850			02 Apr 2020
6.	**HS20030888-06**	**16PM03-200317**	**Groundwater**	**17 Mar 2020 12:35**
	SUB_Perch-6850			02 Apr 2020
7.	**HS20030888-07**	**16PM02-200317**	**Groundwater**	**17 Mar 2020 13:25**
	SUB_Perch-6850			02 Apr 2020
8.	**HS20030888-08**	**16RW07-200317**	**Groundwater**	**17 Mar 2020 14:15**
	SUB_Perch-6850			02 Apr 2020
9.	**HS20030888-09**	**16RW11-200317**	**Groundwater**	**17 Mar 2020 15:00**

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 13558**

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
		SUB_Perch-6850		02 Apr 2020
10.	**HS20030888-10**	**16WW51-200317**	**Groundwater**	**17 Mar 2020 15:50**
		SUB_Perch-6850		02 Apr 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
HS20030888-01 = MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 3/19/2020 1800.

Received By: Kimi Van Jessel Date/Time: 03-19-20 2:56

Cooler ID(s): _____ Temperature(s): _____

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS20030888	***Split:***	**Workorder ID:** 2008310	**Level:** ENV_LVL4
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly
Comments:			**Preservatives**

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850, DoD QSM
								COOL
1	03/17/2020 08:20	16WW44-200317	2008310001		Water	A	1	A
2	03/17/2020 08:20	16WW44-200317MS	2008310002	MS	Water	A	1	A
3	03/17/2020 08:20	16WW44-200317MSD	2008310003	MSD	Water	A	1	A
4	03/17/2020 09:15	16WW37-200317	2008310004		Water	A	1	A
5	03/17/2020 10:00	16WW38-200317	2008310005		Water	A	1	A
6	03/17/2020 10:50	16WW14-200317	2008310006		Water	A	1	A
7	03/17/2020 11:40	16RW06-200317	2008310007		Water	A	1	A
8	03/17/2020 12:35	16PM03-200317	2008310008		Water	A	1	A
9	03/17/2020 13:25	16PM02-200317	2008310009		Water	A	1	A
10	03/17/2020 14:15	16RW07-200317	2008310010		Water	A	1	A

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	03/20/2020 08:56	ALS Sample Receiving	Sample Login
[signature]	3/20/20 1600	ISC	storage
R.33.1	03.25.20/10:45	T. Bosch	cool analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS20030888	***Split:***	**Workorder ID:** 2008310	**Level:** ENV_LVL4
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly
Comments:			**Preservatives**

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850, DoD QSM
								COOL
11	03/17/2020 15:00	16RW11-200317	2008310011		Water	A	1	A
12	03/17/2020 15:50	16WW51-200317	2008310012		Water	A	1	A

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	03/20/2020 08:56	ALS Sample Receiving	Sample Login
[signature] 3/20/20 1600		15C	storage
R-33.1 03/25/20 10:45		T. Bush	cl04 analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: HS00030888 200631B

Date/Time of Receipt: 03-20-20 8:56

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A,B, Gamma Spec	Yes/No/NA

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	good	1 °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: Jennifer Jarrell (Signature) T Naitassell (Printed Name) 03-20-20 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____



Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 159469-434 RIT2 EXP 12/20 #

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

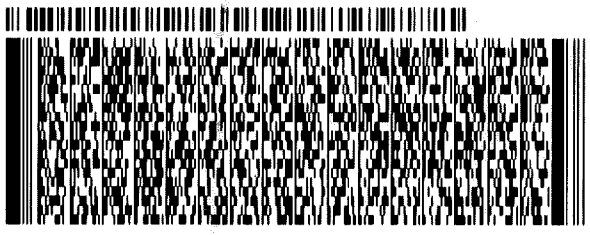
SHIP DATE: 19MAR20
ACTWGT: 18.05 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

5S1C2/64E0/104C

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS20030888 - RJ



FedEx
Express

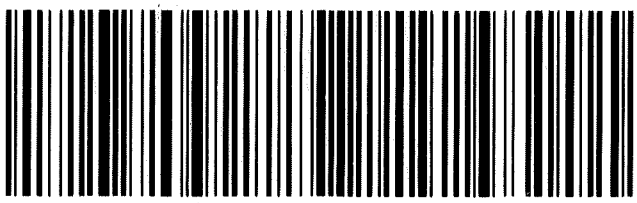
J151119060501en

TRK# 0201 **1251 0295 6628**

FRI - 20 MAR 3:00P
STANDARD OVERNIGHT

AX BTFA

84123
UT-US **SLC**



Batch Worklist

Batch: ELMS/ 2362 Created: 3/26/2020 08:10 Instrument: HBN: 259687

Rule: EPA 6850, DoD QSM Water Analyst: T. Bosch Status: WP

Workorder: 2008062 [ENV_LVL4]

Workorder: 2008310 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	701037	CCV for HBN 259687 [ELMS/2362]				CCV	3		E685041C3Q	5311		4/1/2020	
2	701038	LCS for HBN 259687 [ELMS/2362]				LCS	3		E6850Q413Q	5311		4/1/2020	
3	701039	RLVS for HBN 259687 [ELMS/2362				RLVS	3		E685041C3Q	5311		4/1/2020	
4	701040	ICS for HBN 259687 [ELMS/2362]				ICS	3		E6850..D3Q	5311		4/1/2020	
5	701041	LMB for HBN 259687 [ELMS/2362]				LMB	3		E6850Q413Q	5311		4/1/2020	
6	2008062001	16WW56-200316				SAMPLE	3	2008062001-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
7	2008062002	16WW22-200316				SAMPLE	3	2008062002-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
8	2008062003	16WW41-200316				SAMPLE	3	2008062003-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
9	2008062004	16WW21-200316				SAMPLE	3	2008062004-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
10	2008062005	16WW39-200316				SAMPLE	3	2008062005-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
11	2008062006	16WW25-200316				SAMPLE	3	2008062006-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
12	2008062007	16WW21-200316-FD				FLDDUP	3	2008062007-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
13	2008062008	16WW49-200316				SAMPLE	3	2008062008-A	E6850Q41.3	5480	4/13/2020	4/1/2020	
14	2008310001	16WW44-200317				SAMPLE	3	2008310001-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
15	2008310002	16WW44-200317MS				MS	3	2008310002-A	E6850Q413Q	5480		4/1/2020	
16	701042	CCV for HBN 259687 [ELMS/2362]				CCV	3		E685041C3Q	5311		4/1/2020	
17	2008310003	16WW44-200317MSD				MSD	3	2008310003-A	E6850Q413Q	5480		4/1/2020	
18	2008310004	16WW37-200317				SAMPLE	3	2008310004-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
19	2008310005	16WW38-200317				SAMPLE	3	2008310005-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
20	2008310006	16WW14-200317				SAMPLE	3	2008310006-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
21	2008310007	16RW06-200317				SAMPLE	3	2008310007-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
22	2008310008	16PM03-200317				SAMPLE	3	2008310008-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
23	2008310009	16PM02-200317				SAMPLE	3	2008310009-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
24	2008310010	16RW07-200317				SAMPLE	3	2008310010-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
25	2008310011	16RW11-200317				SAMPLE	3	2008310011-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
26	2008310012	16WW51-200317				SAMPLE	3	2008310012-A	E6850Q41.3	5480	4/14/2020	4/2/2020	
27	701043	CCV for HBN 259687 [ELMS/2362]				CCV	3		E685041C3Q	5311		4/1/2020	
28	701102	CCV for HBN 259687 [ELMS/2362]				CCV	3		E685041C3Q	5311		4/1/2020	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 2008062 (001-08); 2008310 (001-12)
ELMS Batch/HBN ID: 2362 (259687)
Prep Date: 03/24,25/2020 Analysis Date: 03/26/2020 Analyst: Tom Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2020\MAR\26MAR0D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Tom Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 10 Injection Volume: 40µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 701038; Target = 3.0µg/L. ASTM type II water was used for LMB 701041.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on samples 2008310002/03 (Client ID: 16WW44-200317). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters. Field sample 2008062001 had a positive result for perchlorate. However, because the 83/85 ion ratio failed, the result was not reported.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2020\MAR\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2020\DOD\259687-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 701039) is reported from the analysis of the Laboratory Control Sample (LCS – 701038) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafile 26MARD07.

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2362 HBN: 259687 **Sample Set IDs if Applicable:** 2008062 / 2008310	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		**Description - Perchlorate ISTD Stock**
Standard: **47863**	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		**Description - 6850 Stock AccStd 1,000ug/mL**
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	Description - 6850 Intermdt AccStd 10.ug/mL

Standard: 49947
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/23/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		**Description - 6850 QC Stock STD 1,000ug/mL**
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT		**Description - 6850 QC Intrmdt Std-QC 10ug/mL**
Standard: **47515**	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

250 SMITH STREET • NORTH KINGSTOWN, RHODE ISLAND 02852 • WWW.ULTRASCI.COM

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013 **Lot Issue Date:** 29-Feb 2016
Lot Number: CP-0860 **Expiration Date:** 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

Cambridge Isotope Laboratories, Inc. Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: ** For isotopically labeled compounds, MW listed is for the fully enriched product.*	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\26MAR20D\26MAR20S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	701037 CCV@25	Vial 71	1	Control	1	1.31519e6	7.596	24.50269
*	701038 LCS@3.	Vial 72	1	Control	2	1.66008e5	7.469	3.07012
*	701040 ICS@3.0	Vial 73	1	Control	3	9.99850e4	7.425	2.96673
*	701041 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2008062001	Vial 75	1	Sample	5	1.09960e5	6.921	2.23127
*	2008062002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2008062003	Vial 77	1	Sample	7	1.17976e7	6.021	147.31769 Dil
*	2008062004	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	2008062005	Vial 79	1	Sample	9	3.68639e6	7.063	61.54884
*	2008062006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	2008062007	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	2008062008	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	2008310001	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	2008310002 MS	Vial 84	1	Sample	14	1.61579e5	7.624	3.03065
*	701042 CCV@25	Vial 71	1	Control	15	1.25770e6	7.542	25.04210
*	2008310003 MSD	Vial 85	1	Sample	16	1.56764e5	7.529	3.00067
*	2008310004	Vial 86	1	Sample	17	0.00000	0.000	0.00000
*	2008310005	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*	2008310006	Vial 88	1	Sample	19	0.00000	0.000	0.00000
*	2008310007	Vial 89	1	Sample	20	0.00000	0.000	0.00000
*	2008310008 10X	Vial 90	1	Sample	21	2.26474e6	7.461	396.52335
*	2008310009	Vial 91	1	Sample	22	0.00000	0.000	0.00000
*	2008310010	Vial 92	1	Sample	23	2.13687e5	7.243	4.87047
*	2008310011	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	2008310012	Vial 94	1	Sample	25	0.00000	0.000	0.00000
*	701043 CCV@25	Vial 71	1	Control	26	1.23305e6	7.642	25.29232
*	2008062003 10X	Vial 95	1	Sample	27	1.66187e6	7.172	308.79978
*	701102 CCV@25	Vial 71	1	Control	28	1.21579e6	7.568	25.02152

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	701037 CCV@25	Vial 71	1	Control	1	1.83781e5	7.637	5.00000
*	701038 LCS@3.	Vial 72	1	Control	2	1.99015e5	7.478	5.00000
*	701040 ICS@3.0	Vial 73	1	Control	3	1.23987e5	7.431	5.00000
*	701041 LMB	Vial 74	1	Control	4	1.77630e5	7.646	5.00000
*	2008062001	Vial 75	1	Sample	5	1.80290e5	6.911	5.00000
*	2008062002	Vial 76	1	Sample	6	2.21066e5	7.204	5.00000
*	2008062003	Vial 77	1	Sample	7	1.80433e5	5.955	5.00000
*	2008062004	Vial 78	1	Sample	8	2.38862e5	7.519	5.00000
*	2008062005	Vial 79	1	Sample	9	1.77448e5	7.086	5.00000
*	2008062006	Vial 80	1	Sample	10	1.94128e5	8.130	5.00000
*	2008062007	Vial 81	1	Sample	11	1.72495e5	7.483	5.00000
*	2008062008	Vial 82	1	Sample	12	2.20984e5	7.241	5.00000
*	2008310001	Vial 83	1	Sample	13	2.23497e5	7.586	5.00000
*	2008310002 MS	Vial 84	1	Sample	14	1.96195e5	7.631	5.00000
*	701042 CCV@25	Vial 71	1	Control	15	1.71580e5	7.576	5.00000
*	2008310003 MSD	Vial 85	1	Sample	16	1.92226e5	7.553	5.00000
*	2008310004	Vial 86	1	Sample	17	1.66041e5	7.125	5.00000
*	2008310005	Vial 87	1	Sample	18	1.63139e5	7.338	5.00000
*	2008310006	Vial 88	1	Sample	19	1.67930e5	7.299	5.00000
*	2008310007	Vial 89	1	Sample	20	1.37320e5	7.249	5.00000
*	2008310008 10X	Vial 90	1	Sample	21	1.83925e5	7.486	50.00000
*	2008310009	Vial 91	1	Sample	22	2.26093e5	7.401	5.00000
*	2008310010	Vial 92	1	Sample	23	1.61722e5	7.250	5.00000
*	2008310011	Vial 93	1	Sample	24	1.41774e5	7.091	5.00000
*	2008310012	Vial 94	1	Sample	25	1.86602e5	7.252	5.00000

Batch Report: C:\HPCHEM\1\DATA\26MAR20D\26MAR20S.B

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	701043 CCV@25	Vial 71	1	Control	26	1.66381e5	7.665	5.00000
*	2008062003 10X	Vial 95	1	Sample	27	1.79512e5	7.187	50.00000
*	701102 CCV@25	Vial 71	1	Control	28	1.66012e5	7.575	5.00000

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	701037 CCV@25	Vial 71	1	Control	1	4.23244e5	7.613	25.73518
*	701038 LCS@3.	Vial 72	1	Control	2	5.75315e4	7.501	3.40153
*	701040 ICS@3.0	Vial 73	1	Control	3	3.96560e4	7.435	3.77484
*	701041 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2008062001	Vial 75	1	Sample	5	1.31311e4	6.920	7.42428e-1
*	2008062002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2008062003	Vial 77	1	Sample	7	3.62321e6	6.035	150.65418
*	2008062004	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	2008062005	Vial 79	1	Sample	9	1.09785e6	7.077	60.87616
*	2008062006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	2008062007	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	2008062008	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	2008310001	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	2008310002 MS	Vial 84	1	Sample	14	5.55387e4	7.622	3.32853
*	701042 CCV@25	Vial 71	1	Control	15	4.03497e5	7.547	26.23064
*	2008310003 MSD	Vial 85	1	Sample	16	5.07657e4	7.527	3.09739
*	2008310004	Vial 86	1	Sample	17	0.00000	0.000	0.00000
*	2008310005	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*	2008310006	Vial 88	1	Sample	19	0.00000	0.000	0.00000
*	2008310007	Vial 89	1	Sample	20	0.00000	0.000	0.00000
*	2008310008 10X	Vial 90	1	Sample	21	7.08209e5	7.477	407.04413
*	2008310009	Vial 91	1	Sample	22	0.00000	0.000	0.00000
*	2008310010	Vial 92	1	Sample	23	6.45639e4	7.251	4.73281
*	2008310011	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	2008310012	Vial 94	1	Sample	25	0.00000	0.000	0.00000
*	701043 CCV@25	Vial 71	1	Control	26	3.91623e5	7.660	26.25206
*	2008062003 10X	Vial 95	1	Sample	27	4.89002e5	7.190	299.63811
*	701102 CCV@25	Vial 71	1	Control	28	3.97063e5	7.579	26.63751

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2020\MAR\26MAR20D.S

Sequence Table:

Method and Injection Info Part:

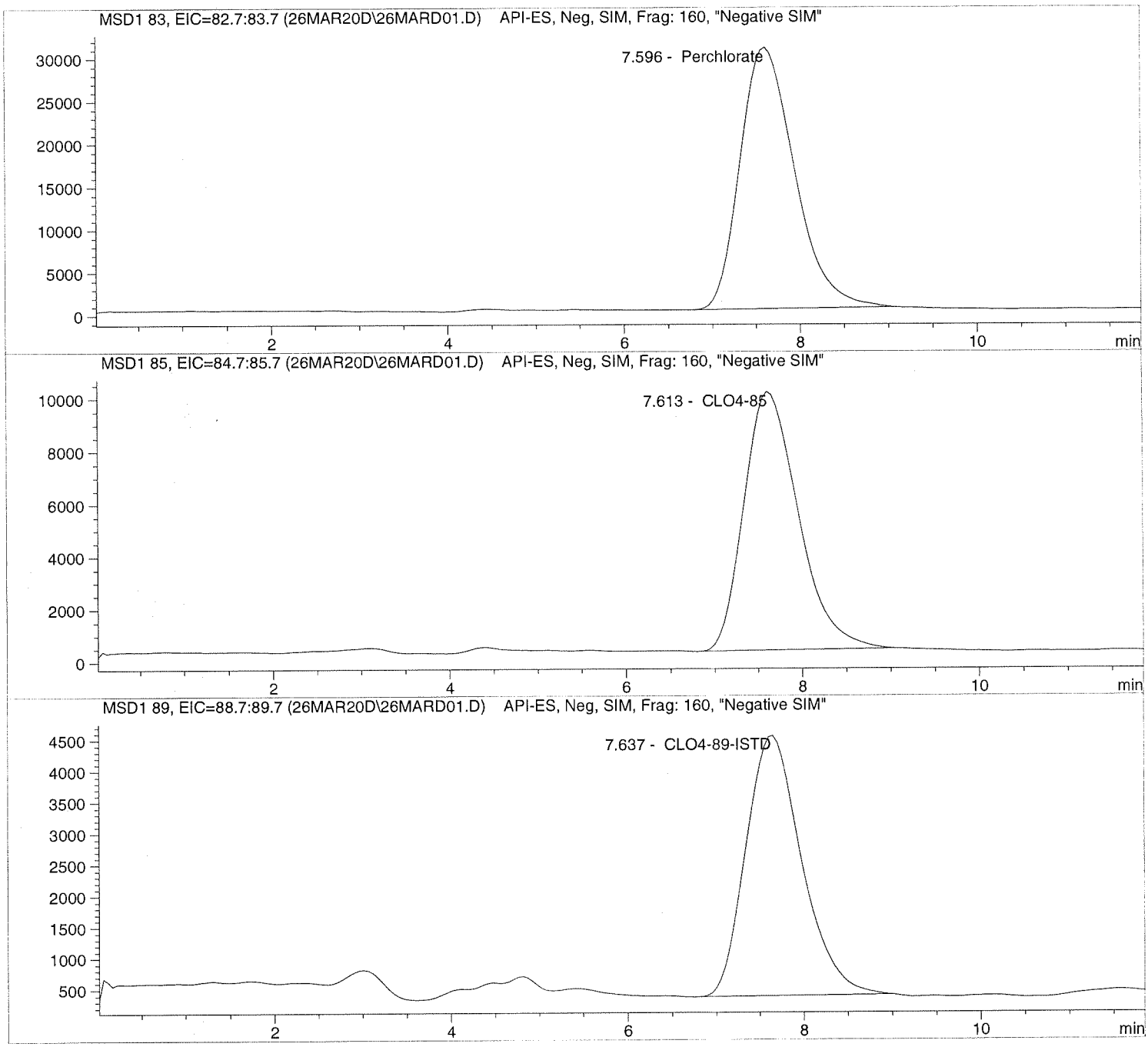
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	701037 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	701038 LCS@3.	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	701040 ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	701041 LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	2008062001	CLO4-AQN	1	Sample		
6	Vial 76	2008062002	CLO4-AQN	1	Sample		
7	Vial 77	2008062003	CLO4-AQN	1	Sample		
8	Vial 78	2008062004	CLO4-AQN	1	Sample		
9	Vial 79	2008062005	CLO4-AQN	1	Sample		
10	Vial 80	2008062006	CLO4-AQN	1	Sample		
11	Vial 81	2008062007	CLO4-AQN	1	Sample		
12	Vial 82	2008062008	CLO4-AQN	1	Sample		
13	Vial 83	2008310001	CLO4-AQN	1	Sample		
14	Vial 84	2008310002 MS	CLO4-AQN	1	Sample		
15	Vial 71	701042 CCV@25	CLO4-AQN	1	Ctrl Samp		
16	Vial 85	2008310003 MSD	CLO4-AQN	1	Sample		
17	Vial 86	2008310004	CLO4-AQN	1	Sample		
18	Vial 87	2008310005	CLO4-AQN	1	Sample		
19	Vial 88	2008310006	CLO4-AQN	1	Sample		
20	Vial 89	2008310007	CLO4-AQN	1	Sample		
21	Vial 90	2008310008 10X	CLO4-AQN	1	Sample		
22	Vial 91	2008310009	CLO4-AQN	1	Sample		
23	Vial 92	2008310010	CLO4-AQN	1	Sample		
24	Vial 93	2008310011	CLO4-AQN	1	Sample		
25	Vial 94	2008310012	CLO4-AQN	1	Sample		
26	Vial 71	701043 CCV@25	CLO4-AQN	1	Ctrl Samp		
27	Vial 95	2008062003 10X	CLO4-AQN	1	Sample		
28	Vial 71	701102 CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD01.D Sample Name: 701037 CCV@25

Injection Date:	3/26/2020 08:19:01	Seq Line:	1
Sample Name:	701037 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD01.D Sample Name: 701037 CCV@25

Injection Date:	3/26/2020 08:19:01	Seq Line:	1
Sample Name:	701037 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.596	PBA	1315193.4	24.5027	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.613	PBA	423244.0	25.7352	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.637	PBA	183780.9	5.0000	CLO4-89-ISTD

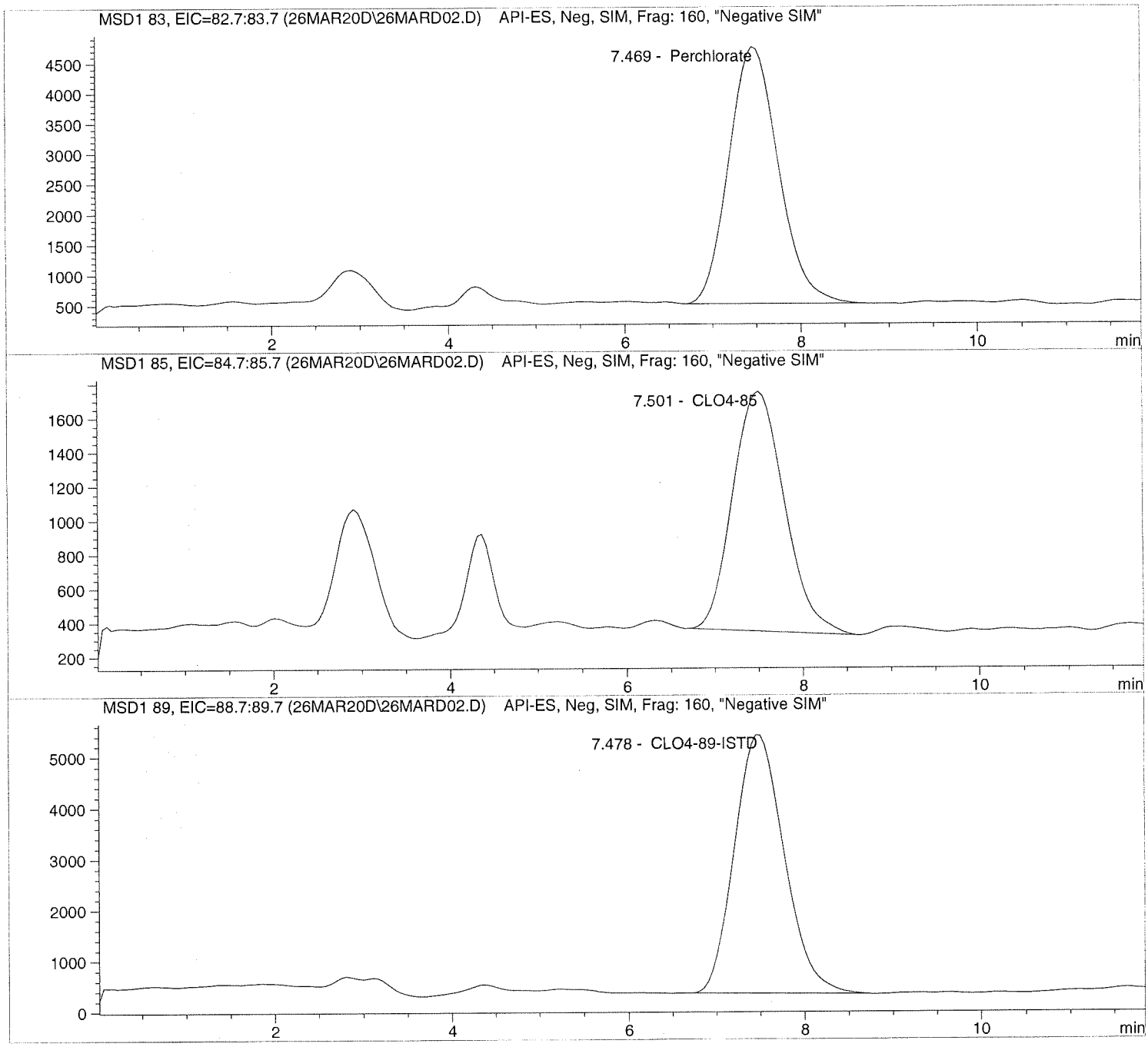
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD02.D Sample Name: 701038 LCS@3.

Injection Date:	3/26/2020 08:34:46	Seq Line:	2
Sample Name:	701038 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD02.D Sample Name: 701038 LCS@3.

Injection Date:	3/26/2020 08:34:46	Seq Line:	2
Sample Name:	701038 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.469	PBA	166008.5	3.0701	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.501	PBA	57531.5	3.4015	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.478	PBA	199014.8	5.0000	CLO4-89-ISTD

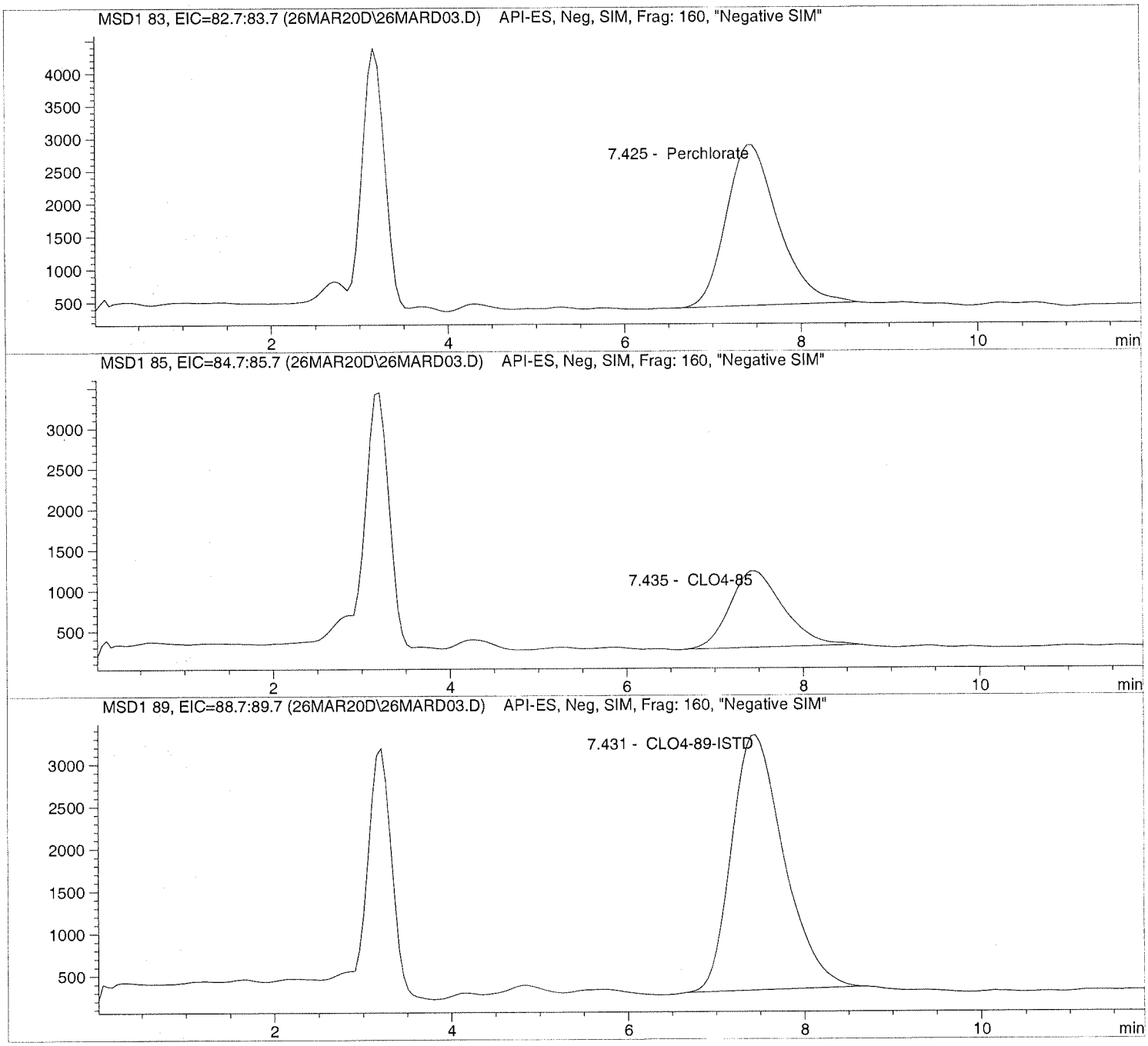
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD03.D Sample Name: 701040 ICS@3.0

Injection Date:	3/26/2020 08:48:42	Seq Line:	3
Sample Name:	701040 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD03.D Sample Name: 701040 ICS@3.0

Injection Date:	3/26/2020 08:48:42	Seq Line:	3
Sample Name:	701040 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.425	PBA	99985.0	2.9667	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.435	PBA	39656.0	3.7748	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.431	PBA	123986.5	5.0000	CLO4-89-ISTD

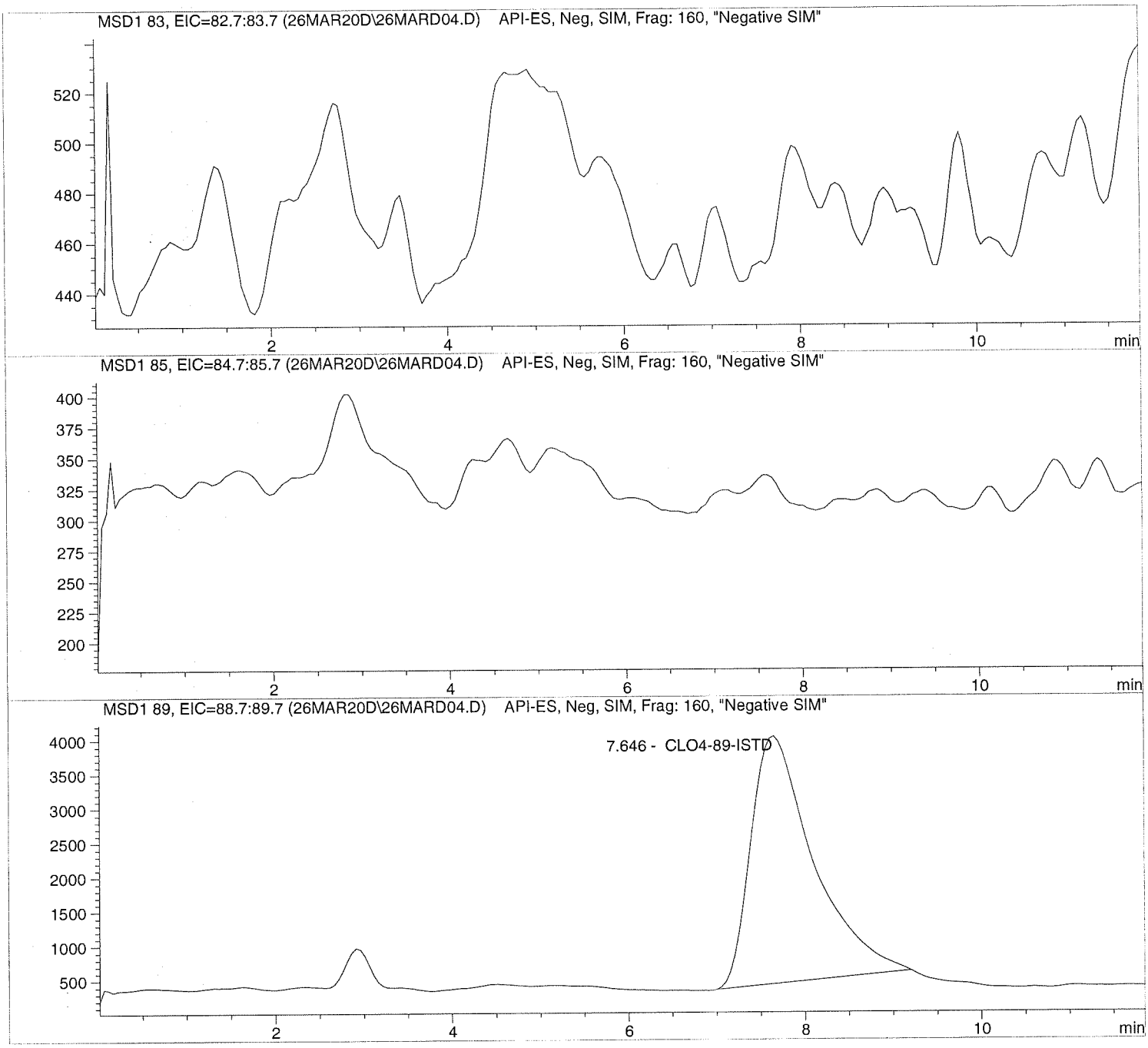
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD04.D Sample Name: 701041 LMB

Injection Date:	3/26/2020 09:02:43	Seq Line:	4
Sample Name:	701041 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD04.D Sample Name: 701041 LMB

Injection Date:	3/26/2020 09:02:43	Seq Line:	4
Sample Name:	701041 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.646	PBA	177629.6	5.0000	CLO4-89-ISTD

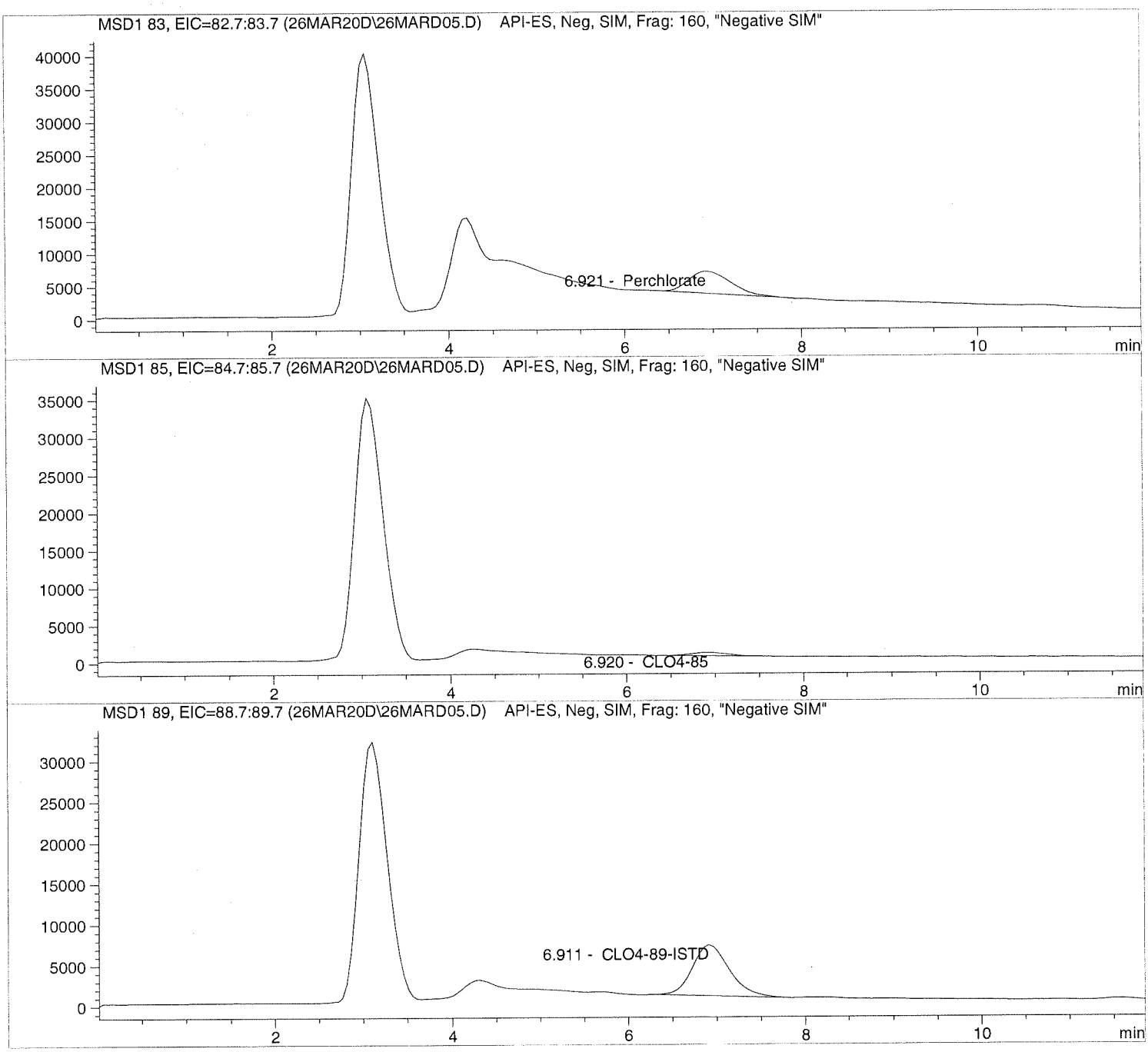
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD05.D Sample Name: 2008062001

Injection Date:	3/26/2020 09:16:42	Seq Line:	5
Sample Name:	2008062001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD05.D Sample Name: 2008062001

Injection Date:	3/26/2020 09:16:42	Seq Line:	5
Sample Name:	2008062001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.921	PBA	109960.3	2.2313	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.920	PBA	13131.1	0.7424	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.911	PBA	180290.0	5.0000	CLO4-89-ISTD

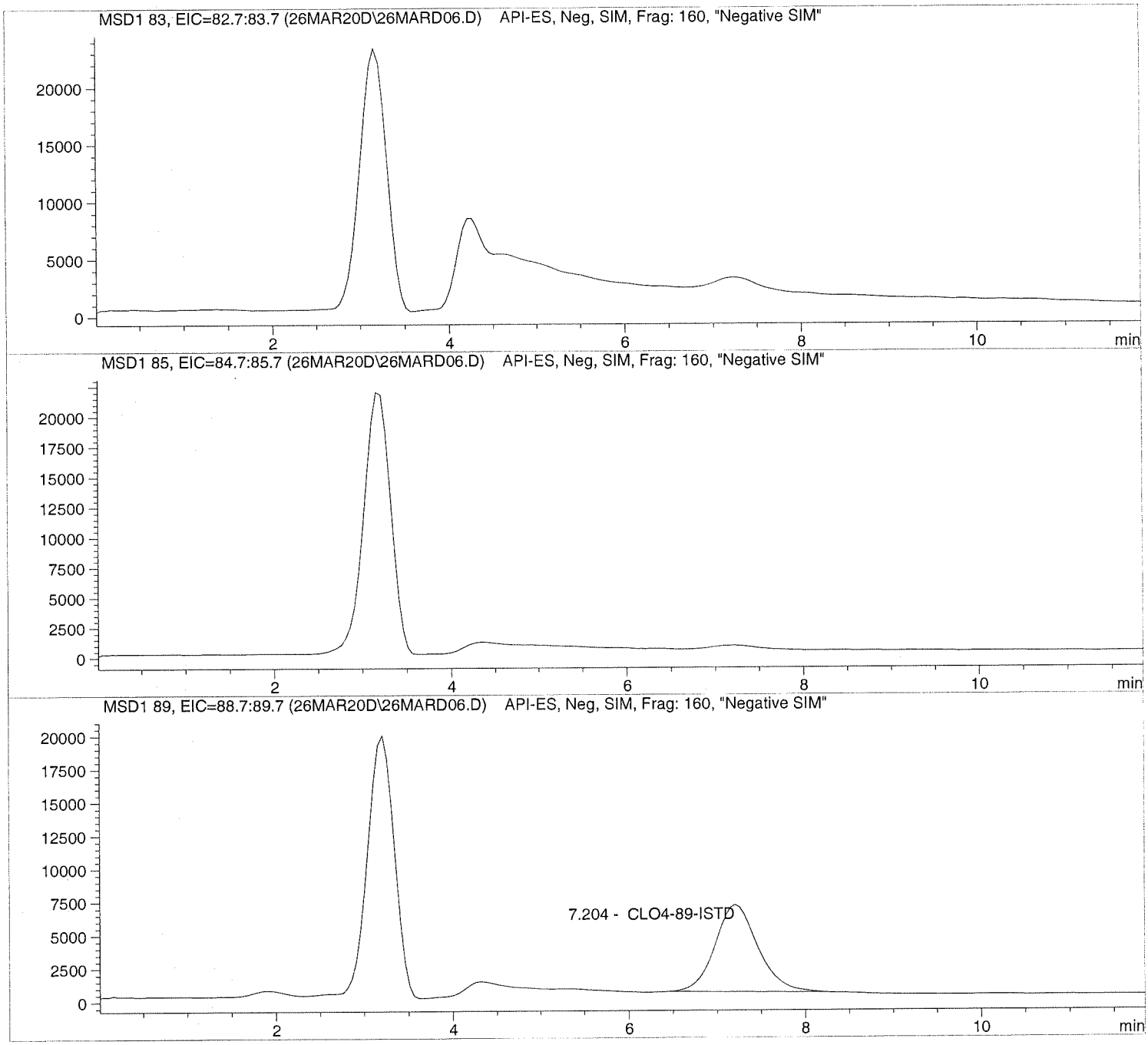
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD06.D Sample Name: 2008062002

Injection Date:	3/26/2020 09:30:41	Seq Line:	6
Sample Name:	2008062002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD06.D Sample Name: 2008062002

Injection Date:	3/26/2020 09:30:41	Seq Line:	6
Sample Name:	2008062002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.204	PBA	221065.7	5.0000	CLO4-89-ISTD

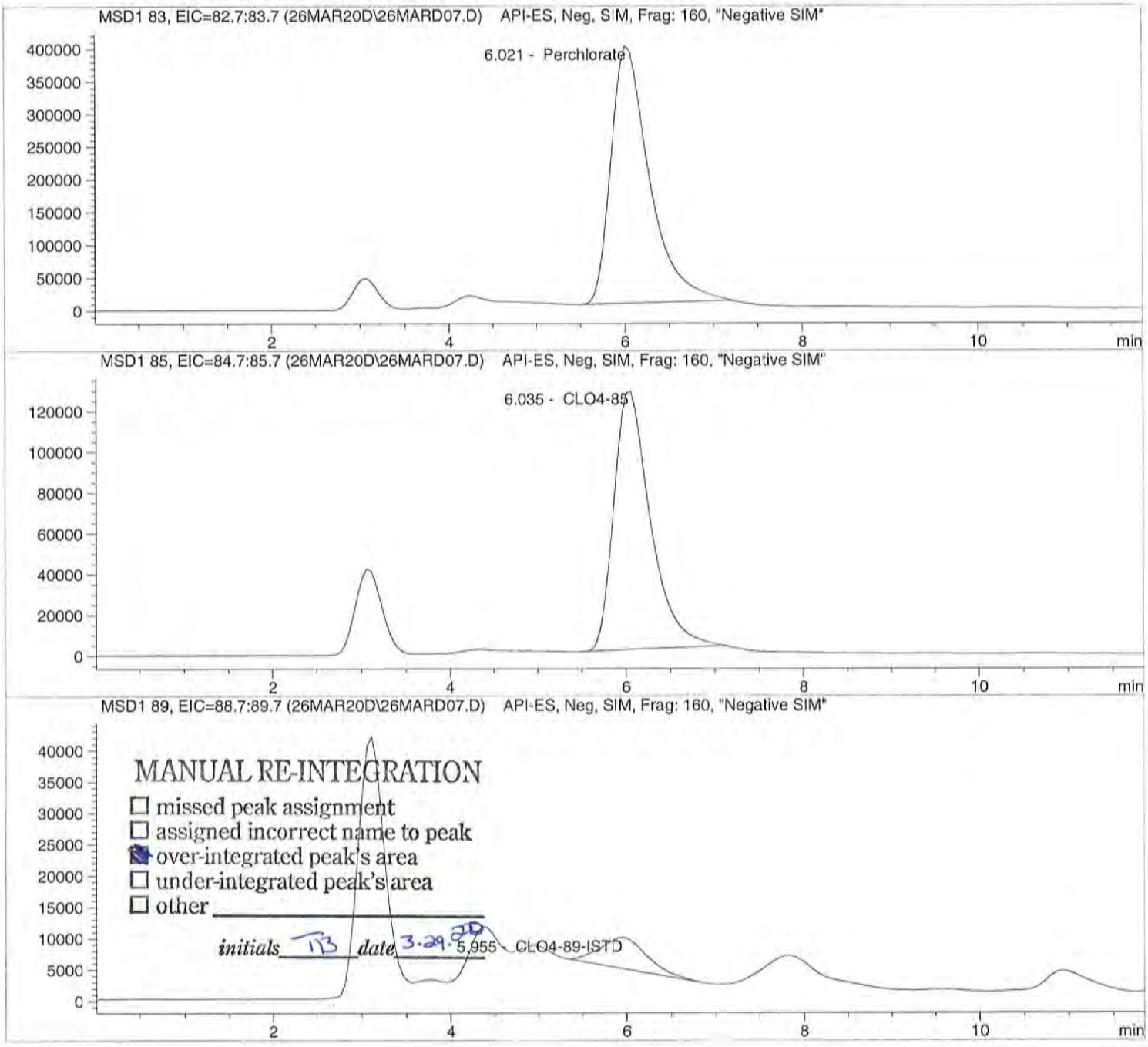
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD07.D Sample Name: 2008062003

Injection Date:	3/26/2020 09:44:40	Seq Line:	7
Sample Name:	2008062003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD07.D Sample Name: 2008062003

Injection Date:	3/26/2020 09:44:40	Seq Line:	7
Sample Name:	2008062003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.021	PBA	11797552.0	147.3177	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.035	PBA	3623208.0	150.6542	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.955	MM	180433.5	5.0000	CLO4-89-ISTD

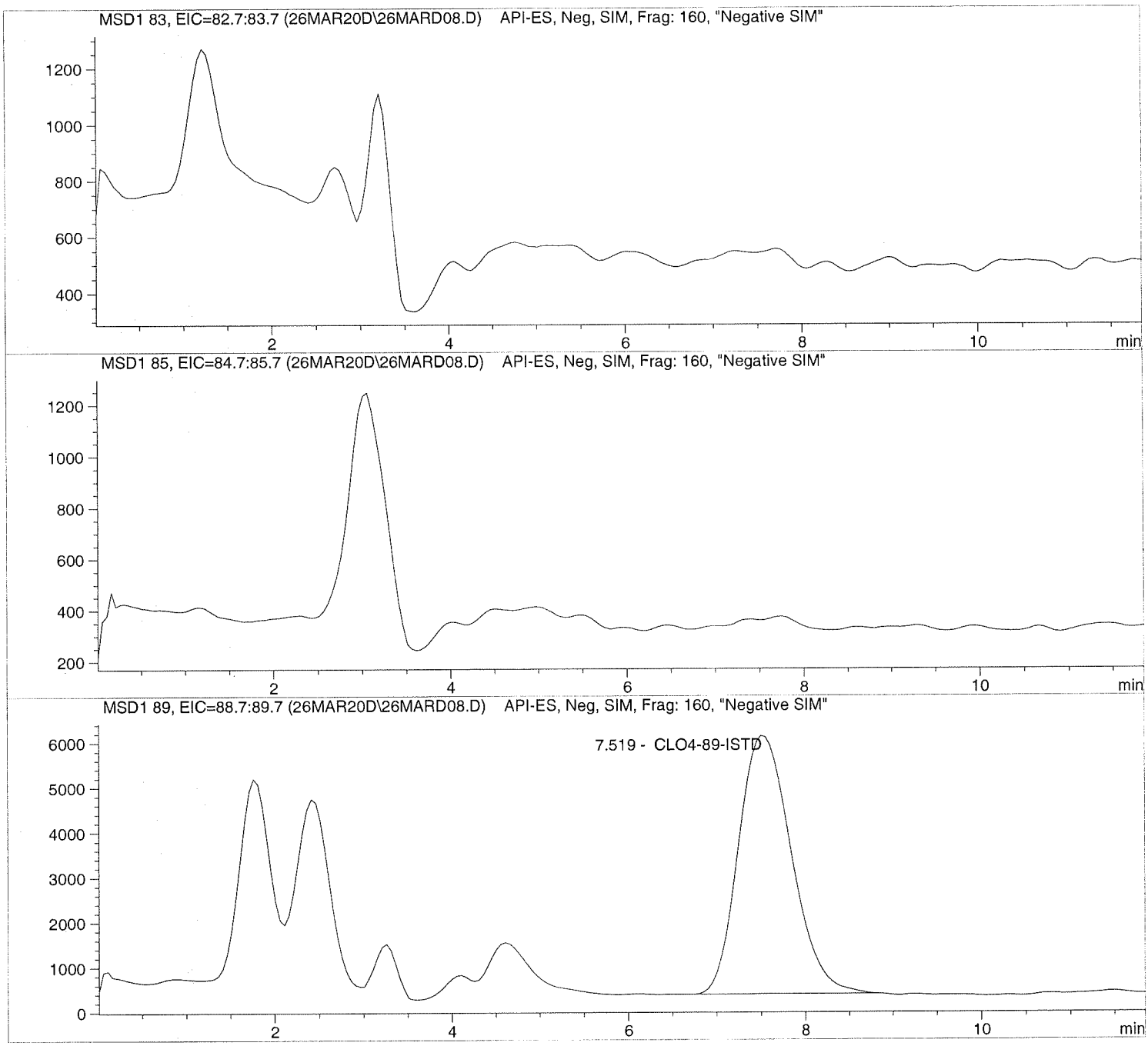
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD08.D Sample Name: 2008062004

Injection Date:	3/26/2020 09:58:39	Seq Line:	8
Sample Name:	2008062004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD08.D Sample Name: 2008062004

Injection Date:	3/26/2020 09:58:39	Seq Line:	8
Sample Name:	2008062004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.519	PBA	238862.2	5.0000	CLO4-89-ISTD

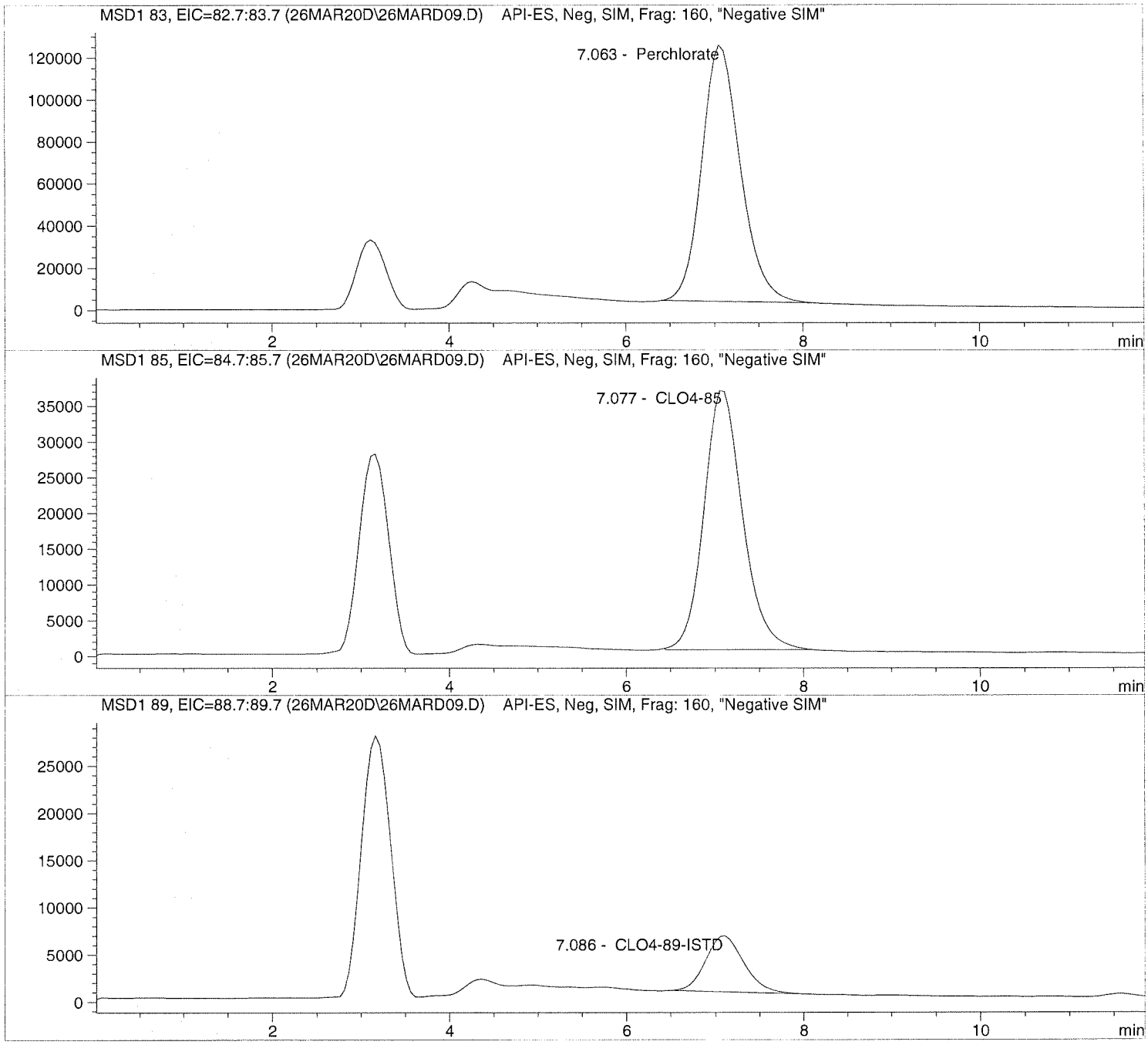
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD09.D Sample Name: 2008062005

Injection Date:	3/26/2020 10:12:38	Seq Line:	9
Sample Name:	2008062005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD09.D Sample Name: 2008062005

Injection Date:	3/26/2020 10:12:38	Seq Line:	9
Sample Name:	2008062005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.063	BBA	3686393.8	61.5488	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.077	BBA	1097853.7	60.8762	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.086	PBA	177447.9	5.0000	CLO4-89-ISTD

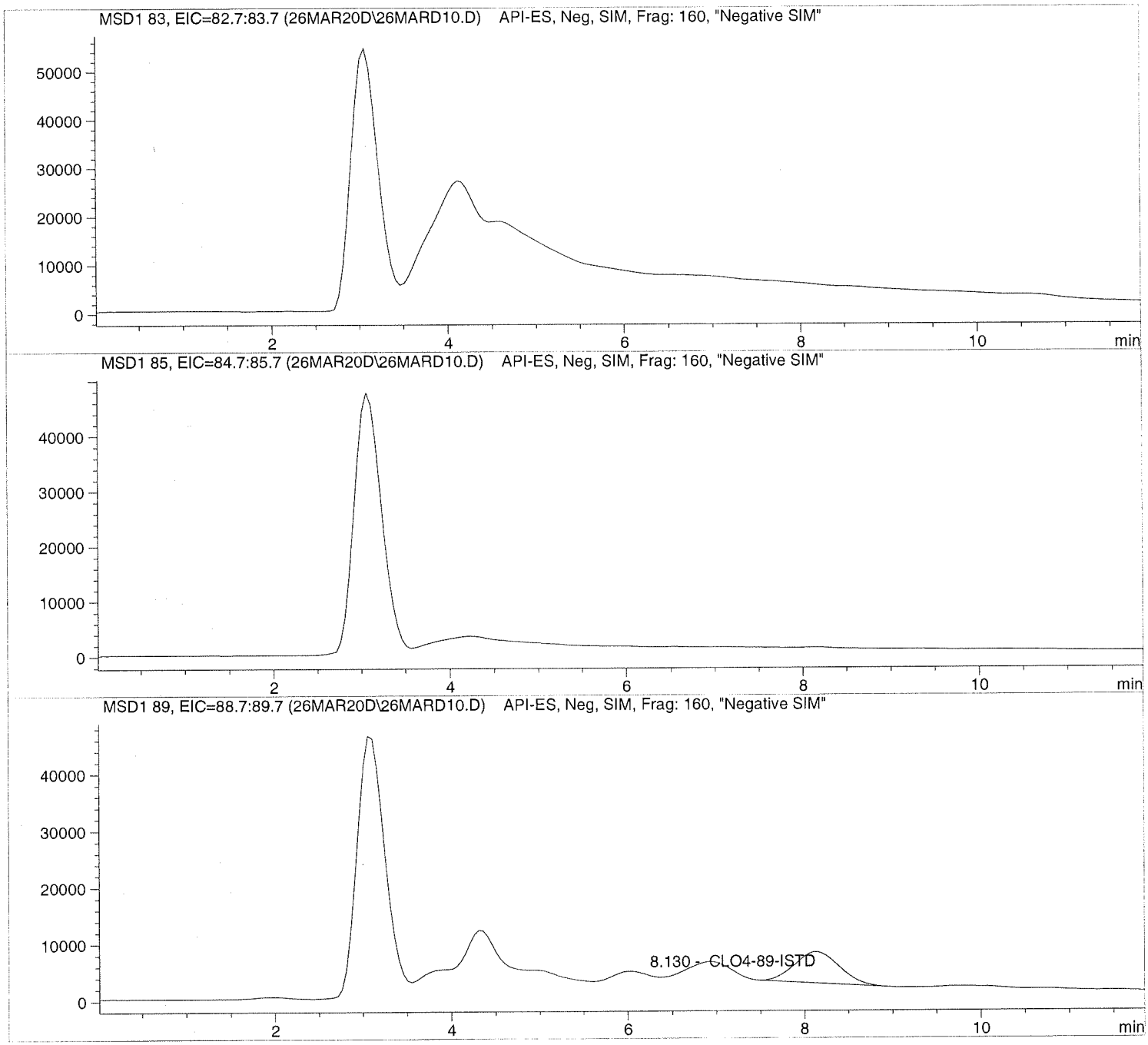
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD10.D Sample Name: 2008062006

Injection Date:	3/26/2020 10:26:37	Seq Line:	10
Sample Name:	2008062006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD10.D Sample Name: 2008062006

Injection Date:	3/26/2020 10:26:37	Seq Line:	10
Sample Name:	2008062006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.130	VBA	194127.8	5.0000	CLO4-89-ISTD

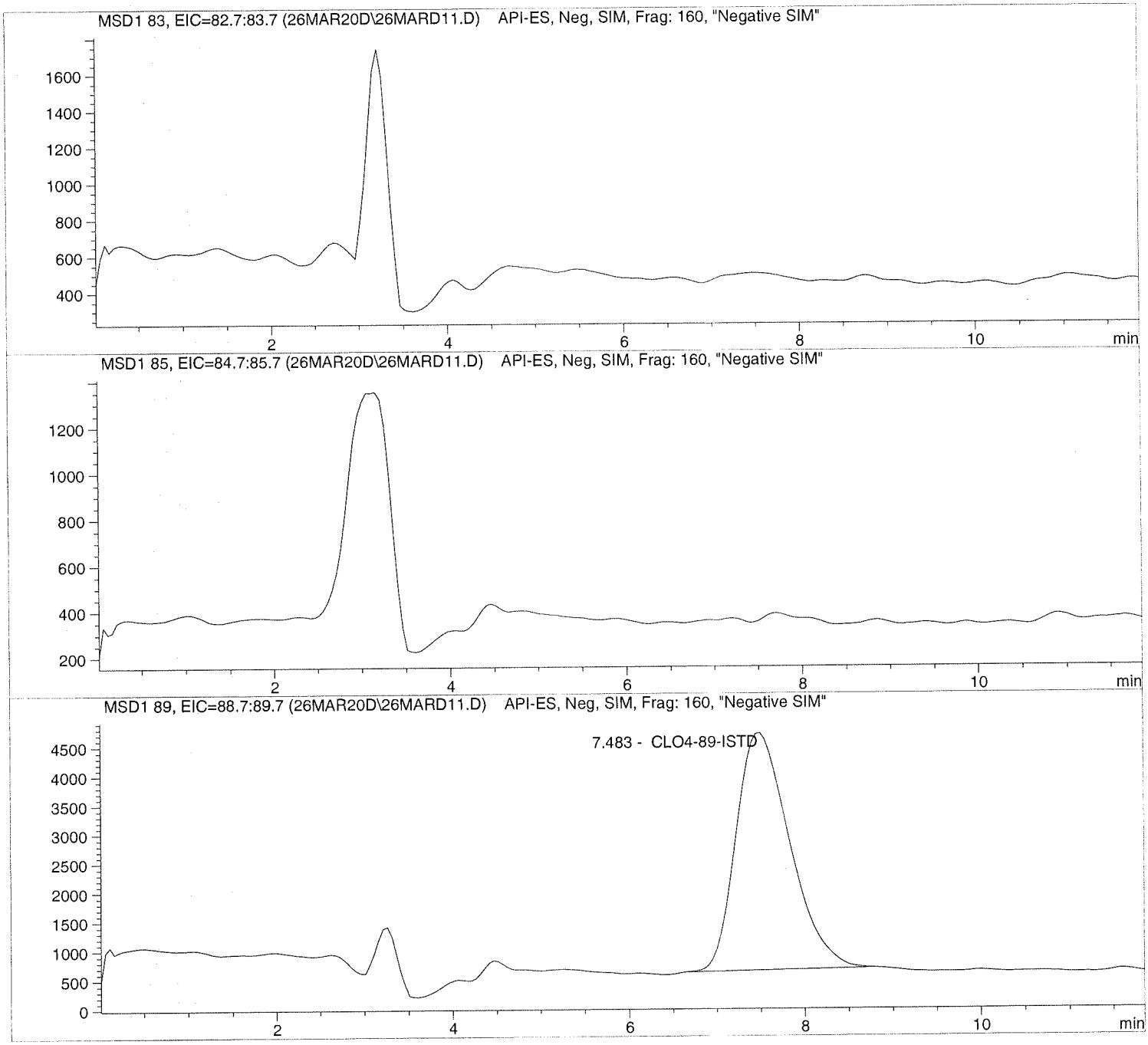
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD11.D Sample Name: 2008062007

Injection Date:	3/26/2020 10:40:42	Seq Line:	11
Sample Name:	2008062007	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD11.D Sample Name: 2008062007

Injection Date:	3/26/2020 10:40:42	Seq Line:	11
Sample Name:	2008062007	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.483	BBA	172495.2	5.0000	CLO4-89-ISTD

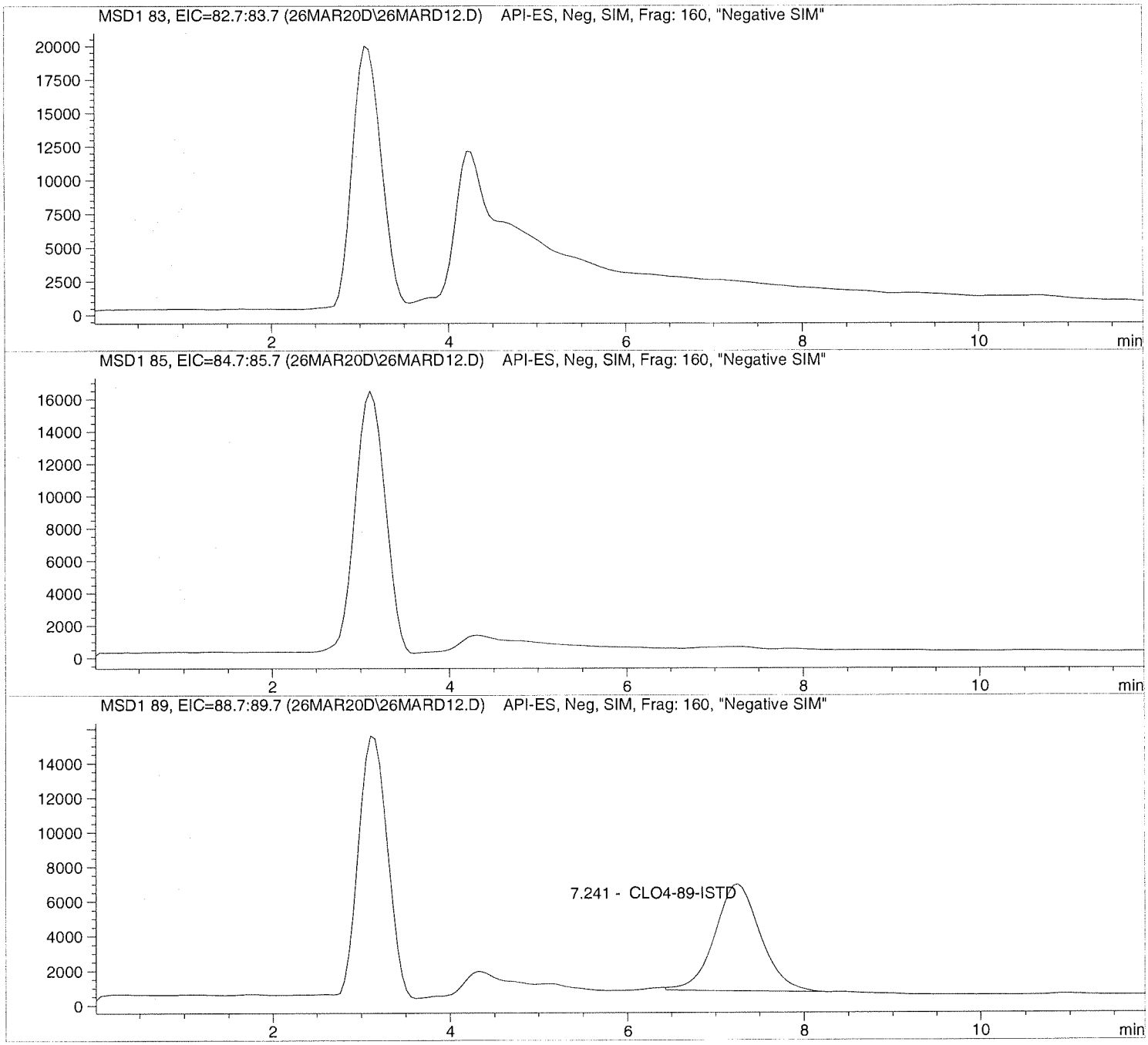
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD12.D Sample Name: 2008062008

Injection Date:	3/26/2020 10:54:39	Seq Line:	12
Sample Name:	2008062008	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD12.D Sample Name: 2008062008

Injection Date:	3/26/2020 10:54:39	Seq Line:	12
Sample Name:	2008062008	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.241	BBA	220984.2	5.0000	CLO4-89-ISTD

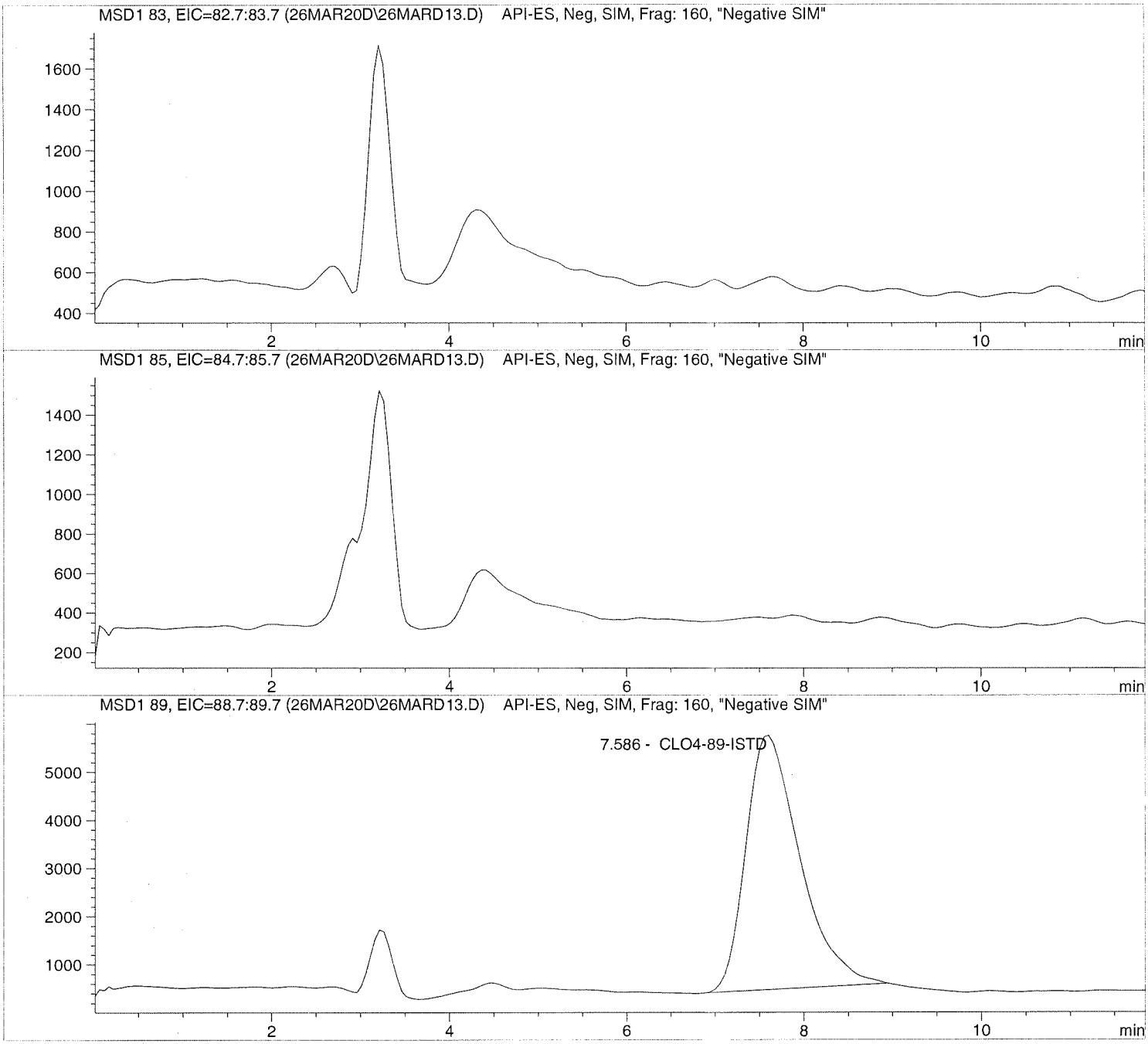
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD13.D Sample Name: 2008310001

Injection Date:	3/26/2020 11:08:35	Seq Line:	13
Sample Name:	2008310001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD13.D Sample Name: 2008310001

Injection Date:	3/26/2020 11:08:35	Seq Line:	13
Sample Name:	2008310001	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.586	PBA	223497.3	5.0000	CLO4-89-ISTD

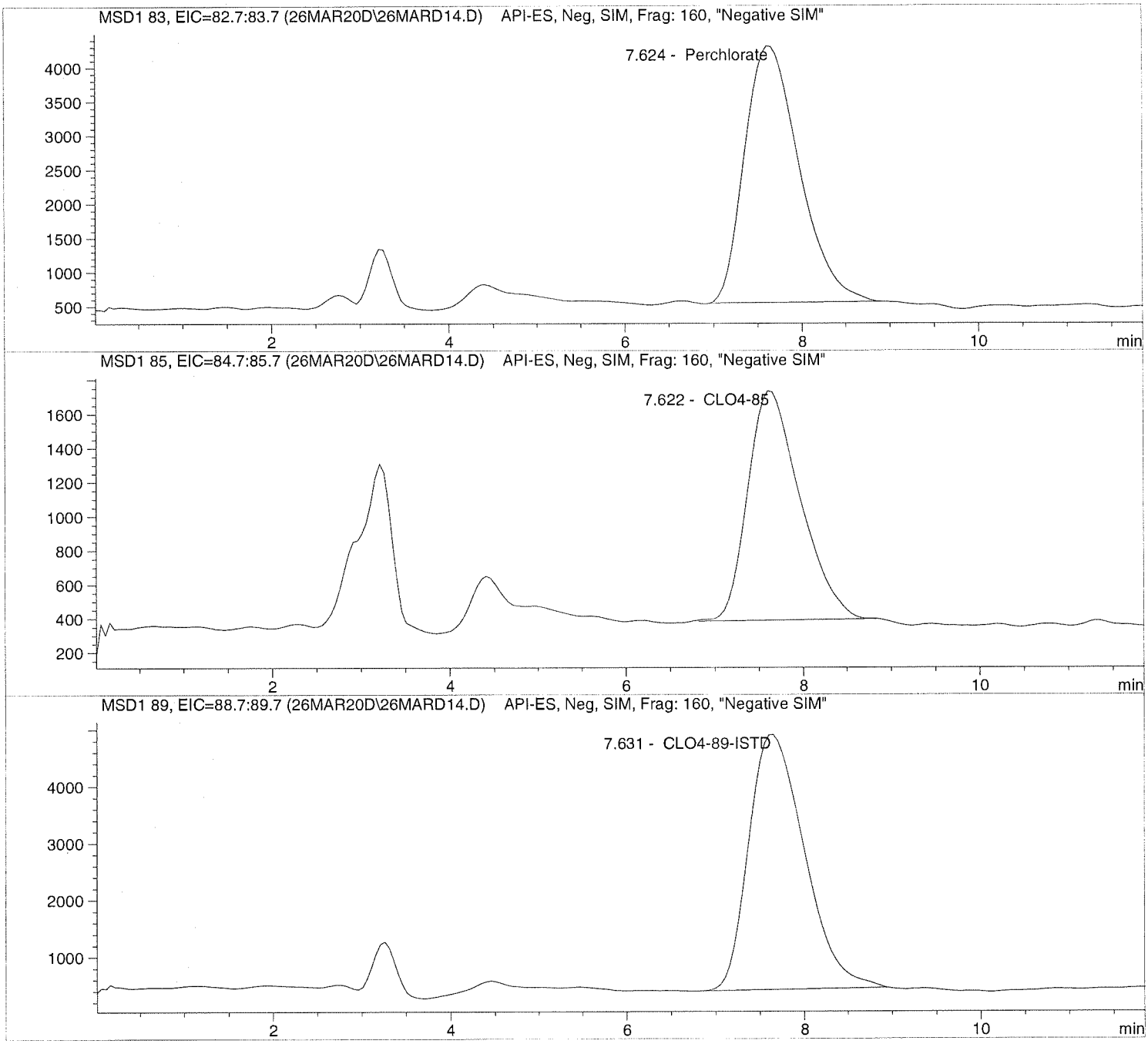
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD14.D Sample Name: 2008310002 MS

Injection Date:	3/26/2020 11:22:32	Seq Line:	14
Sample Name:	2008310002 MS	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD14.D Sample Name: 2008310002 MS

Injection Date:	3/26/2020 11:22:32	Seq Line:	14
Sample Name:	2008310002 MS	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.624	PBA	161578.6	3.0306	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.622	BBA	55538.7	3.3285	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.631	PBA	196195.3	5.0000	CLO4-89-ISTD

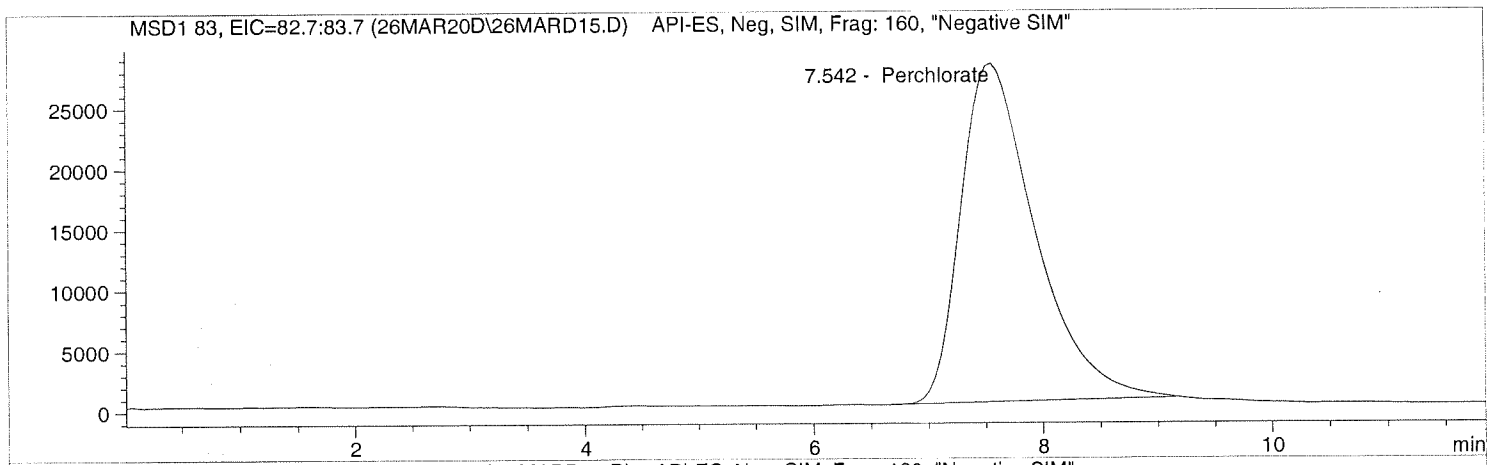
*** End of Report ***

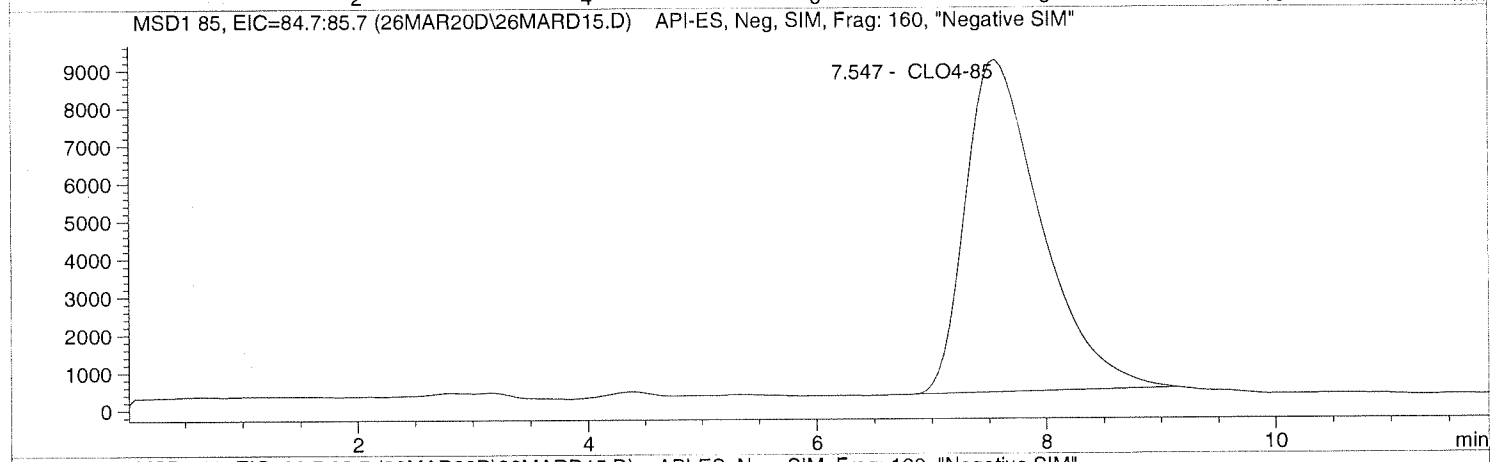
Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD15.D Sample Name: 701042 CCV@25

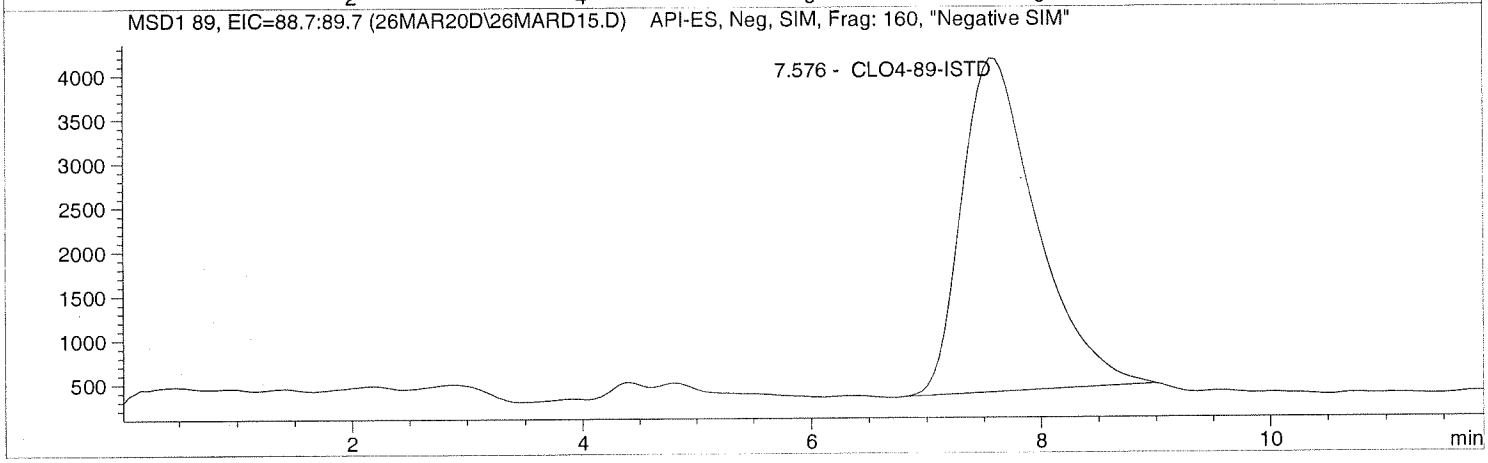
Injection Date:	3/26/2020 11:36:32	Seq Line:	15
Sample Name:	701042 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD15.D Sample Name: 701042 CCV@25

Injection Date:	3/26/2020 11:36:32	Seq Line:	15
Sample Name:	701042 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.542	PBA	1257703.0	25.0421	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.547	PBA	403497.3	26.2306	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.576	PBA	171579.5	5.0000	CLO4-89-ISTD

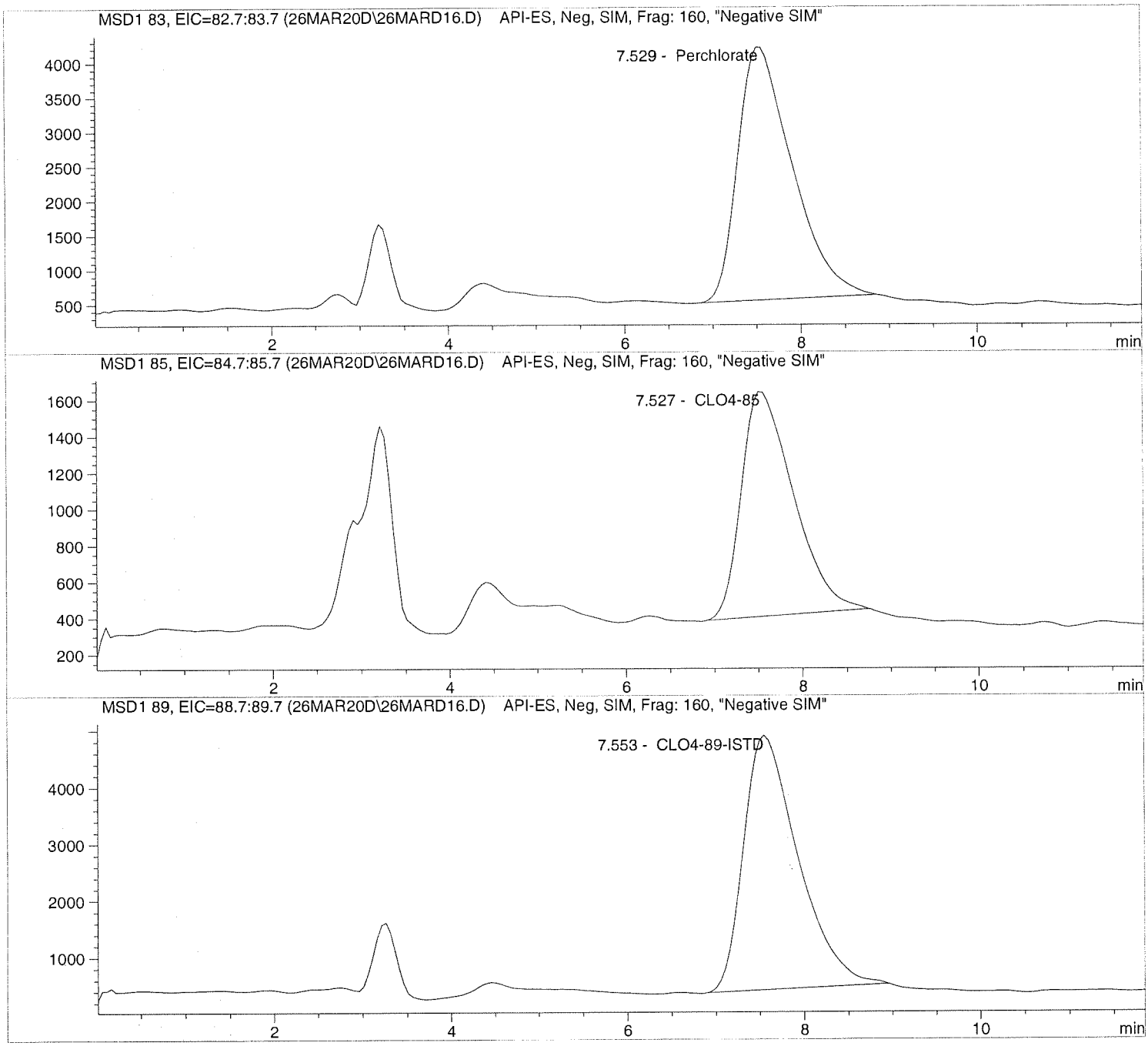
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD16.D Sample Name: 2008310003 MSD

Injection Date:	3/26/2020 11:50:32	Seq Line:	16
Sample Name:	2008310003 MSD	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD16.D Sample Name: 2008310003 MSD

Injection Date:	3/26/2020 11:50:32	Seq Line:	16
Sample Name:	2008310003 MSD	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.529	PBA	156764.3	3.0007	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.527	PBA	50765.7	3.0974	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.553	PBA	192226.0	5.0000	CLO4-89-ISTD

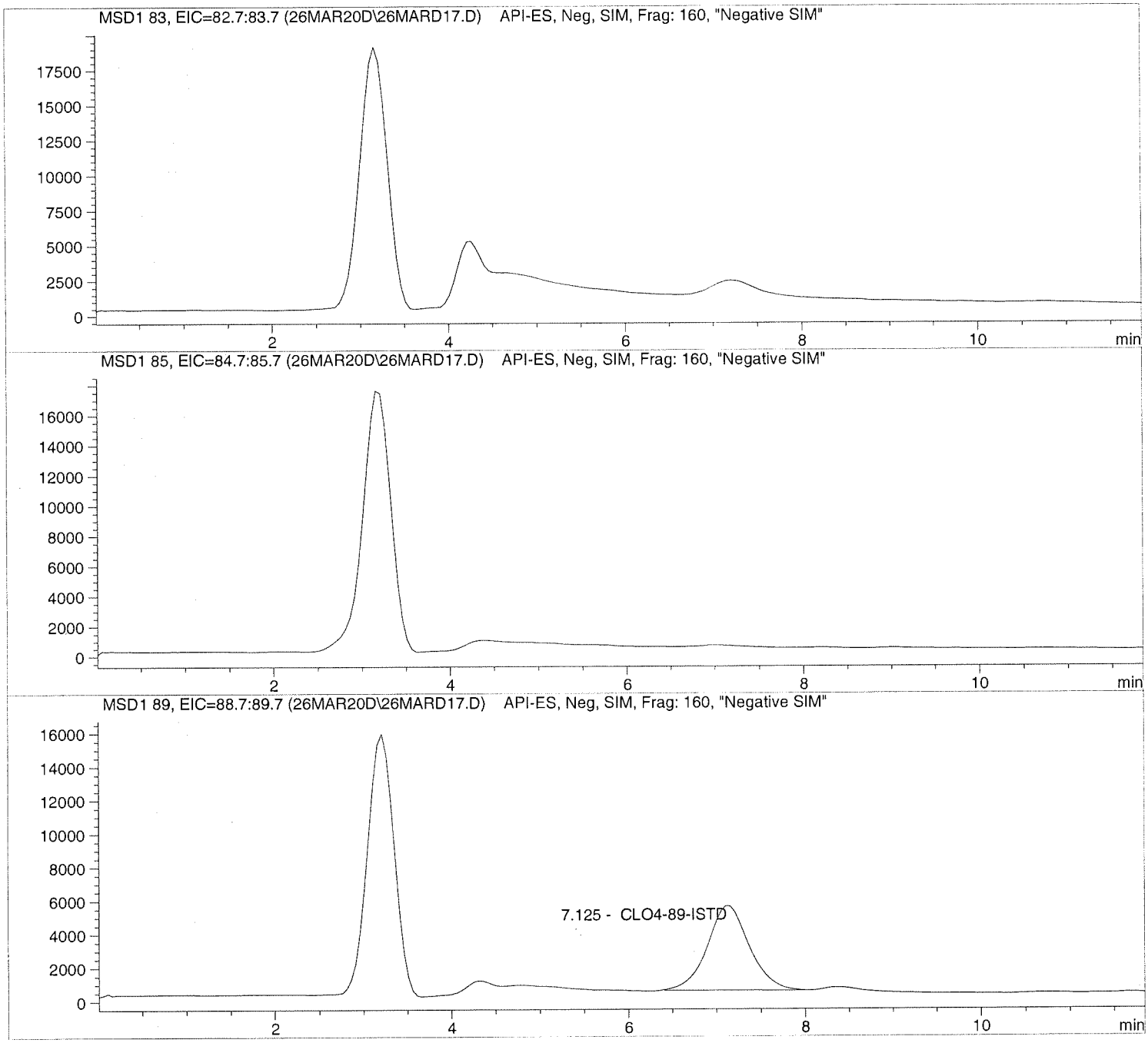
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD17.D Sample Name: 2008310004

Injection Date:	3/26/2020 12:04:29	Seq Line:	17
Sample Name:	2008310004	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD17.D Sample Name: 2008310004

Injection Date:	3/26/2020 12:04:29	Seq Line:	17
Sample Name:	2008310004	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.125	PBA	166041.3	5.0000	CLO4-89-ISTD

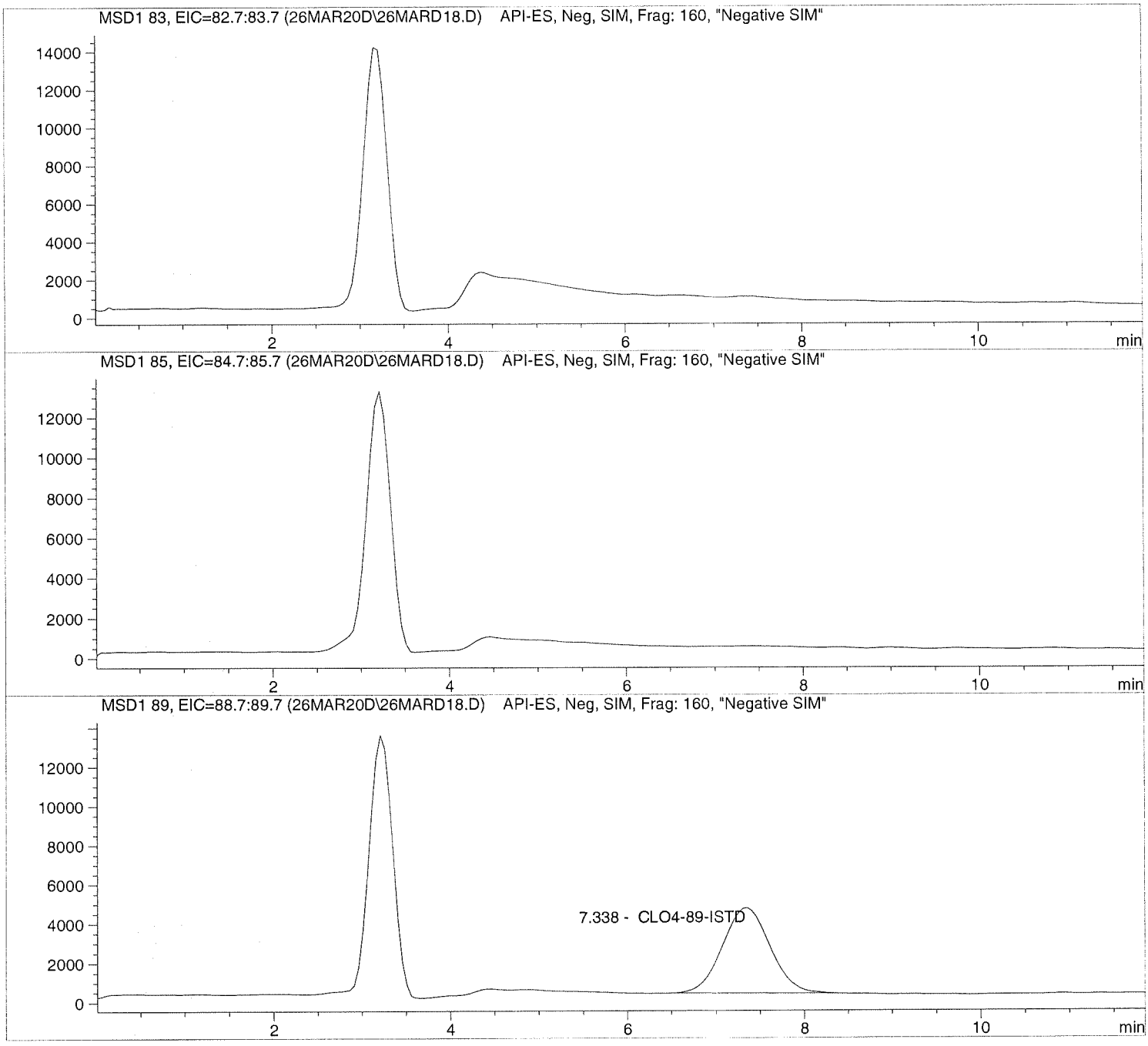
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD18.D Sample Name: 2008310005

Injection Date:	3/26/2020 12:18:26	Seq Line:	18
Sample Name:	2008310005	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD18.D Sample Name: 2008310005

Injection Date:	3/26/2020 12:18:26	Seq Line:	18
Sample Name:	2008310005	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.338	PBA	163139.4	5.0000	CLO4-89-ISTD

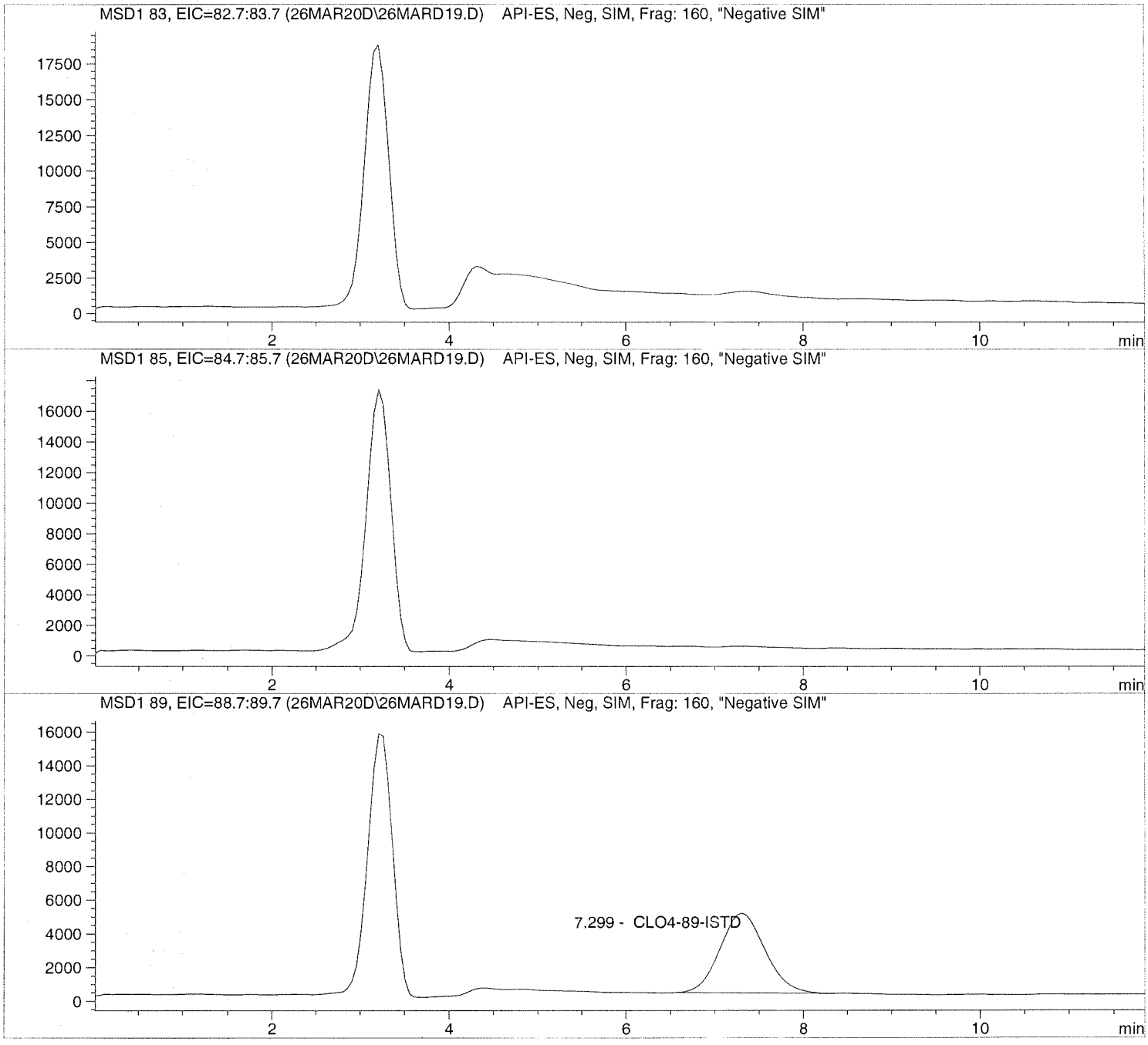
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD19.D Sample Name: 2008310006

Injection Date:	3/26/2020 12:32:24	Seq Line:	19
Sample Name:	2008310006	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD19.D Sample Name: 2008310006

Injection Date:	3/26/2020 12:32:24	Seq Line:	19
Sample Name:	2008310006	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.299	PBA	167930.1	5.0000	CLO4-89-ISTD

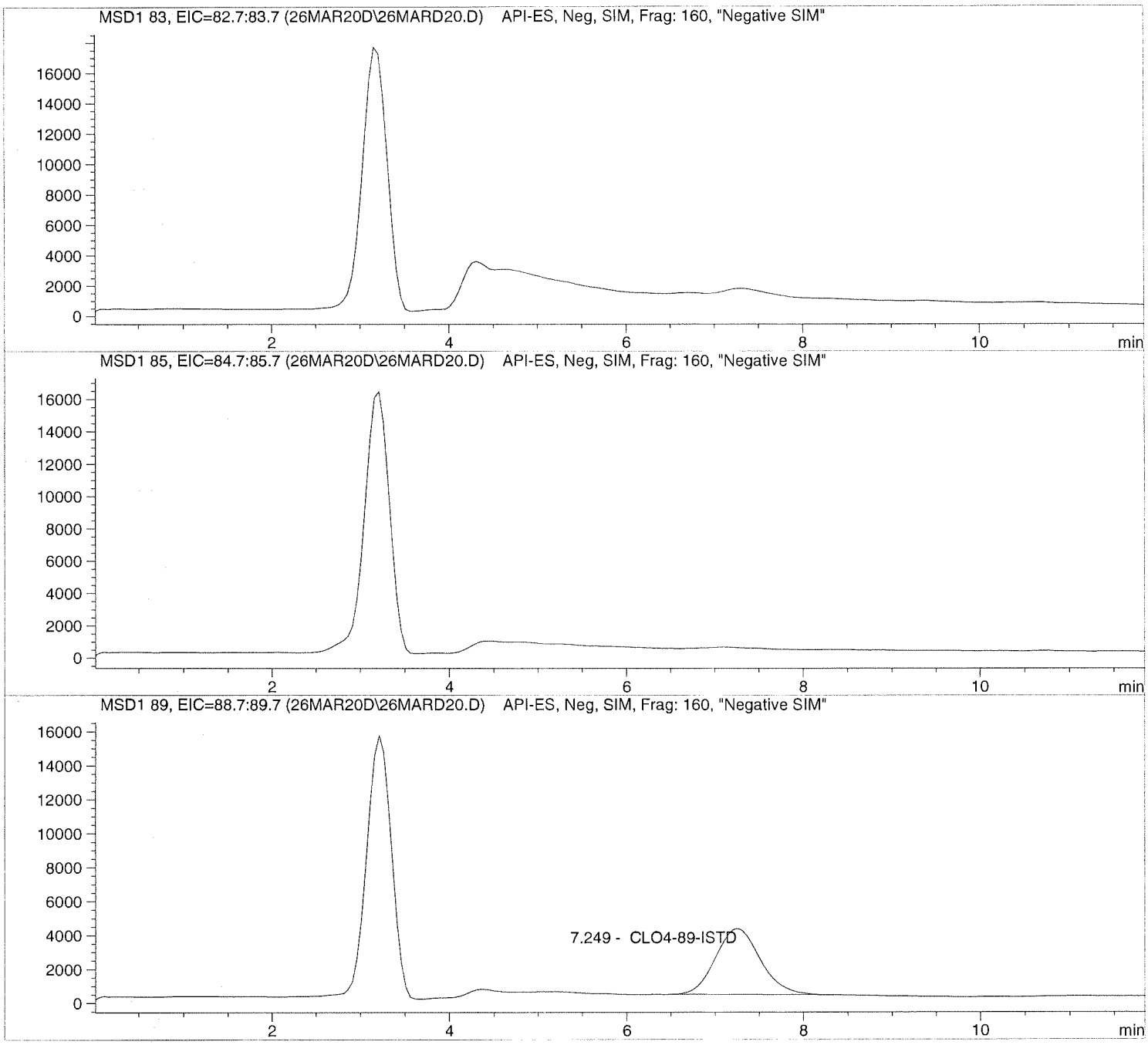
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD20.D Sample Name: 2008310007

Injection Date:	3/26/2020 12:46:26	Seq Line:	20
Sample Name:	2008310007	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD20.D Sample Name: 2008310007

Injection Date:	3/26/2020 12:46:26	Seq Line:	20
Sample Name:	2008310007	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.249	PBA	137319.5	5.0000	CLO4-89-ISTD

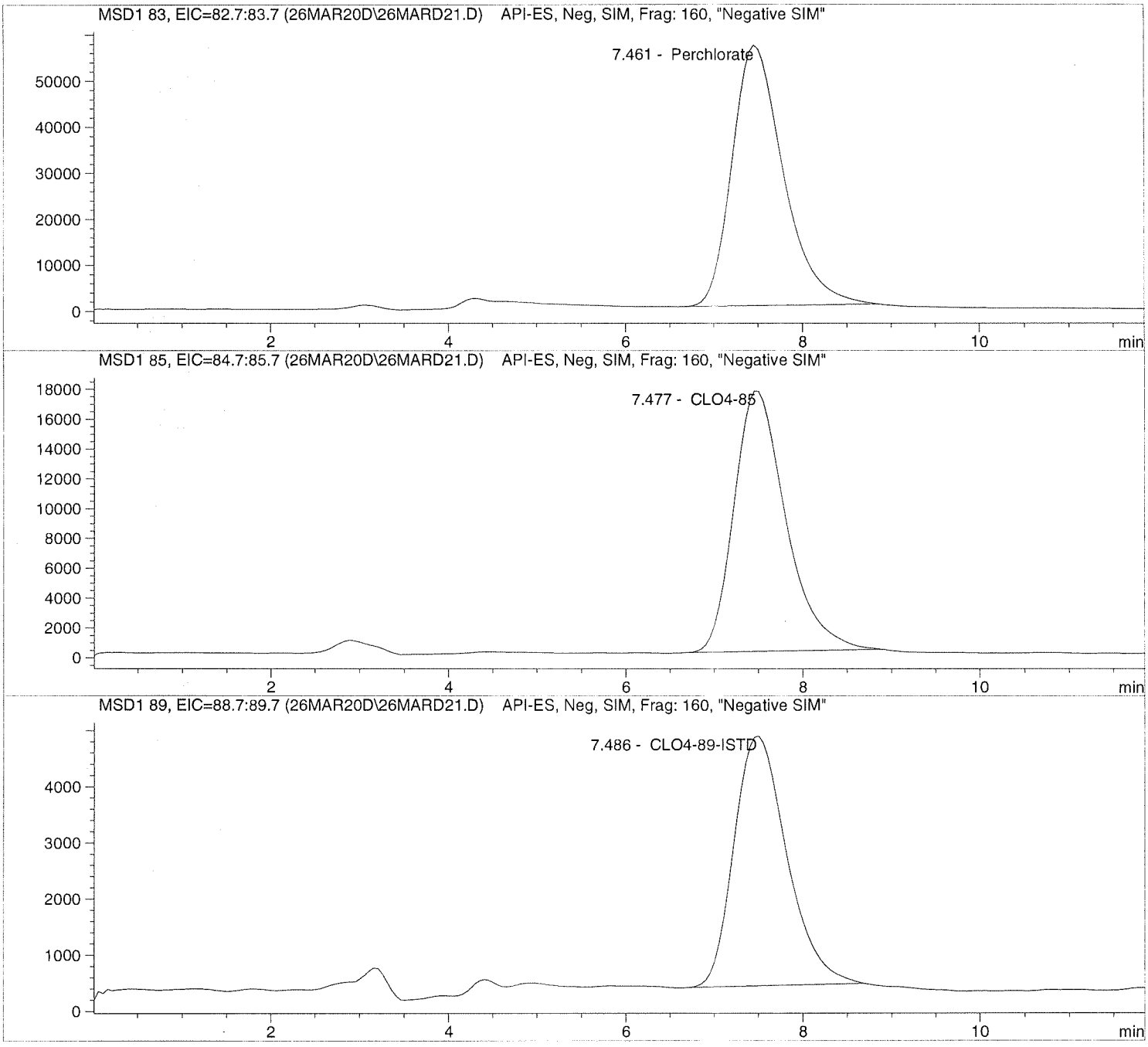
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD21.D Sample Name: 2008310008 10X

Injection Date:	3/26/2020 13:00:24	Seq Line:	21
Sample Name:	2008310008 10X	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD21.D Sample Name: 2008310008 10X

Injection Date:	3/26/2020 13:00:24	Seq Line:	21
Sample Name:	2008310008 10X	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.461	PBA	2264742.3	396.5233	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.477	PBA	708208.9	407.0441	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.486	PBA	183925.3	50.0000	CLO4-89-ISTD

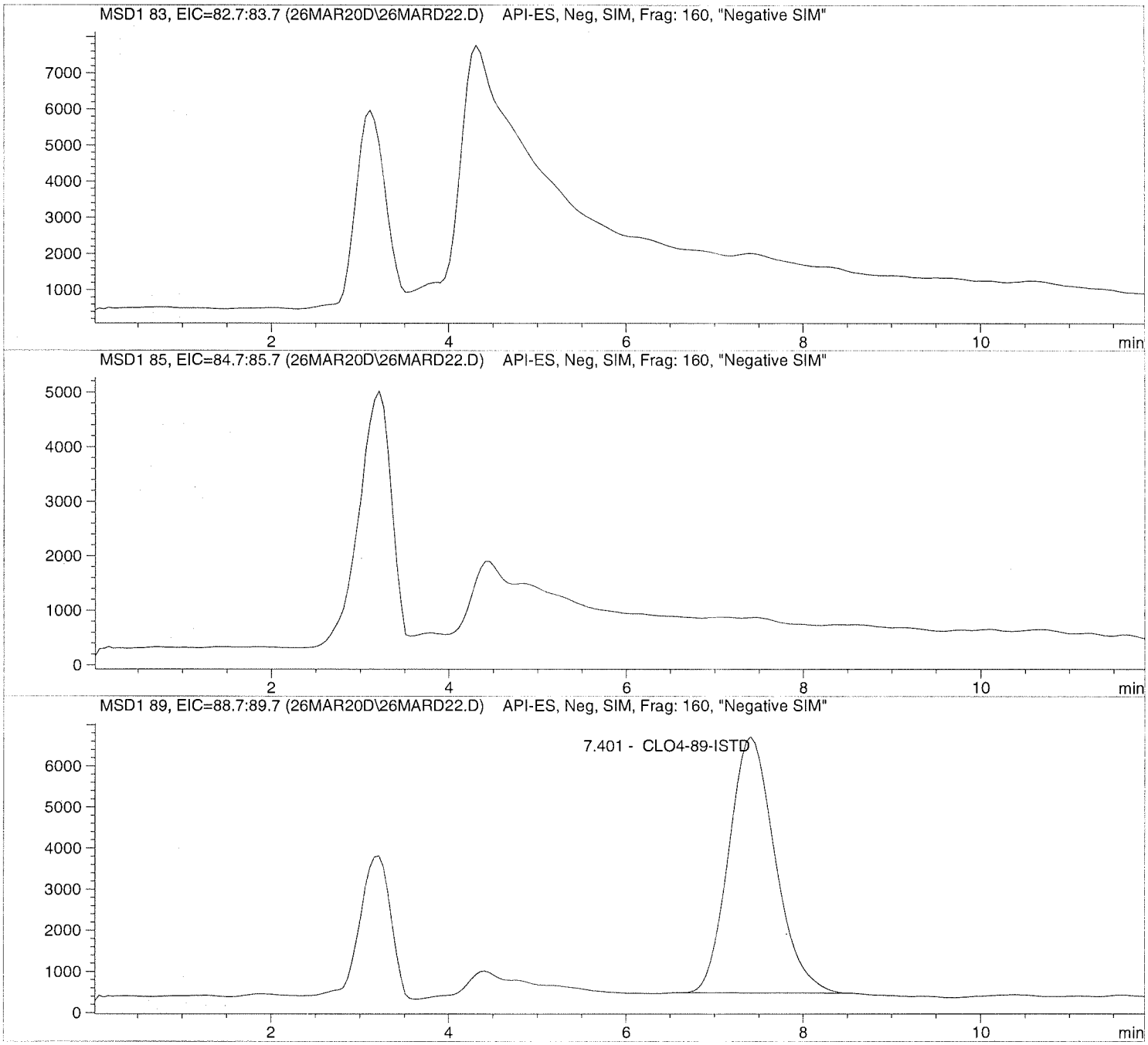
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD22.D Sample Name: 2008310009

Injection Date:	3/26/2020 13:14:36	Seq Line:	22
Sample Name:	2008310009	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD22.D Sample Name: 2008310009

Injection Date:	3/26/2020 13:14:36	Seq Line:	22
Sample Name:	2008310009	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.401	PBA	226092.7	5.0000	CLO4-89-ISTD

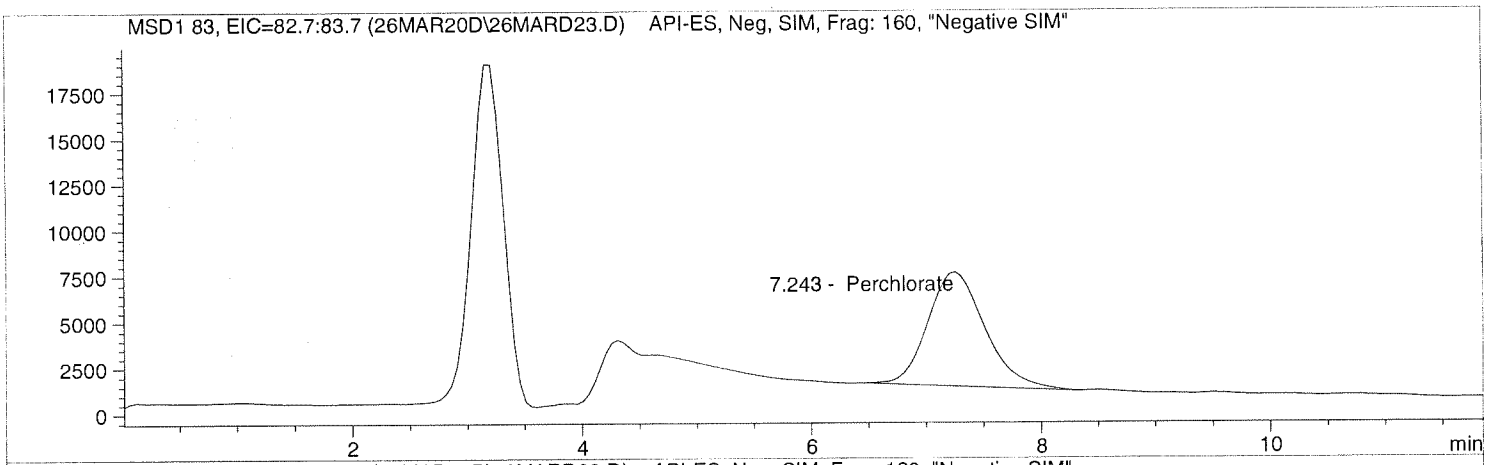
*** End of Report ***

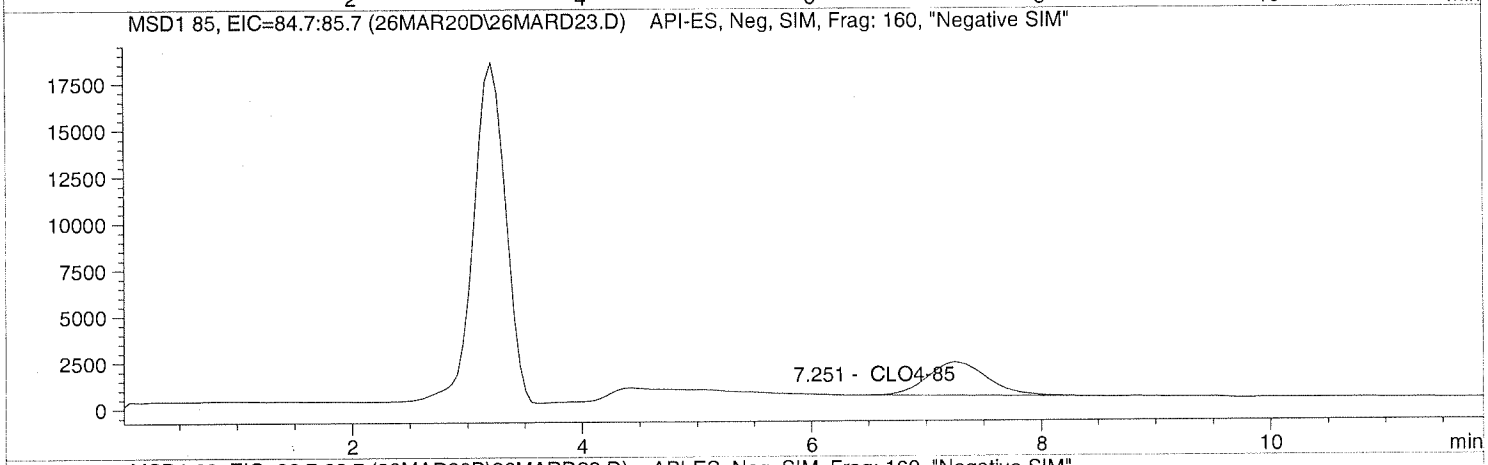
Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD23.D Sample Name: 2008310010

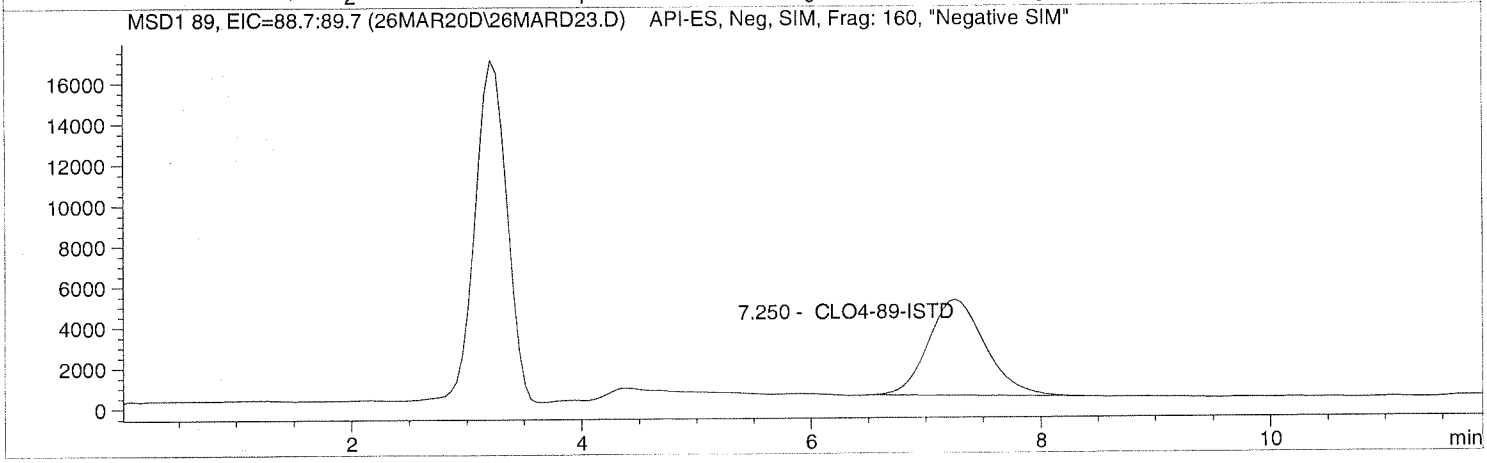
Injection Date:	3/26/2020 13:28:31	Seq Line:	23
Sample Name:	2008310010	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD23.D Sample Name: 2008310010

Injection Date:	3/26/2020 13:28:31	Seq Line:	23
Sample Name:	2008310010	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.243	BBA	213687.0	4.8705	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.251	PBA	64563.9	4.7328	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.250	PBA	161722.0	5.0000	CLO4-89-ISTD

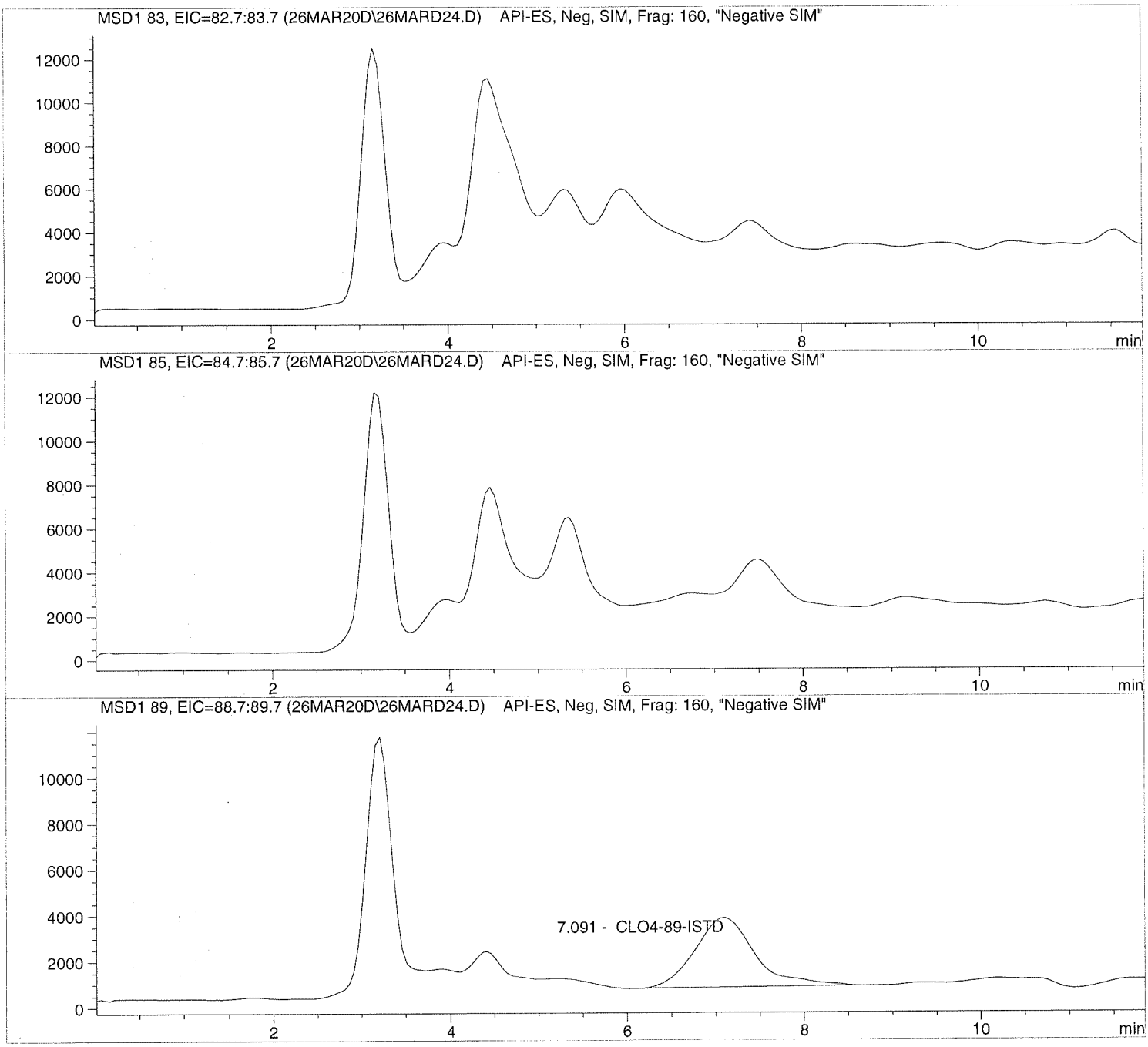
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD24.D Sample Name: 2008310011

Injection Date:	3/26/2020 13:42:47	Seq Line:	24
Sample Name:	2008310011	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD24.D Sample Name: 2008310011

Injection Date:	3/26/2020 13:42:47	Seq Line:	24
Sample Name:	2008310011	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.091	PBA	141774.2	5.0000	CLO4-89-ISTD

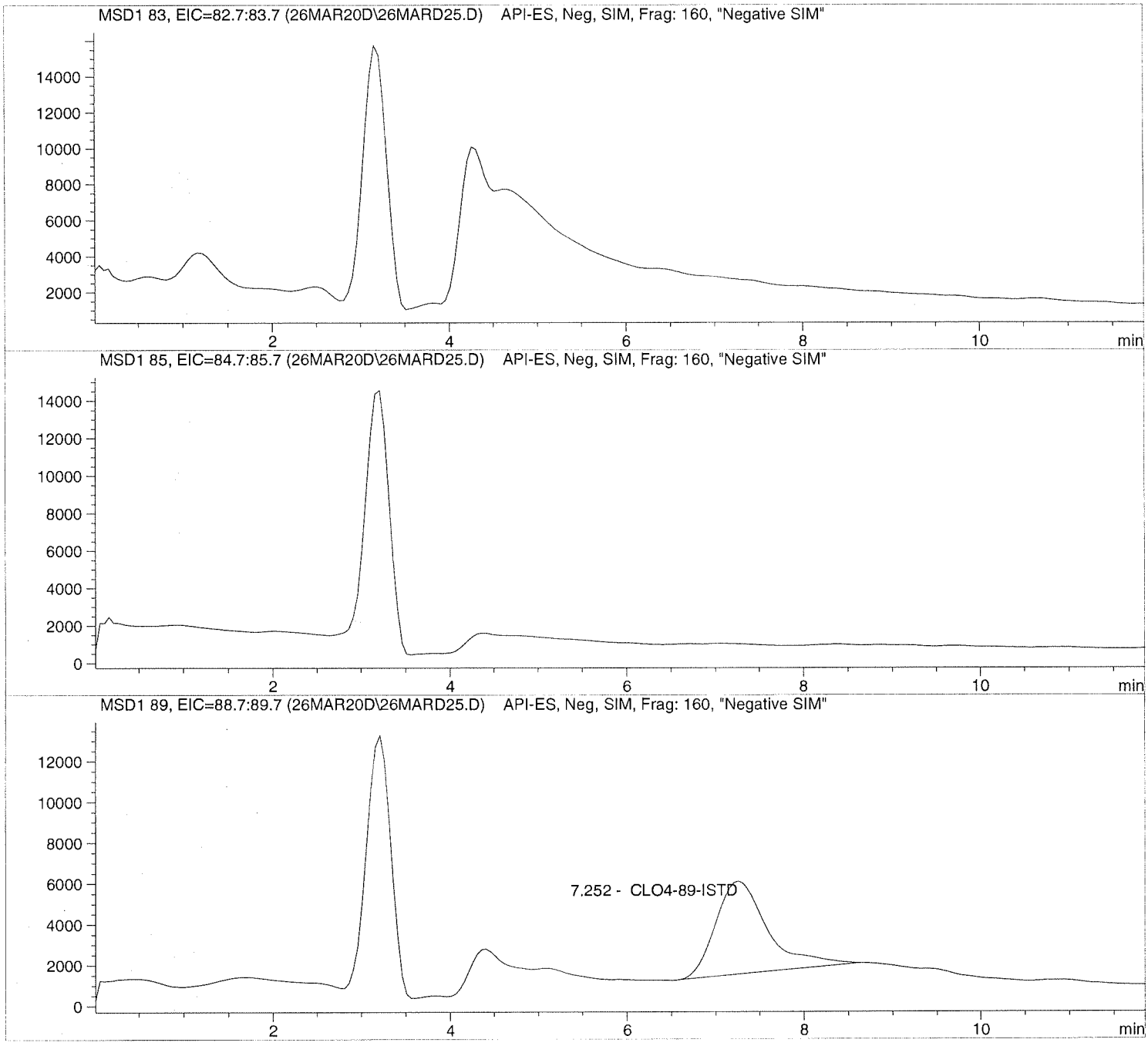
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD25.D Sample Name: 2008310012

Injection Date:	3/26/2020 13:56:46	Seq Line:	25
Sample Name:	2008310012	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD25.D Sample Name: 2008310012

Injection Date:	3/26/2020 13:56:46	Seq Line:	25
Sample Name:	2008310012	Location:	Vial 94
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.252	PBA	186601.9	5.0000	CLO4-89-ISTD

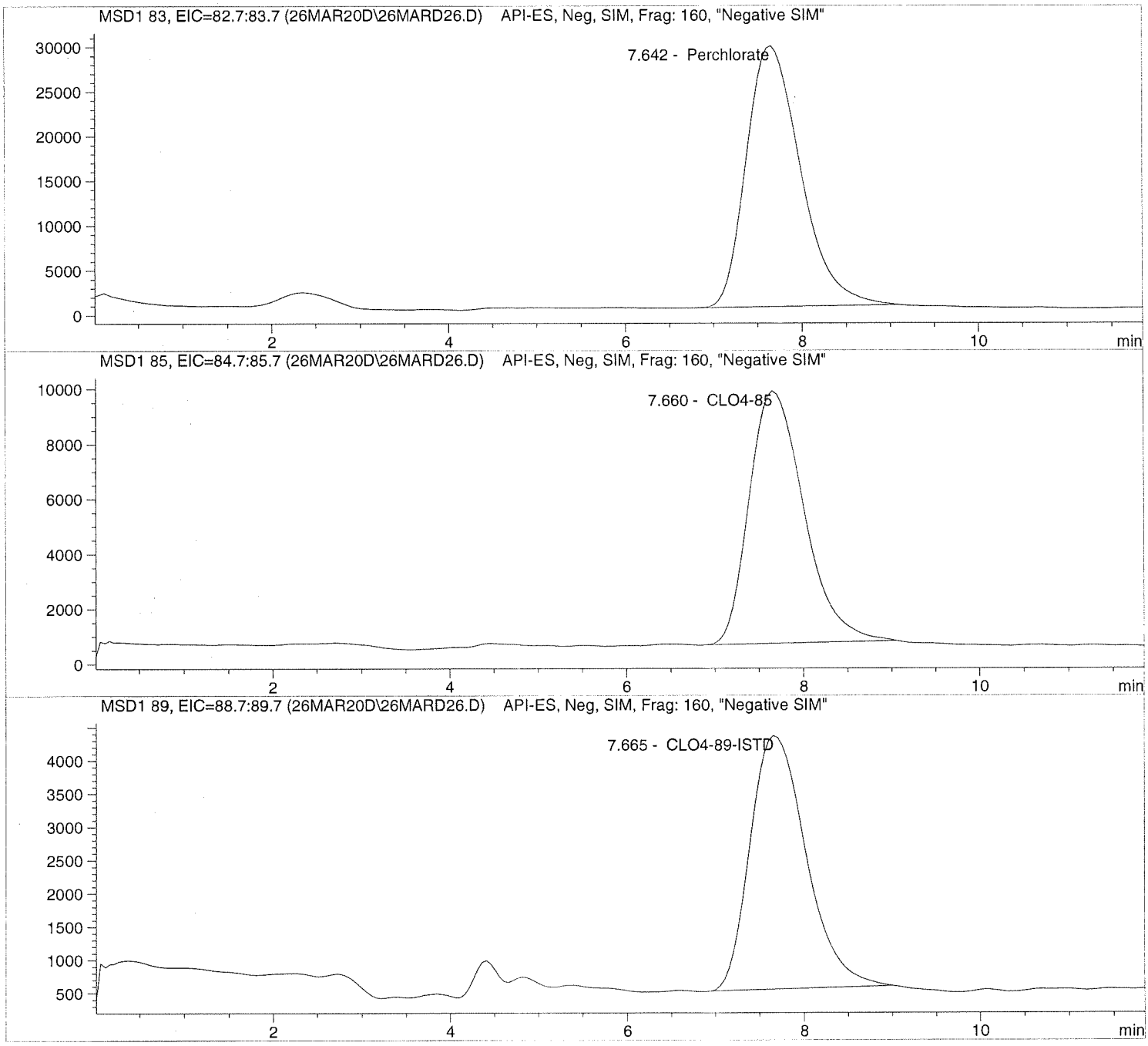
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD26.D Sample Name: 701043 CCV@25

Injection Date:	3/26/2020 14:10:42	Seq Line:	26
Sample Name:	701043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD26.D Sample Name: 701043 CCV@25

Injection Date:	3/26/2020 14:10:42	Seq Line:	26
Sample Name:	701043 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.642	PBA	1233054.6	25.2923	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.660	PBA	391623.1	26.2521	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.665	PBA	166381.0	5.0000	CLO4-89-ISTD

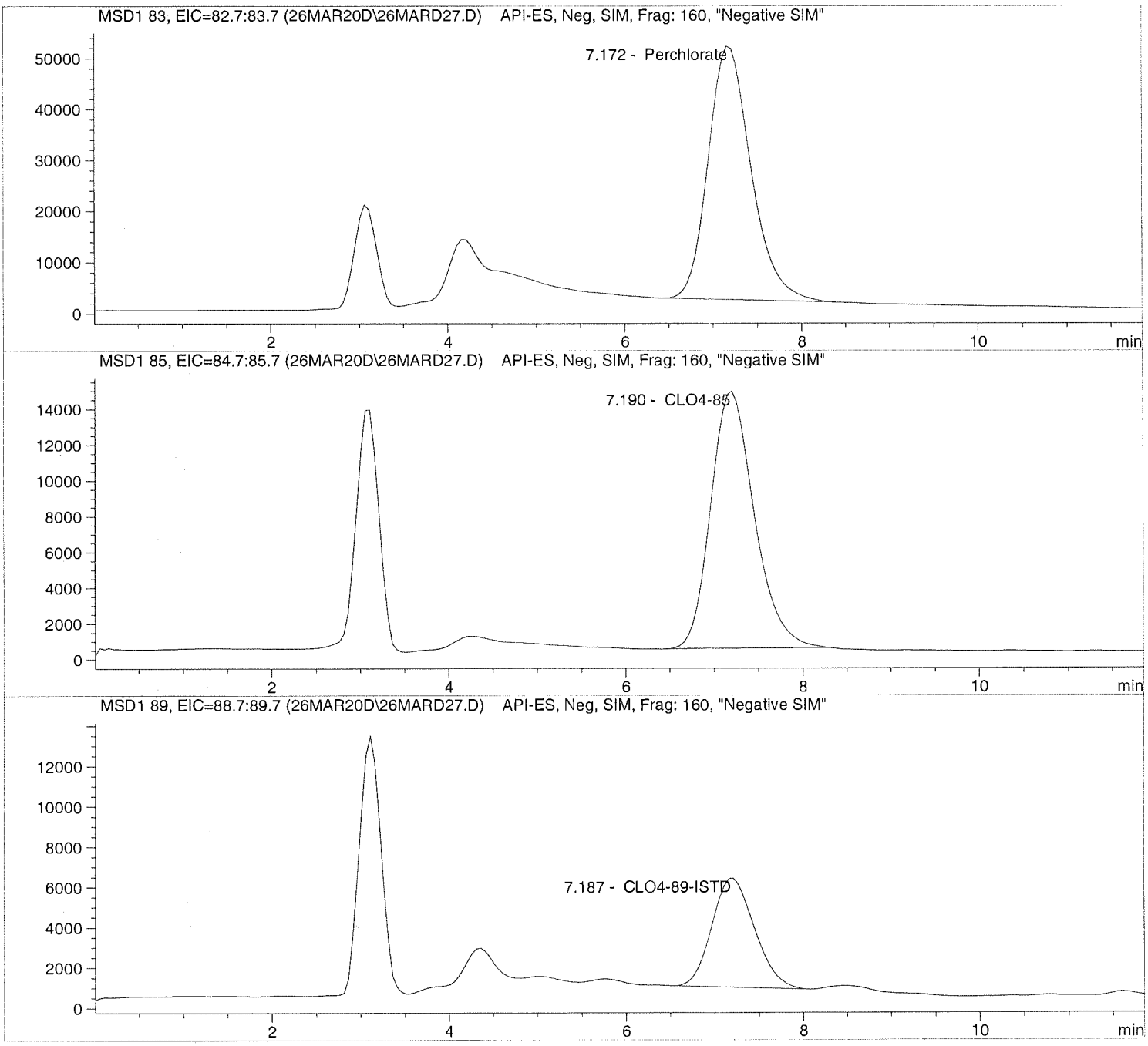
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD27.D Sample Name: 2008062003 10X

Injection Date:	3/26/2020 14:24:42	Seq Line:	27
Sample Name:	2008062003 10X	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD27.D Sample Name: 2008062003 10X

Injection Date:	3/26/2020 14:24:42	Seq Line:	27
Sample Name:	2008062003 10X	Location:	Vial 95
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.172	BBA	1661872.5	308.7998	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.190	PBA	489002.0	299.6381	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.187	PBA	179512.0	50.0000	CLO4-89-ISTD

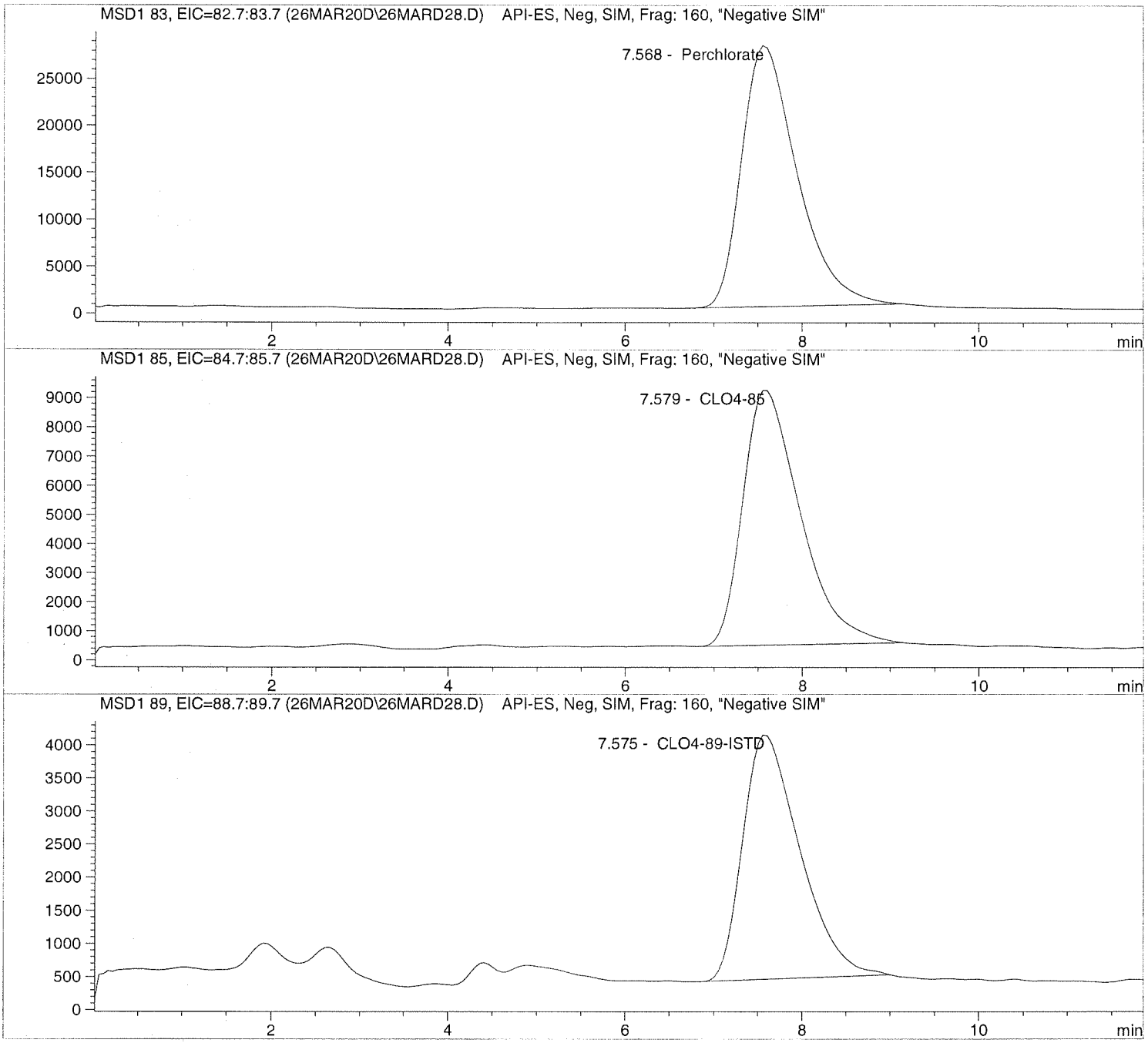
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD28.D Sample Name: 701102 CCV@25

Injection Date:	3/26/2020 14:38:44	Seq Line:	28
Sample Name:	701102 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD28.D Sample Name: 701102 CCV@25

Injection Date:	3/26/2020 14:38:44	Seq Line:	28
Sample Name:	701102 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.568	PBA	1215789.9	25.0215	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.579	PBA	397063.1	26.6375	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.575	PBA	166012.1	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

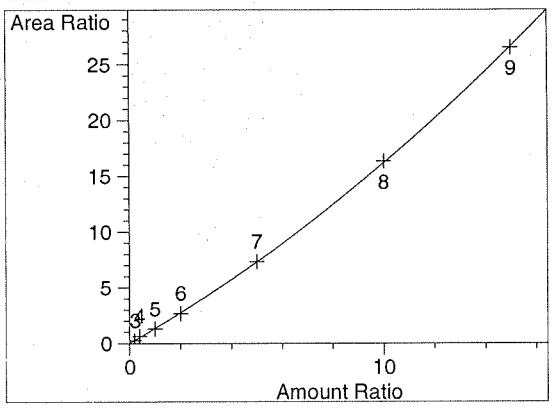
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

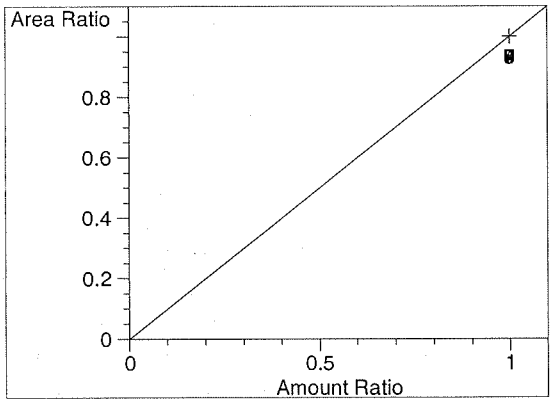
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Calibration Curves

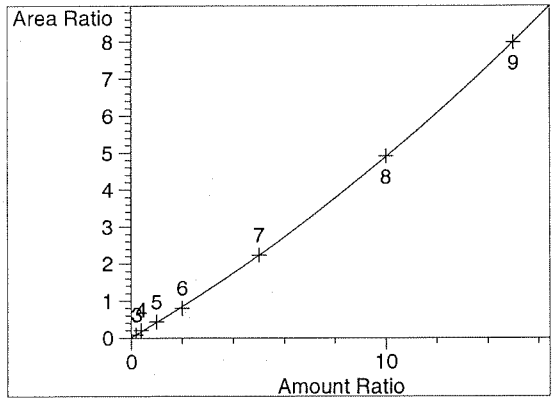
==========



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

==========

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#	*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#	*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#	*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#	*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#	*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#	*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#	*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#	*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#	*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#	*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#	*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#	*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#	*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#	*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#	*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#	*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#	*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#	*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#	*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#	*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#	*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#	*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#	*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#	*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

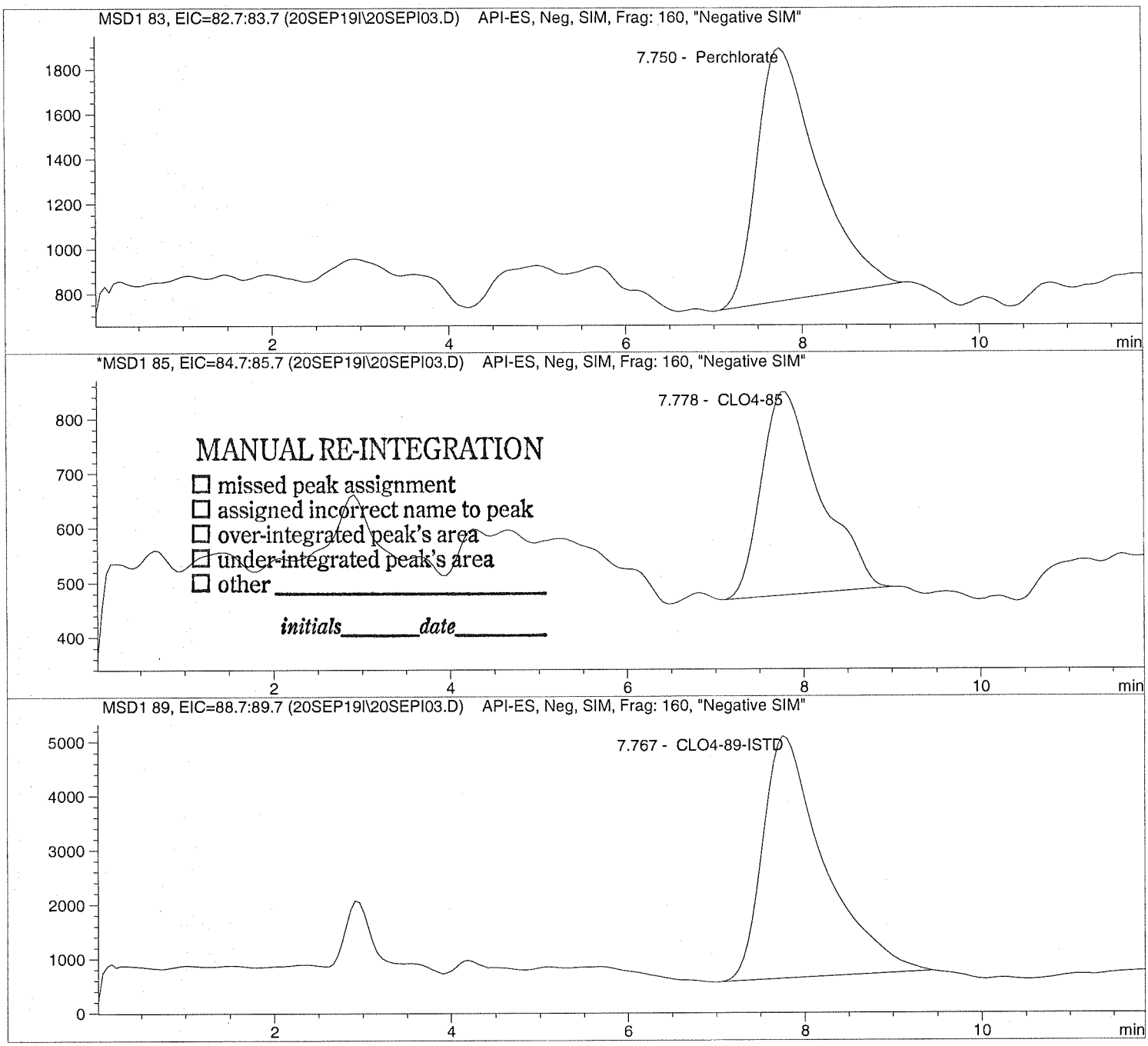
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

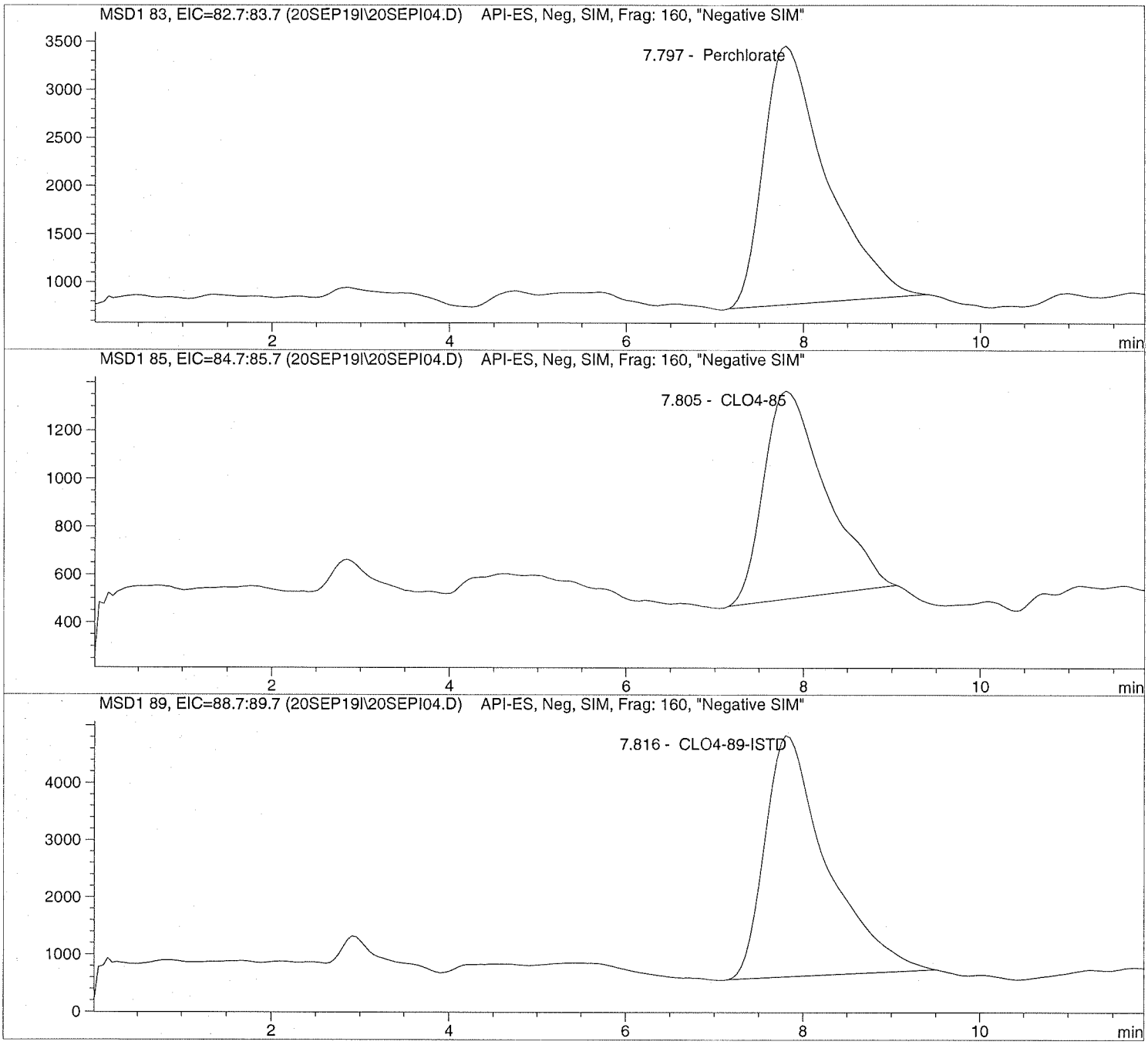
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

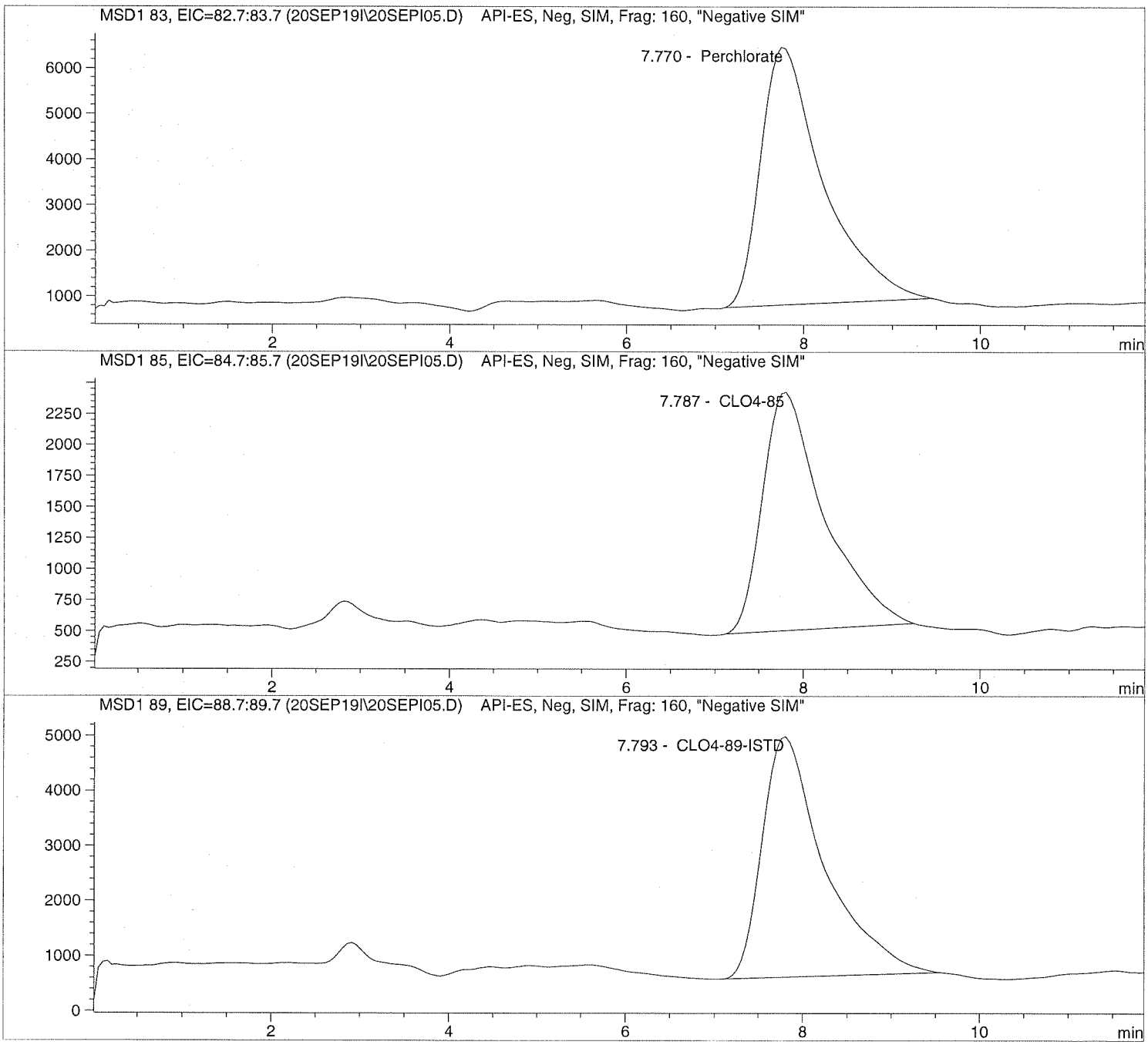
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

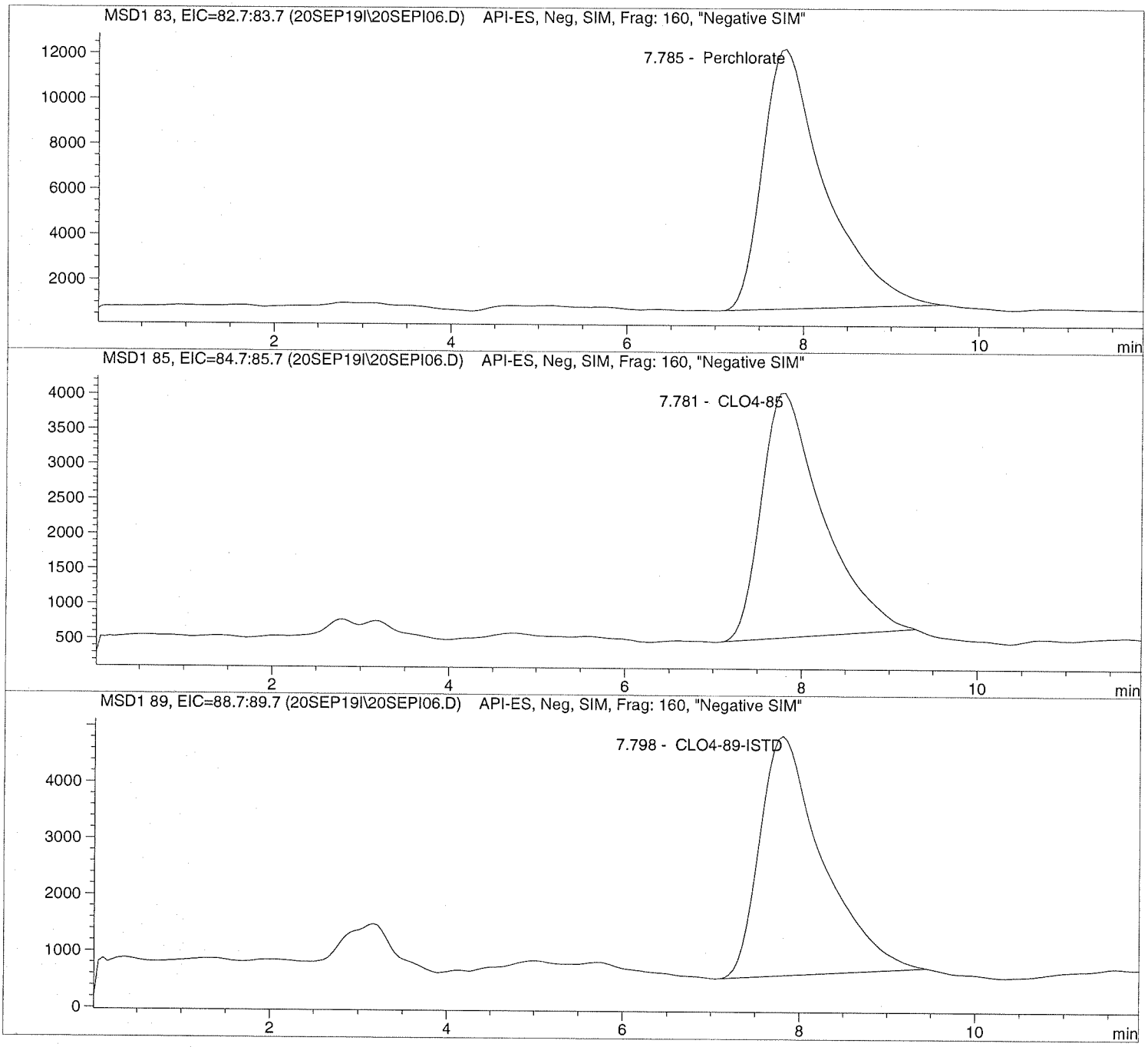
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

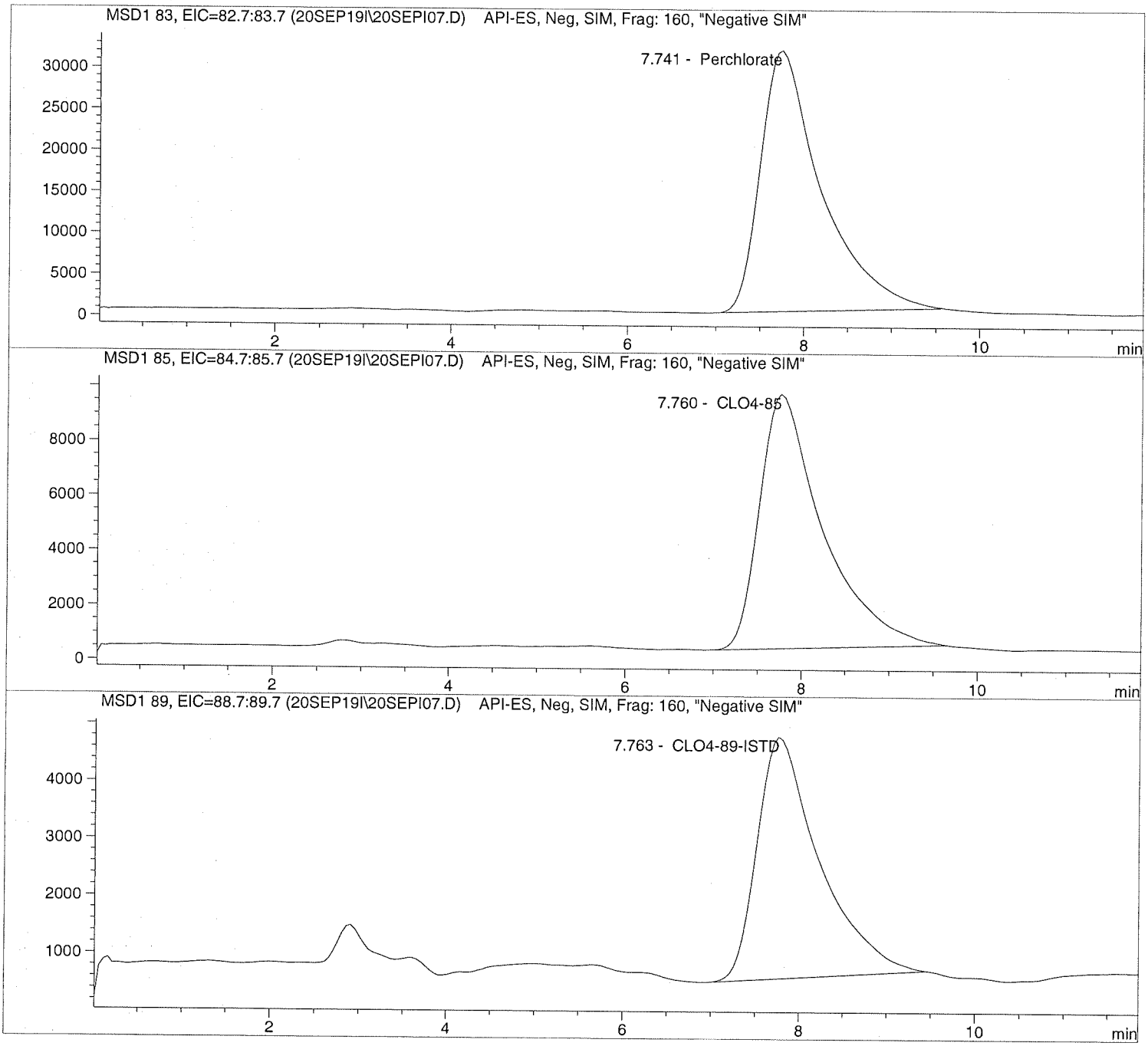
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

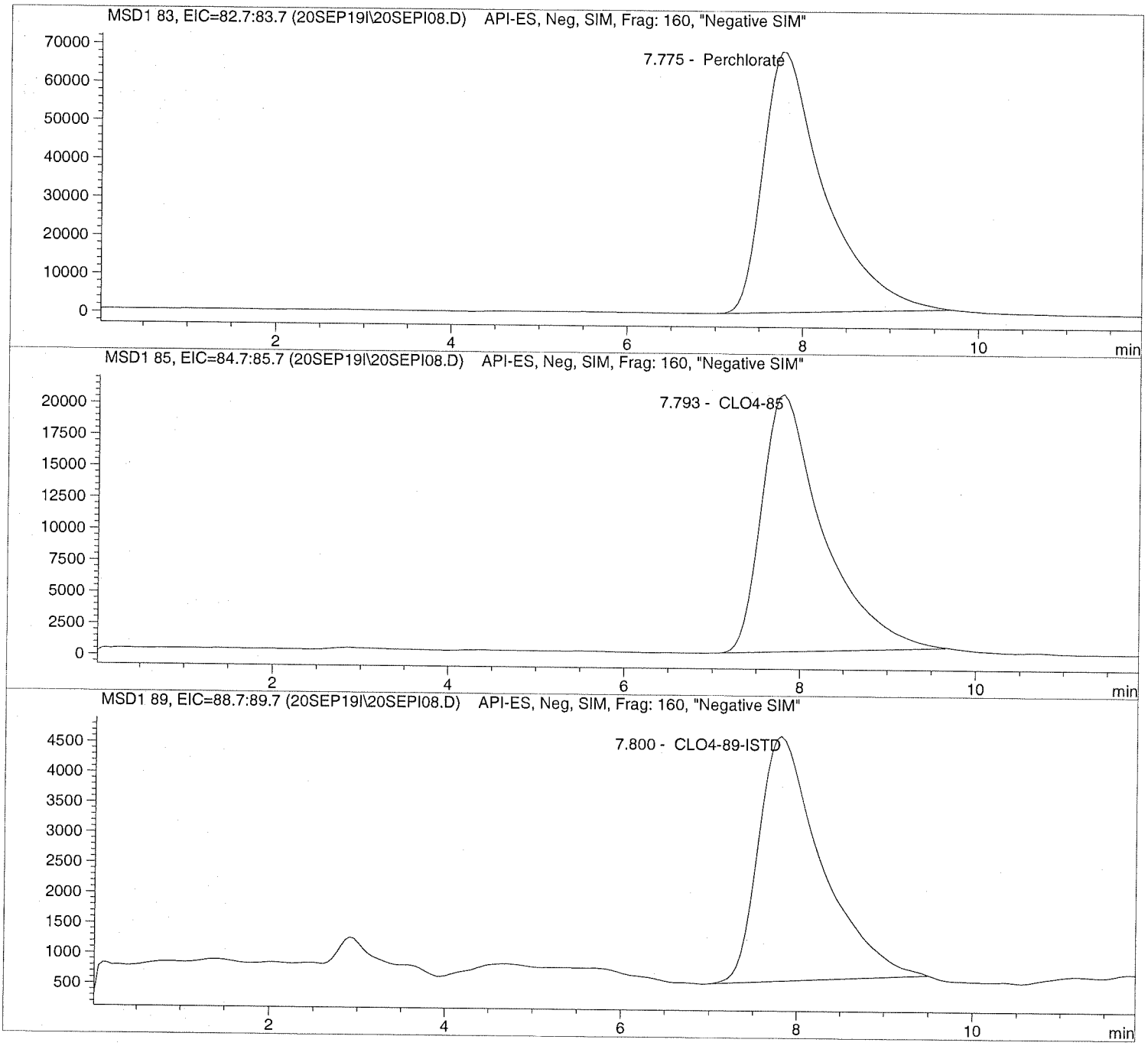
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

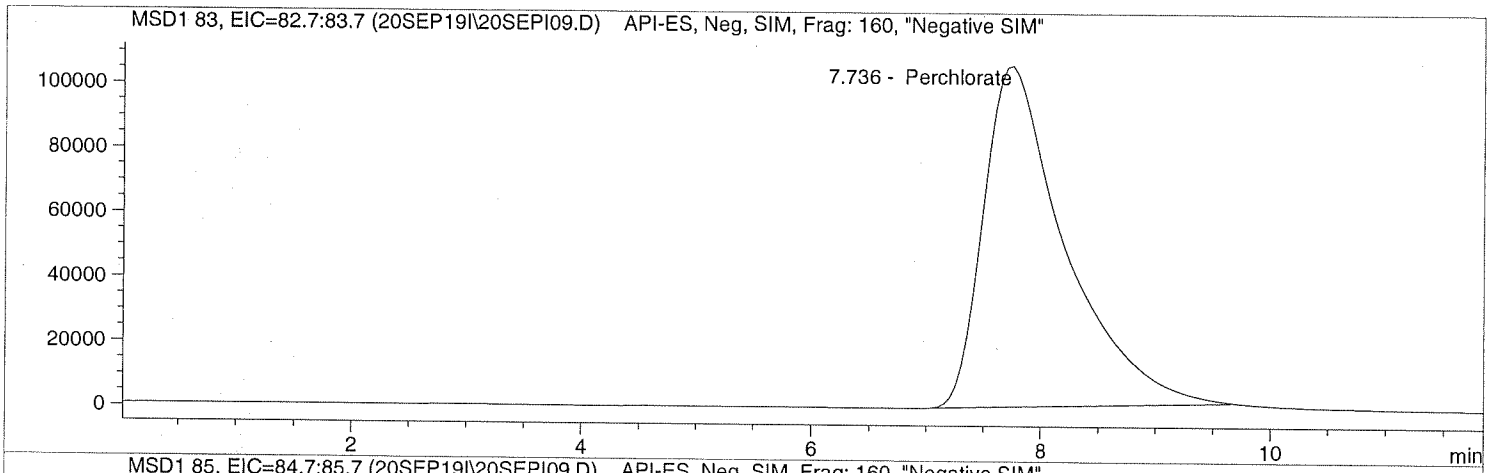
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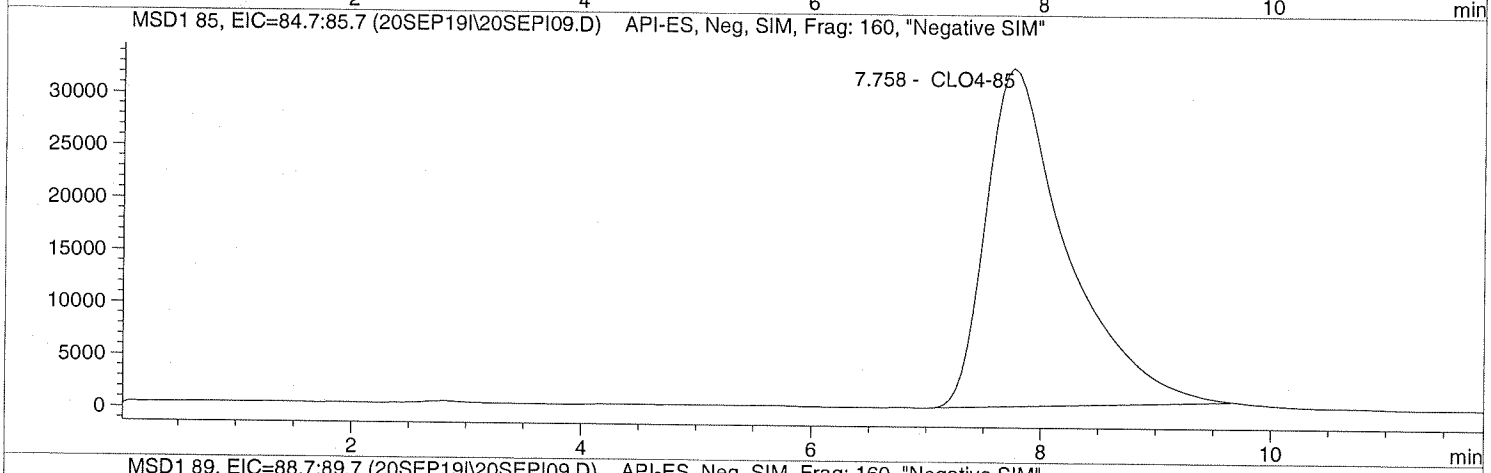
Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

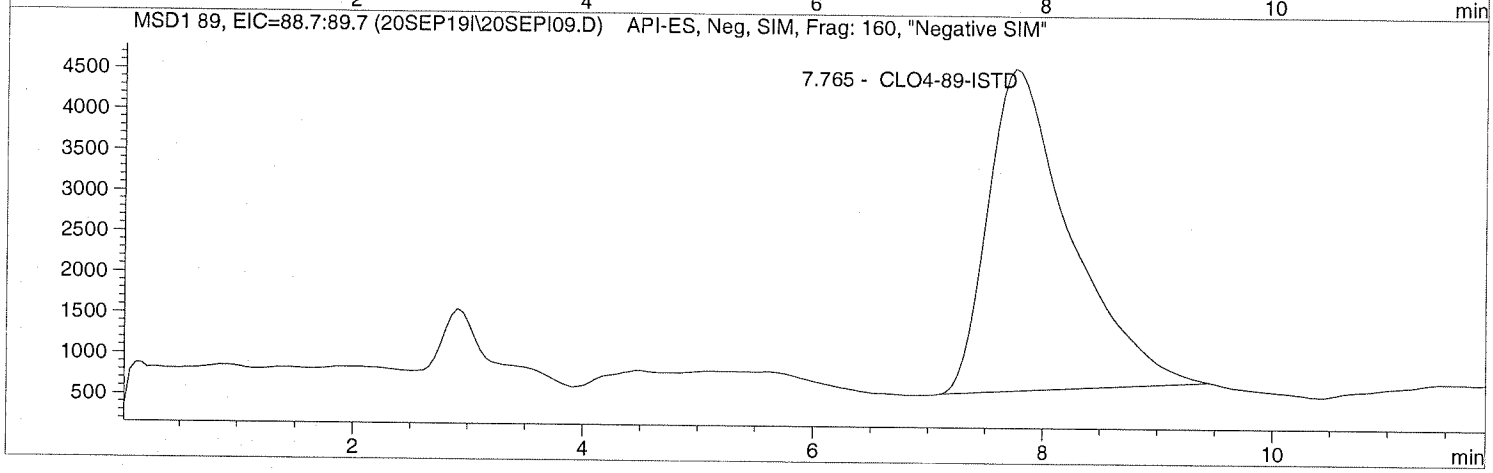
Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

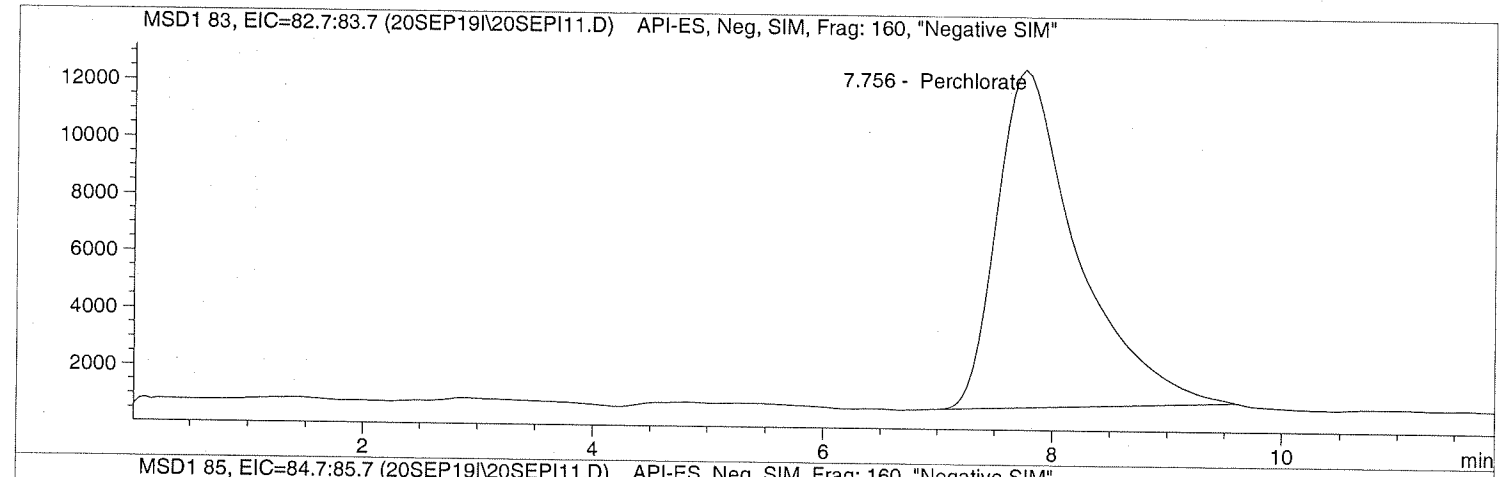
*** End of Report ***

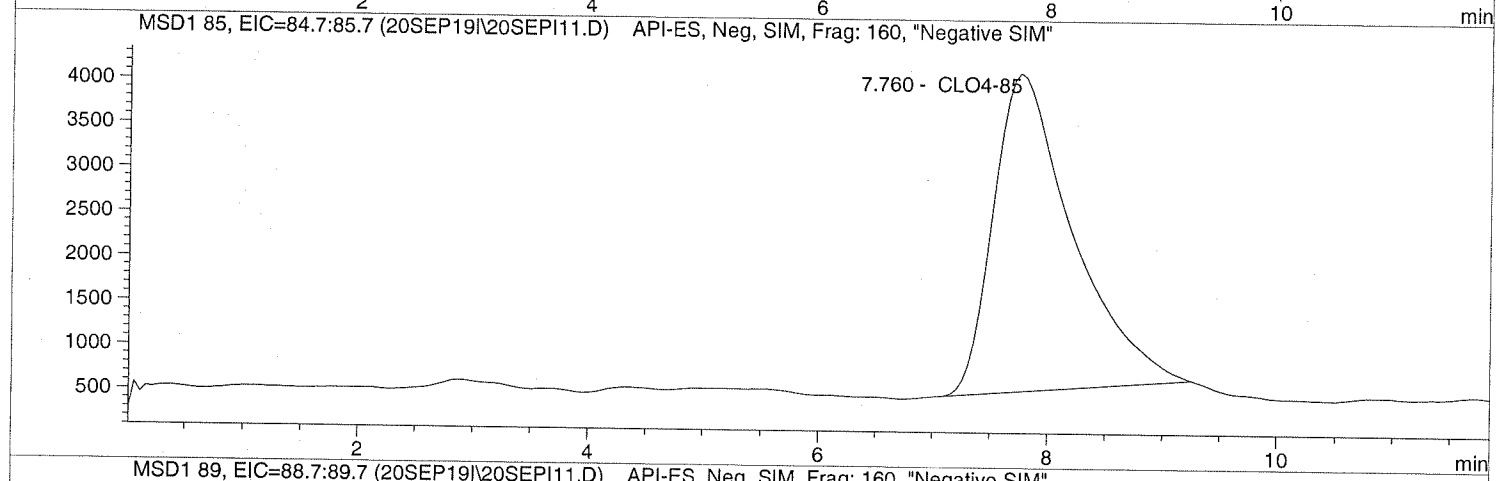
Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

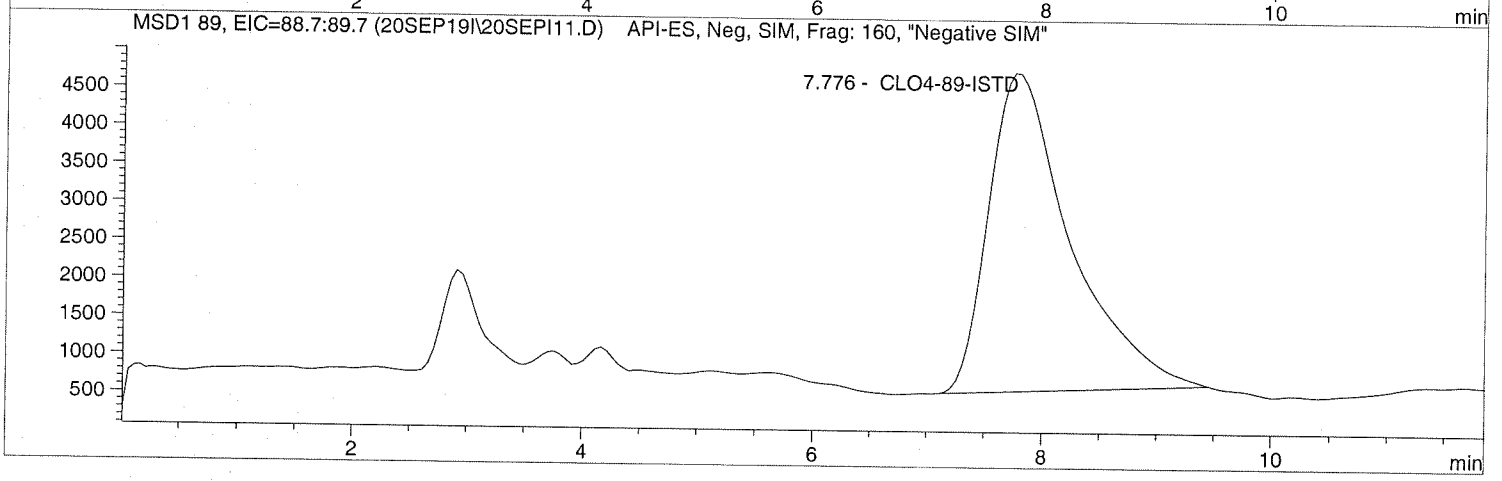
Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date: 9/20/2019 11:14:45 Seq Line: 11
Sample Name: ICAL Verf@10ug/L Location: Vial 80
Acq Operator: TNB Inj. No.: 1
Inj. Vol.: 30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By: Signal
Calib. Data Modified: Mon, 23. Sep. 2019,00:20:59 pm
Multiplier: 1.000000
Dilution: 1.000000
Sample Amount: 10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

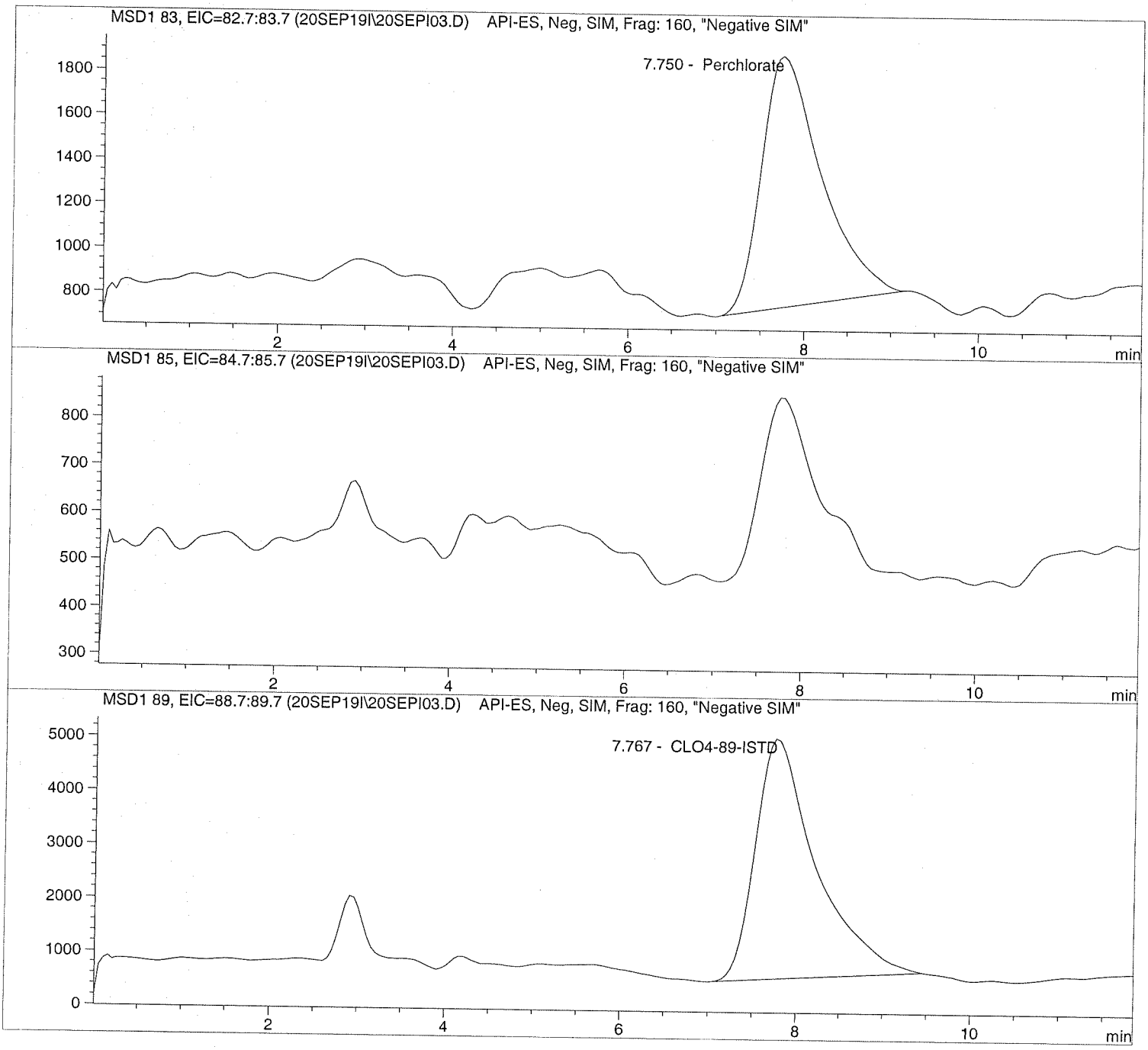
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

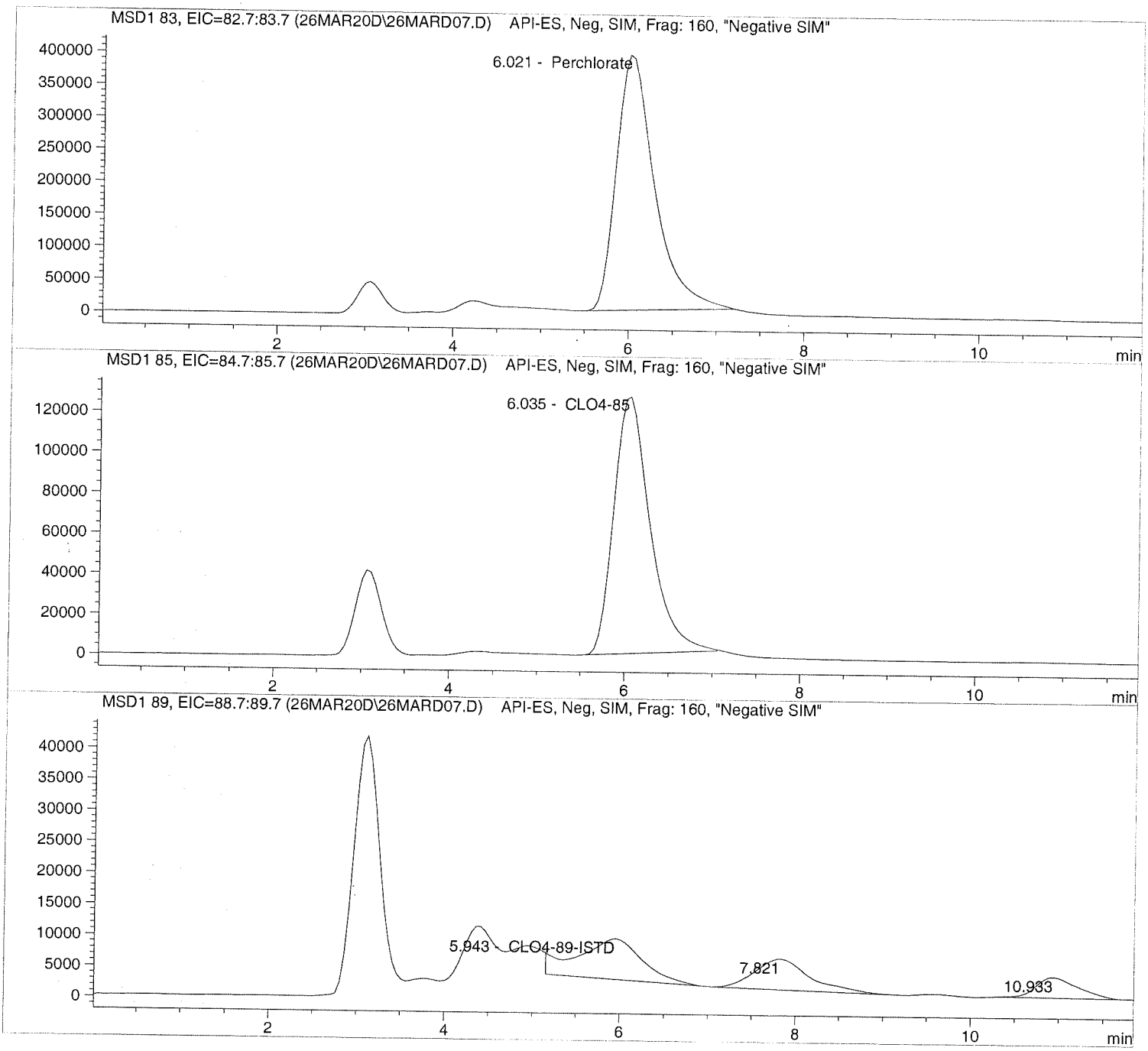
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD07.D Sample Name: 2008062003

Injection Date:	3/26/2020 09:44:40	Seq Line:	7
Sample Name:	2008062003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\26MAR20D\26MARD07.D Sample Name: 2008062003

Injection Date:	3/26/2020 09:44:40	Seq Line:	7
Sample Name:	2008062003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.021	PBA	11797552.0	94.0331	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.035	PBA	3623208.0	95.7707	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.943	BB	332132.3	5.0000	CLO4-89-ISTD
7.821	VBA	216345.0	0.0000	
10.933	PPA	109265.2	0.0000	

*** End of Report ***

10450 Stancliff Rd. Suite 210
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April 03, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20031162**

Laboratory Results for: **Longhorn Army Ammunition Plant- 16**

Dear Susan,

ALS Environmental received 9 sample(s) on Mar 26, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Work Order: HS20031162

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20031162-01	16WW55-200325	Groundwater		25-Mar-2020 08:25	26-Mar-2020 08:37	☐
HS20031162-02	16IW10-200325	Groundwater		25-Mar-2020 09:15	26-Mar-2020 08:37	☐
HS20031162-03	16IW09-200325	Groundwater		25-Mar-2020 10:25	26-Mar-2020 08:37	☐
HS20031162-04	16IW09-200325-FD	Groundwater		25-Mar-2020 10:25	26-Mar-2020 08:37	☐
HS20031162-05	16EW06-200325	Groundwater		25-Mar-2020 11:35	26-Mar-2020 08:37	☐
HS20031162-06	16EW03-200325	Groundwater		25-Mar-2020 13:00	26-Mar-2020 08:37	☐
HS20031162-07	16EW07-200325	Groundwater		25-Mar-2020 13:45	26-Mar-2020 08:37	☐
HS20031162-08	16IW03-200325	Groundwater		25-Mar-2020 14:35	26-Mar-2020 08:37	☐
HS20031162-09	Trip Blank	Water	CG 111519 -105	26-Mar-2020 00:00	26-Mar-2020 08:37	☐

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant- 16
Work Order: HS20031162

Work Order Comments

- The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached.
- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GC Semivolatiles by Method RSK-175

Batch ID: R359276

Sample ID: HS20031163-02MS

- MS and MSD are for an unrelated sample

GCMS Volatiles by Method SW8260

Batch ID: R359115

Sample ID: 16EW06-200325 (HS20031162-05)

- Lowest practical dilution for sample Hs20031162-05 due to matrix.

Sample ID: 16EW07-200325 (HS20031162-07)

- Lowest practical dilution for sample HS20031162-07 due to matrix.

Sample ID: 16IW09-200325 (HS20031162-03)

- Lowest practical dilution for sample HS20031162-03 due to matrix.

Sample ID: 16IW09-200325-FD (HS20031162-04)

- Lowest practical dilution for sample HS20031162-04 due to matrix.

Sample ID: 16IW10-200325 (HS20031162-02)

- Lowest practical dilution for sample HS20031162-02 due to matrix.

Sample ID: 16EW03-200325 (HS20031162-06MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference. cis-1,2-Dichloroethene

WetChemistry by Method SW9056

Batch ID: R359085

Sample ID: 16IW03-200325 (HS20031162-08MS)

- The recovery of the Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) associated with this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS/MSD may be due to sample matrix interference. (Sulfate)

Sample ID: HS20031135-01MSD

- MSD is for an unrelated sample (Sulfate)

WetChemistry by Method SM2320B

Batch ID: R359058

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Work Order: HS20031162

CASE NARRATIVE

WetChemistry by Method SM2320B

Batch ID: R359058

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Sample ID: 16WW55-200325
Collection Date: 25-Mar-2020 08:25

ANALYTICAL REPORT
WorkOrder:HS20031162
Lab ID:HS20031162-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	27-Mar-2020 16:04
1,1-Dichloroethene	**10**		**1.0**	**2.5**	**5.0**	**UG/L**	5	27-Mar-2020 16:04
1,2-Dichloroethane	**5.8**		**1.0**	**2.5**	**5.0**	**UG/L**	5	27-Mar-2020 16:04
cis-1,2-Dichloroethene	**380**		**1.0**	**2.5**	**5.0**	**UG/L**	5	27-Mar-2020 16:04
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	27-Mar-2020 16:04
Trichloroethene	**4,300**		**10**	**25**	**50**	**UG/L**	50	27-Mar-2020 16:28
Vinyl chloride	**25**		**1.0**	**2.5**	**5.0**	**UG/L**	5	27-Mar-2020 16:04
Surr: 1,2-Dichloroethane-d4	*89.8*			**0**	*81-118*	*%REC*	*5*	*27-Mar-2020 16:04*
Surr: 1,2-Dichloroethane-d4	*90.7*			**0**	*81-118*	*%REC*	*50*	*27-Mar-2020 16:28*
Surr: 4-Bromofluorobenzene	*95.2*			**0**	*85-114*	*%REC*	*5*	*27-Mar-2020 16:04*
Surr: 4-Bromofluorobenzene	*97.6*			**0**	*85-114*	*%REC*	*50*	*27-Mar-2020 16:28*
Surr: Dibromofluoromethane	*95.2*			**0**	*80-119*	*%REC*	*5*	*27-Mar-2020 16:04*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*50*	*27-Mar-2020 16:28*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*5*	*27-Mar-2020 16:04*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*50*	*27-Mar-2020 16:28*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000607**	J	**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 10:28
Ethene	**0.00206**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 10:28
Methane	**0.0701**		**0.000535**	**0.00250**	**0.00250**	**mg/L**	5	31-Mar-2020 10:38
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**381**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	27-Mar-2020 04:05
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**3.78**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	26-Mar-2020 22:42
Nitrogen, Nitrate (As N)	**1.21**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	26-Mar-2020 22:42
Sulfate	**770**		**10.0**	**25.0**	**25.0**	**mg/L**	50	27-Mar-2020 01:07
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 12:39
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Sample ID: 16IW10-200325
Collection Date: 25-Mar-2020 09:15

ANALYTICAL REPORT
WorkOrder:HS20031162
Lab ID:HS20031162-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	UG/L	10	27-Mar-2020 14:03
1,1-Dichloroethene	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:03
1,2-Dichloroethane	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:03
cis-1,2-Dichloroethene	**110**		**2.0**	**5.0**	**10**	**UG/L**	10	27-Mar-2020 14:03
Methylene chloride	10	U	4.0	10	20	UG/L	10	27-Mar-2020 14:03
Trichloroethene	**200**		**2.0**	**5.0**	**10**	**UG/L**	10	27-Mar-2020 14:03
Vinyl chloride	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:03
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*81-118*	*%REC*	*10*	*27-Mar-2020 14:03*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*85-114*	*%REC*	*10*	*27-Mar-2020 14:03*
Surr: Dibromofluoromethane	*94.5*			**0**	*80-119*	*%REC*	*10*	*27-Mar-2020 14:03*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*10*	*27-Mar-2020 14:03*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.00646**		**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 10:47
Ethene	**0.0483**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 10:47
Methane	**1.45**		**0.0107**	**0.0500**	**0.0500**	**mg/L**	100	31-Mar-2020 10:58
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**2,390**	a	**25.0**	**25.0**	**25.0**	**mg/L**	5	27-Mar-2020 04:33
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**143**		**0.600**	**2.00**	**2.00**	**mg/L**	20	27-Mar-2020 01:25
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	26-Mar-2020 23:00
Sulfate	**3.19**		**0.200**	**0.500**	**0.500**	**mg/L**	1	26-Mar-2020 23:00
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 12:39
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Sample ID: 16IW09-200325
Collection Date: 25-Mar-2020 10:25

ANALYTICAL REPORT
WorkOrder:HS20031162
Lab ID:HS20031162-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	UG/L	10	27-Mar-2020 14:28
1,1-Dichloroethene	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:28
1,2-Dichloroethane	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:28
cis-1,2-Dichloroethene	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:28
Methylene chloride	10	U	4.0	10	20	UG/L	10	27-Mar-2020 14:28
Trichloroethene	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:28
Vinyl chloride	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:28
Surr: 1,2-Dichloroethane-d4	*89.2*			**0**	*81-118*	*%REC*	*10*	*27-Mar-2020 14:28*
Surr: 4-Bromofluorobenzene	*95.5*			**0**	*85-114*	*%REC*	*10*	*27-Mar-2020 14:28*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*10*	*27-Mar-2020 14:28*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*10*	*27-Mar-2020 14:28*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.0114**		**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 11:30
Ethene	**0.0102**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 11:30
Methane	**1.34**		**0.0107**	**0.0500**	**0.0500**	**mg/L**	100	31-Mar-2020 11:38
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**432**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	27-Mar-2020 04:39
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**11.6**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	26-Mar-2020 23:55
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	26-Mar-2020 23:55
Sulfate	**1.43**		**0.200**	**0.500**	**0.500**	**mg/L**	1	26-Mar-2020 23:55
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 12:39
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Sample ID: 16IW09-200325-FD
Collection Date: 25-Mar-2020 10:25

ANALYTICAL REPORT
WorkOrder:HS20031162
Lab ID:HS20031162-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	UG/L	10	27-Mar-2020 14:52
1,1-Dichloroethene	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:52
1,2-Dichloroethane	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:52
cis-1,2-Dichloroethene	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:52
Methylene chloride	10	U	4.0	10	20	UG/L	10	27-Mar-2020 14:52
Trichloroethene	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:52
Vinyl chloride	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 14:52
Surr: 1,2-Dichloroethane-d4	*90.3*			**0**	*81-118*	*%REC*	*10*	*27-Mar-2020 14:52*
Surr: 4-Bromofluorobenzene	*95.4*			**0**	*85-114*	*%REC*	*10*	*27-Mar-2020 14:52*
Surr: Dibromofluoromethane	*95.6*			**0**	*80-119*	*%REC*	*10*	*27-Mar-2020 14:52*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*10*	*27-Mar-2020 14:52*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.0119**		**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 11:48
Ethene	**0.00793**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 11:48
Methane	**1.11**		**0.0107**	**0.0500**	**0.0500**	**mg/L**	100	31-Mar-2020 12:05
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**440**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	27-Mar-2020 05:18
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**11.3**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	27-Mar-2020 00:13
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	27-Mar-2020 00:13
Sulfate	**1.48**		**0.200**	**0.500**	**0.500**	**mg/L**	1	27-Mar-2020 00:13
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 12:39
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Sample ID: 16EW06-200325
Collection Date: 25-Mar-2020 11:35

ANALYTICAL REPORT
WorkOrder:HS20031162
Lab ID:HS20031162-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	50	U	30	50	100	UG/L	100	27-Mar-2020 15:16
1,1-Dichloroethene	50	U	20	50	100	UG/L	100	27-Mar-2020 15:16
1,2-Dichloroethane	50	U	20	50	100	UG/L	100	27-Mar-2020 15:16
cis-1,2-Dichloroethene	**160**		**20**	**50**	**100**	**UG/L**	100	27-Mar-2020 15:16
Methylene chloride	100	U	40	100	200	UG/L	100	27-Mar-2020 15:16
Trichloroethene	50	U	20	50	100	UG/L	100	27-Mar-2020 15:16
Vinyl chloride	50	U	20	50	100	UG/L	100	27-Mar-2020 15:16
Surr: 1,2-Dichloroethane-d4	*90.0*			**0**	*81-118*	*%REC*	*100*	*27-Mar-2020 15:16*
Surr: 4-Bromofluorobenzene	*94.5*			**0**	*85-114*	*%REC*	*100*	*27-Mar-2020 15:16*
Surr: Dibromofluoromethane	*95.1*			**0**	*80-119*	*%REC*	*100*	*27-Mar-2020 15:16*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*100*	*27-Mar-2020 15:16*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 12:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Sample ID: 16EW03-200325
Collection Date: 25-Mar-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20031162
Lab ID:HS20031162-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	27-Mar-2020 13:39
1,1-Dichloroethene	2.5	U	1.0	2.5	5.0	UG/L	5	27-Mar-2020 13:39
1,2-Dichloroethane	**4.5**	J	**1.0**	**2.5**	**5.0**	**UG/L**	5	27-Mar-2020 13:39
cis-1,2-Dichloroethene	**1,700**		**5.0**	**12**	**25**	**UG/L**	25	27-Mar-2020 17:40
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	27-Mar-2020 13:39
Trichloroethene	**170**		**1.0**	**2.5**	**5.0**	**UG/L**	5	27-Mar-2020 13:39
Vinyl chloride	**750**		**1.0**	**2.5**	**5.0**	**UG/L**	5	27-Mar-2020 13:39
Surr: 1,2-Dichloroethane-d4	*88.9*			**0**	*81-118*	*%REC*	*5*	*27-Mar-2020 13:39*
Surr: 1,2-Dichloroethane-d4	*88.1*			**0**	*81-118*	*%REC*	*25*	*27-Mar-2020 17:40*
Surr: 4-Bromofluorobenzene	*92.8*			**0**	*85-114*	*%REC*	*25*	*27-Mar-2020 17:40*
Surr: 4-Bromofluorobenzene	*96.4*			**0**	*85-114*	*%REC*	*5*	*27-Mar-2020 13:39*
Surr: Dibromofluoromethane	*93.4*			**0**	*80-119*	*%REC*	*5*	*27-Mar-2020 13:39*
Surr: Dibromofluoromethane	*93.6*			**0**	*80-119*	*%REC*	*25*	*27-Mar-2020 17:40*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*5*	*27-Mar-2020 13:39*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*25*	*27-Mar-2020 17:40*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 12:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Sample ID: 16EW07-200325
Collection Date: 25-Mar-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20031162
Lab ID:HS20031162-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	50	U	30	50	100	UG/L	100	27-Mar-2020 15:40
1,1-Dichloroethene	50	U	20	50	100	UG/L	100	27-Mar-2020 15:40
1,2-Dichloroethane	50	U	20	50	100	UG/L	100	27-Mar-2020 15:40
cis-1,2-Dichloroethene	50	U	20	50	100	UG/L	100	27-Mar-2020 15:40
Methylene chloride	100	U	40	100	200	UG/L	100	27-Mar-2020 15:40
Trichloroethene	**100**		**20**	**50**	**100**	**UG/L**	100	27-Mar-2020 15:40
Vinyl chloride	50	U	20	50	100	UG/L	100	27-Mar-2020 15:40
Surr: 1,2-Dichloroethane-d4	*91.2*			**0**	*81-118*	*%REC*	*100*	*27-Mar-2020 15:40*
Surr: 4-Bromofluorobenzene	*93.9*			**0**	*85-114*	*%REC*	*100*	*27-Mar-2020 15:40*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*100*	*27-Mar-2020 15:40*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*100*	*27-Mar-2020 15:40*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 12:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Sample ID: 16IW03-200325
Collection Date: 25-Mar-2020 14:35

ANALYTICAL REPORT
WorkOrder:HS20031162
Lab ID:HS20031162-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	3.0	5.0	10	UG/L	10	27-Mar-2020 16:52
1,1-Dichloroethene	**37**		**2.0**	**5.0**	**10**	**UG/L**	10	27-Mar-2020 16:52
1,2-Dichloroethane	5.0	U	2.0	5.0	10	UG/L	10	27-Mar-2020 16:52
cis-1,2-Dichloroethene	**14,000**		**20**	**50**	**100**	**UG/L**	100	27-Mar-2020 17:16
Methylene chloride	10	U	4.0	10	20	UG/L	10	27-Mar-2020 16:52
Trichloroethene	**8,000**		**20**	**50**	**100**	**UG/L**	100	27-Mar-2020 17:16
Vinyl chloride	**160**		**2.0**	**5.0**	**10**	**UG/L**	10	27-Mar-2020 16:52
Surr: 1,2-Dichloroethane-d4	*90.8*			**0**	*81-118*	*%REC*	*10*	*27-Mar-2020 16:52*
Surr: 1,2-Dichloroethane-d4	*90.0*			**0**	*81-118*	*%REC*	*100*	*27-Mar-2020 17:16*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*85-114*	*%REC*	*10*	*27-Mar-2020 16:52*
Surr: 4-Bromofluorobenzene	*96.4*			**0**	*85-114*	*%REC*	*100*	*27-Mar-2020 17:16*
Surr: Dibromofluoromethane	*95.0*			**0**	*80-119*	*%REC*	*10*	*27-Mar-2020 16:52*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*100*	*27-Mar-2020 17:16*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*10*	*27-Mar-2020 16:52*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*100*	*27-Mar-2020 17:16*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.00138**		**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 12:15
Ethene	**0.00460**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	31-Mar-2020 12:15
Methane	**0.0124**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	31-Mar-2020 12:15
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**502**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	27-Mar-2020 04:51
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Bromide	**0.582**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	27-Mar-2020 00:31
Nitrogen, Nitrate (As N)	**0.325**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	27-Mar-2020 00:31
Sulfate	**6.92**		**0.200**	**0.500**	**0.500**	**mg/L**	1	27-Mar-2020 00:31
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 12:39
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
Sample ID: Trip Blank
Collection Date: 26-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20031162
Lab ID:HS20031162-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	27-Mar-2020 13:15
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	27-Mar-2020 13:15
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	27-Mar-2020 13:15
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	27-Mar-2020 13:15
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	27-Mar-2020 13:15
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	27-Mar-2020 13:15
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	27-Mar-2020 13:15
Surr: 1,2-Dichloroethane-d4	*88.3*			**0**	*81-118*	*%REC*	*1*	*27-Mar-2020 13:15*
Surr: 4-Bromofluorobenzene	*96.7*			**0**	*85-114*	*%REC*	*1*	*27-Mar-2020 13:15*
Surr: Dibromofluoromethane	*92.5*			**0**	*80-119*	*%REC*	*1*	*27-Mar-2020 13:15*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*27-Mar-2020 13:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R359058 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS20031162-01	16WW55-200325	25 Mar 2020 08:25			27 Mar 2020 04:05	1
HS20031162-02	16IW10-200325	25 Mar 2020 09:15			27 Mar 2020 04:33	5
HS20031162-03	16IW09-200325	25 Mar 2020 10:25			27 Mar 2020 04:39	1
HS20031162-04	16IW09-200325-FD	25 Mar 2020 10:25			27 Mar 2020 05:18	1
HS20031162-08	16IW03-200325	25 Mar 2020 14:35			27 Mar 2020 04:51	1
Batch ID: R359085 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20031162-01	16WW55-200325	25 Mar 2020 08:25			27 Mar 2020 01:07	50
HS20031162-01	16WW55-200325	25 Mar 2020 08:25			26 Mar 2020 22:42	1
HS20031162-02	16IW10-200325	25 Mar 2020 09:15			27 Mar 2020 01:25	20
HS20031162-02	16IW10-200325	25 Mar 2020 09:15			26 Mar 2020 23:00	1
HS20031162-03	16IW09-200325	25 Mar 2020 10:25			26 Mar 2020 23:55	1
HS20031162-04	16IW09-200325-FD	25 Mar 2020 10:25			27 Mar 2020 00:13	1
HS20031162-08	16IW03-200325	25 Mar 2020 14:35			27 Mar 2020 00:31	1
Batch ID: R359115 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20031162-09	Trip Blank	26 Mar 2020 00:00			27 Mar 2020 13:15	1
Batch ID: R359115 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20031162-01	16WW55-200325	25 Mar 2020 08:25			27 Mar 2020 16:28	50
HS20031162-01	16WW55-200325	25 Mar 2020 08:25			27 Mar 2020 16:04	5
HS20031162-02	16IW10-200325	25 Mar 2020 09:15			27 Mar 2020 14:03	10
HS20031162-03	16IW09-200325	25 Mar 2020 10:25			27 Mar 2020 14:28	10
HS20031162-04	16IW09-200325-FD	25 Mar 2020 10:25			27 Mar 2020 14:52	10
HS20031162-05	16EW06-200325	25 Mar 2020 11:35			27 Mar 2020 15:16	100
HS20031162-06	16EW03-200325	25 Mar 2020 13:00			27 Mar 2020 17:40	25
HS20031162-06	16EW03-200325	25 Mar 2020 13:00			27 Mar 2020 13:39	5
HS20031162-07	16EW07-200325	25 Mar 2020 13:45			27 Mar 2020 15:40	100
HS20031162-08	16IW03-200325	25 Mar 2020 14:35			27 Mar 2020 17:16	100
HS20031162-08	16IW03-200325	25 Mar 2020 14:35			27 Mar 2020 16:52	10
Batch ID: R359276 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS20031162-01	16WW55-200325	25 Mar 2020 08:25			31 Mar 2020 10:38	5
HS20031162-01	16WW55-200325	25 Mar 2020 08:25			31 Mar 2020 10:28	1
HS20031162-02	16IW10-200325	25 Mar 2020 09:15			31 Mar 2020 10:58	100
HS20031162-02	16IW10-200325	25 Mar 2020 09:15			31 Mar 2020 10:47	1
HS20031162-03	16IW09-200325	25 Mar 2020 10:25			31 Mar 2020 11:38	100
HS20031162-03	16IW09-200325	25 Mar 2020 10:25			31 Mar 2020 11:30	1
HS20031162-04	16IW09-200325-FD	25 Mar 2020 10:25			31 Mar 2020 12:05	100
HS20031162-04	16IW09-200325-FD	25 Mar 2020 10:25			31 Mar 2020 11:48	1
HS20031162-08	16IW03-200325	25 Mar 2020 14:35			31 Mar 2020 12:15	1

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R359385 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20031162-01	16WW55-200325	25 Mar 2020 08:25			02 Apr 2020 12:39	1
HS20031162-02	16IW10-200325	25 Mar 2020 09:15			02 Apr 2020 12:39	1
HS20031162-03	16IW09-200325	25 Mar 2020 10:25			02 Apr 2020 12:39	1
HS20031162-04	16IW09-200325-FD	25 Mar 2020 10:25			02 Apr 2020 12:39	1
HS20031162-05	16EW06-200325	25 Mar 2020 11:35			02 Apr 2020 12:39	1
HS20031162-06	16EW03-200325	25 Mar 2020 13:00			02 Apr 2020 12:39	1
HS20031162-07	16EW07-200325	25 Mar 2020 13:45			02 Apr 2020 12:39	1
HS20031162-08	16IW03-200325	25 Mar 2020 14:35			02 Apr 2020 12:39	1
Batch ID: R359470 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20031162-01	16WW55-200325	25 Mar 2020 08:25			03 Apr 2020 15:23	1
HS20031162-02	16IW10-200325	25 Mar 2020 09:15			03 Apr 2020 15:23	1
HS20031162-03	16IW09-200325	25 Mar 2020 10:25			03 Apr 2020 15:23	1
HS20031162-04	16IW09-200325-FD	25 Mar 2020 10:25			03 Apr 2020 15:23	1
HS20031162-08	16IW03-200325	25 Mar 2020 14:35			03 Apr 2020 15:23	1

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

QC BATCH REPORT

Batch ID: R359276 (0) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-200331** Units: **mg/L** Analysis Date: **31-Mar-2020 06:29**
Client ID: Run ID: **FID-4_359276** SeqNo: **5539615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000500	0.00100								U
Ethene	0.000500	0.00100								U
Methane	0.000500	0.000500								U

LCS Sample ID: **LCS-200331** Units: **mg/L** Analysis Date: **31-Mar-2020 06:11**
Client ID: Run ID: **FID-4_359276** SeqNo: **5539613** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0176	0.00100	0.01804	0	97.3	75 - 125				
Ethene	0.0174	0.00100	0.0168	0	104	75 - 125				
Methane	0.00930	0.000500	0.009647	0	96.4	75 - 125				

LCSD Sample ID: **LCSD-200331** Units: **mg/L** Analysis Date: **31-Mar-2020 06:20**
Client ID: Run ID: **FID-4_359276** SeqNo: **5539614** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0174	0.00100	0.01804	0	96.1	75 - 125	0.01755	1.19	30	
Ethene	0.0172	0.00100	0.0168	0	102	75 - 125	0.01745	1.71	30	
Methane	0.00946	0.000500	0.009647	0	98.1	75 - 125	0.009296	1.76	30	

MS Sample ID: **HS20031163-02MS** Units: **mg/L** Analysis Date: **31-Mar-2020 07:19**
Client ID: Run ID: **FID-4_359276** SeqNo: **5539619** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0285	0.00100	0.01804	0	158	75 - 125				S
Ethene	0.0292	0.00100	0.0168	0.004463	147	75 - 125				S
Methane	0.548	0.000500	0.009647	0.5938	-476	75 - 125				SEO

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

QC BATCH REPORT

Batch ID: R359276 (0) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MSD Sample ID: **HS20031163-02MSD** Units: **mg/L** Analysis Date: **31-Mar-2020 07:28**
Client ID: Run ID: **FID-4_359276** SeqNo: **5539620** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0292	0.00100	0.01804	0	162	75 - 125	0.02848	2.48	30	S
Ethene	0.0303	0.00100	0.0168	0.004463	154	75 - 125	0.02918	3.67	30	S
Methane	0.546	0.000500	0.009647	0.5938	-497	75 - 125	0.5478	0.362	30	SEO

The following samples were analyzed in this batch: HS20031162-01 HS20031162-02 HS20031162-03 HS20031162-04 HS20031162-08

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

QC BATCH REPORT

Batch ID: R359115 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200327** Units: **UG/L** Analysis Date: **27-Mar-2020 12:51**
Client ID: Run ID: **VOA6_359115** SeqNo: **5536088** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.86*	*1.0*	*50*	*0*	*89.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*47.65*	*1.0*	*50*	*0*	*95.3*	*85 - 114*				
Surr: Dibromofluoromethane	*47.58*	*1.0*	*50*	*0*	*95.2*	*80 - 119*				
Surr: Toluene-d8	*52.28*	*1.0*	*50*	*0*	*105*	*89 - 112*				

LCS Sample ID: **VLCSW-200327** Units: **UG/L** Analysis Date: **27-Mar-2020 12:03**
Client ID: Run ID: **VOA6_359115** SeqNo: **5536087** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.01	1.0	20	0	100	80 - 119				
1,1-Dichloroethene	18.16	1.0	20	0	90.8	71 - 131				
1,2-Dichloroethane	20	1.0	20	0	100.0	73 - 128				
cis-1,2-Dichloroethene	19.87	1.0	20	0	99.4	78 - 123				
Methylene chloride	19.13	2.0	20	0	95.7	74 - 124				
Trichloroethene	19.49	1.0	20	0	97.5	79 - 123				
Vinyl chloride	16.6	1.0	20	0	83.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*50.89*	*1.0*	*50*	*0*	*102*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.72*	*1.0*	*50*	*0*	*99.4*	*85 - 114*				
Surr: Dibromofluoromethane	*52.07*	*1.0*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*49.21*	*1.0*	*50*	*0*	*98.4*	*89 - 112*				

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

QC BATCH REPORT

Batch ID: R359115 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20031162-06MS** Units: **UG/L** Analysis Date: **27-Mar-2020 18:04**
Client ID: **16EW03-200325** Run ID: **VOA6_359115** SeqNo: **5536101** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	501.9	25	500	0	100	80 - 119				
1,1-Dichloroethene	495.1	25	500	0	99.0	71 - 131				
1,2-Dichloroethane	505.1	25	500	0	101	73 - 128				
cis-1,2-Dichloroethene	2190	25	500	1699	98.1	78 - 123				
Methylene chloride	475.7	50	500	0	95.1	74 - 124				
Trichloroethene	706.8	25	500	214.5	98.5	79 - 123				
Vinyl chloride	1377	25	500	836.3	108	58 - 137				
Surr: 1,2-Dichloroethane-d4	*1112*	*25*	*1250*	*0*	*89.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*1225*	*25*	*1250*	*0*	*98.0*	*85 - 114*				
Surr: Dibromofluoromethane	*1200*	*25*	*1250*	*0*	*96.0*	*80 - 119*				
Surr: Toluene-d8	*1287*	*25*	*1250*	*0*	*103*	*89 - 112*				

MSD Sample ID: **HS20031162-06MSD** Units: **UG/L** Analysis Date: **27-Mar-2020 18:28**
Client ID: **16EW03-200325** Run ID: **VOA6_359115** SeqNo: **5536102** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	488.9	25	500	0	97.8	80 - 119	501.9	2.64	20	
1,1-Dichloroethene	440.5	25	500	0	88.1	71 - 131	495.1	11.7	20	
1,2-Dichloroethane	488.5	25	500	0	97.7	73 - 128	505.1	3.33	20	
cis-1,2-Dichloroethene	2069	25	500	1699	73.9	78 - 123	2190	5.67	20	S
Methylene chloride	446.4	50	500	0	89.3	74 - 124	475.7	6.36	20	
Trichloroethene	696	25	500	214.5	96.3	79 - 123	706.8	1.53	20	
Vinyl chloride	1235	25	500	836.3	79.7	58 - 137	1377	10.9	20	
Surr: 1,2-Dichloroethane-d4	*1123*	*25*	*1250*	*0*	*89.8*	*81 - 118*	*1112*	*0.992*	*20*	
Surr: 4-Bromofluorobenzene	*1224*	*25*	*1250*	*0*	*97.9*	*85 - 114*	*1225*	*0.0997*	*20*	
Surr: Dibromofluoromethane	*1199*	*25*	*1250*	*0*	*95.9*	*80 - 119*	*1200*	*0.0887*	*20*	
Surr: Toluene-d8	*1280*	*25*	*1250*	*0*	*102*	*89 - 112*	*1287*	*0.541*	*20*	

The following samples were analyzed in this batch: HS20031162-01, HS20031162-02, HS20031162-03, HS20031162-04, HS20031162-05, HS20031162-06, HS20031162-07, HS20031162-08, HS20031162-09

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

QC BATCH REPORT

Batch ID: R359058 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW2-200326** Units: **mg/L** Analysis Date: **27-Mar-2020 02:11**
Client ID: Run ID: **ManTech01_359058** SeqNo: **5534287** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **LCS2-200326** Units: **mg/L** Analysis Date: **27-Mar-2020 02:20**
Client ID: Run ID: **ManTech01_359058** SeqNo: **5534288** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1088	5.00	1000	0	109	85 - 115				

LCSD Sample ID: **LCSD2-200326** Units: **mg/L** Analysis Date: **27-Mar-2020 02:46**
Client ID: Run ID: **ManTech01_359058** SeqNo: **5534291** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1092	5.00	1000	0	109	85 - 115	1088	0.327	20	

DUP Sample ID: **HS20031096-07DUP** Units: **mg/L** Analysis Date: **27-Mar-2020 02:59**
Client ID: Run ID: **ManTech01_359058** SeqNo: **5534293** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	456.5	5.00					461.5	1.08	20	

The following samples were analyzed in this batch: HS20031162-01 HS20031162-02 HS20031162-03 HS20031162-04 HS20031162-08

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

QC BATCH REPORT

Batch ID: R359085 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-03.26.20** Units: **mg/L** Analysis Date: **26-Mar-2020 19:38**
Client ID: Run ID: **ICS-Integrion_359085** SeqNo: **5535476** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS-03.26.20** Units: **mg/L** Analysis Date: **26-Mar-2020 19:56**
Client ID: Run ID: **ICS-Integrion_359085** SeqNo: **5535477** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.711	0.100	4	0	92.8	80 - 120				
Nitrogen, Nitrate (As N)	4.001	0.100	4	0	100	80 - 120				
Sulfate	19.47	0.500	20	0	97.3	80 - 120				

LCSD Sample ID: **LCSD-03.26.20** Units: **mg/L** Analysis Date: **26-Mar-2020 20:14**
Client ID: Run ID: **ICS-Integrion_359085** SeqNo: **5535478** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.643	0.100	4	0	91.1	80 - 120	3.711	1.85	20	
Nitrogen, Nitrate (As N)	3.944	0.100	4	0	98.6	80 - 120	4.001	1.44	20	
Sulfate	19.26	0.500	20	0	96.3	80 - 120	19.47	1.09	20	

MS Sample ID: **HS20031162-08MS** Units: **mg/L** Analysis Date: **27-Mar-2020 01:43**
Client ID: **16IW03-200325** Run ID: **ICS-Integrion_359085** SeqNo: **5535493** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.335	0.100	2	0.582	87.6	80 - 120				
Nitrogen, Nitrate (As N)	2.26	0.100	2	0.3246	96.8	80 - 120				
Sulfate	12.82	0.500	10	6.924	58.9	80 - 120				S

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

QC BATCH REPORT

Batch ID: R359085 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MS Sample ID: **HS20031135-01MS** Units: **mg/L** Analysis Date: **27-Mar-2020 03:50**
Client ID: Run ID: **ICS-Integrion_359085** SeqNo: **5535500** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1.704	0.100	2	0	85.2	80 - 120				
Nitrogen, Nitrate (As N)	3.114	0.100	2	1.071	102	80 - 120				
Sulfate	149.5	0.500	10	140.9	85.9	80 - 120				EO

MS Sample ID: **HS200301147-01MS** Units: **mg/L** Analysis Date: **27-Mar-2020 02:37**
Client ID: Run ID: **ICS-Integrion_359085** SeqNo: **5535496** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	17.36	1.00	20	0	86.8	80 - 120				
Nitrogen, Nitrate (As N)	39.85	1.00	20	20.89	94.8	80 - 120				
Sulfate	573.2	5.00	100	486.2	87.0	80 - 120				O

MSD Sample ID: **HS20031162-08MSD** Units: **mg/L** Analysis Date: **27-Mar-2020 02:01**
Client ID: **16IW03-200325** Run ID: **ICS-Integrion_359085** SeqNo: **5535494** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.345	0.100	2	0.582	88.1	80 - 120	2.335	0.415	20	
Nitrogen, Nitrate (As N)	2.263	0.100	2	0.3246	96.9	80 - 120	2.26	0.128	20	
Sulfate	13.12	0.500	10	6.924	61.9	80 - 120	12.82	2.3	20	S

MSD Sample ID: **HS20031135-01MSD** Units: **mg/L** Analysis Date: **27-Mar-2020 04:08**
Client ID: Run ID: **ICS-Integrion_359085** SeqNo: **5535501** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1.696	0.100	2	0	84.8	80 - 120	1.704	0.465	20	
Nitrogen, Nitrate (As N)	3.074	0.100	2	1.071	100	80 - 120	3.114	1.26	20	
Sulfate	147.8	0.500	10	140.9	68.3	80 - 120	149.5	1.18	20	SEO

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: HS20031162

QC BATCH REPORT

Batch ID: R359085 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS200301147-01MSD** Units: **mg/L** Analysis Date: **27-Mar-2020 03:32**
Client ID: Run ID: **ICS-Integrion_359085** SeqNo: **5535499** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	17.11	1.00	20	0	85.5	80 - 120	17.36	1.46	20	
Nitrogen, Nitrate (As N)	39.5	1.00	20	20.89	93.1	80 - 120	39.85	0.88	20	
Sulfate	565.1	5.00	100	486.2	78.8	80 - 120	573.2	1.43	20	SO

The following samples were analyzed in this batch: HS20031162-01 HS20031162-02 HS20031162-03 HS20031162-04 HS20031162-08

ALS Houston, US Date: 03-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant- 16
WorkOrder: **HS20031162**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

ALS Houston, US Date: 03-Apr-20

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS20031162
Date/Time Received: **26-Mar-2020 08:37**
Received by: **PMG**

Checklist completed by: *Jared R. Makan* 26-Mar-2020
eSignature | Date

Reviewed by: _____
eSignature | Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	4.3°C/4.3°C UC/C	IR25
Cooler(s)/Kit(s):	42818	
Date/Time sample(s) sent to storage:	03/26/2020 15:16	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: LHAAP16 March 2020 -ALS

TURNAROUND TIME: Normal

RUSH:

Page 1 of

PROJECT/CLIENT INFO			
Facility Name	Longhorn AAP		
Project Number	501032		
	LHAAP-16		
Address	1203-B East Grand Avenue		
	PMB 202		
City	Marshall	State	TX
Postal Code	75670	Country	USA
Phone Number	713.243 7264		
Project Manager	Praveen Srivastav		

LABORATORY			
Lab Name	ALS Laboratories		
Lab Contact	RJ Modashia		
Email	RJ.Modashia@alsglobal.com		
Address	10450 Stancliff Rd., Suite 210		
City	Houston	State	TX
Postal Code	77099	Country	USA
Phone Number	281.575.2279 or 281 530.5656		

OTHER INFO			
Email Invoice To	FedInvoices@aptim.com		
Email Report To	Susan.Huang@aptim.com		
Mail Reports To	Susan Huang		
Address	4005 Port Chicago Highway, Suite 200		
City	Concord	State	CA
Postal Code	94520	Country	USA
Shipping Company			

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont	ANALYSIS: Sample Container and Preservatives	3-40 ml VOA/HCL: VOCs by SW8260B	3-40 ml VOA/HCL: MEE by RSK175	2-40ml Amber/H2SO4: TOC by SM5310C	1-250 ml PE/HNO3: Metals (arsenic, chromium, manganese, nickel, and thallium) by SW6020	1-250ml PE/Ice: Anions (sulfate/nitrate/bromide) by SW9056	1-250ml PE /Ice: Anions (bromide only) by SW9056	1-250ml PE/Ice: Alkalinity by SM2320	1-125ml PE/Ice: Perchlorate by SW6850		
16MW55-200325	LHAAP16				WG	3/25/20	0825	11		X	X	X		X		X	X		
16IW10-200325	LHAAP16				WG	3/25/20	0915	11		X	X	X		X		X	X		
16IW09-200325	LHAAP16				WG	3/25/20	1025	11		X	X	X		X		X	X		
16IW09-200325-FD	LHAAP16				WG	3/25/20	1025	11		X	X	X		X		X	X		
16EW06-200325	LHAAP16				WG	3/25/20	1135	4		X							X		
16EW03-200325	LHAAP16				WG	3/25/20	1300	4		X							X		
16EW07-200325	LHAAP16				WG	3/25/20	1345	4		X							X		
16IW03-200325	LHAAP16				WG	3/25/20	1435	11		X	X	X		X		X	X		
TRIP BLANK	LHAAP16				WG	3/25/20		2		X									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Patti Bergen/BHATE	3/25/20 1545	PG	03/26/20 08:37

HS20031162

Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant

Cooler # 0.2818 Temp °C 0.2 + 4.3 = 4.5 CF 0.0

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

42818

CUSTODY SEAL

Date: 3/25/20 Time:
Name: SCOTT BEESINGER
Company: BHATA

Seal Broken By: SM
Date: 03/26/20

42818 MAR 2 6 2020

Must Deliver Next Business Day
Time and Tempature Sensitive!

42818

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINGER
APTIM
1203-B EAST GRAND AVE.
RMB202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 04MAR20
ACTWGT: 1.00 LB MAN
CAD: 900130/CAFE3211
DIMS: 18x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-16-80.70713-RJ
RMA:

FedEx Express

TRK# 1295 0295 0424

THU - 26 MAR 10:30
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

ALS Environmental
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1317 South 13th Avenue
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www.alsglobal.com

April 03, 2020 **Analytical Report for Service Request No:** K2002643

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS20031162

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory March 27, 2020
For your reference, these analyses have been assigned our service request number **K2002643.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS20031162
Sample Matrix: Ground Water

Service Request: K2002643
Date Received: 03/27/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Five ground water samples were received for analysis at ALS Environmental on 03/27/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 04/03/2020

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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K1002643

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 13592**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20031162
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20031162-01**	**16WW55-200325**	**Groundwater**	**25 Mar 2020 08:25**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			03 Apr 2020
2.	**HS20031162-02**	**16IW10-200325**	**Groundwater**	**25 Mar 2020 09:15**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			03 Apr 2020
3.	**HS20031162-03**	**16IW09-200325**	**Groundwater**	**25 Mar 2020 10:25**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			03 Apr 2020
4.	**HS20031162-04**	**16IW09-200325-FD**	**Groundwater**	**25 Mar 2020 10:25**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			03 Apr 2020
5.	**HS20031162-08**	**16IW03-200325**	**Groundwater**	**25 Mar 2020 14:35**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			03 Apr 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

K2002643

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13592**

Relinquished By: S. Maguire Date/Time: 3/26/20 18:00

Received By: K Morrow ALS Kel80 Date/Time: 3/27/20 0930

Cooler ID(s): Temperature(s):

PC KL

Cooler Receipt and Preservation Form

Client ALS-Houston Service Request K2002643

Received: 3/27/20 Opened: 3/27/20 By: [signature] Unloaded: 3/27/20 By: [signature]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 Ea-Side
   If present, were custody seals intact? (Y) N If present, were they signed and dated? Y N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID NA	Tracking Number NA	Filed
1.9	—	—	—	—	3980488WS	13597	1251 0295 9248	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

RUSH

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2002643
Project:	HS20031162	**Date Collected:**	03/25/20
Sample Matrix:	Ground Water	**Date Received:**	03/27/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16WW55-200325	K2002643-001	**5.21**	0.50	0.20	0.07	1	03/31/20 19:08	
16IW10-200325	K2002643-002	**2720**	100	40	20	200	03/31/20 19:36	
16IW09-200325	K2002643-003	**820**	100	40	20	200	03/31/20 20:04	
16IW09-200325-FD	K2002643-004	**820**	100	40	20	200	03/31/20 20:32	
16IW03-200325	K2002643-005	**650**	100	40	20	200	03/31/20 21:00	
Method Blank	K2002643-MB	ND U	0.50	0.20	0.07	1	03/31/20 13:40	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002643
Project	HS20031162	**Date Collected:**	03/25/20
Sample Matrix:	Ground Water	**Date Received:**	03/27/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	LOQ	LOD	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
16WW55-200325	K2002643-001DUP	0.50	0.20	0.07	5.21	5.01	5.11	4	10	03/31/20
16IW10-200325	K2002643-002DUP	100	40	20	2720	2760	2740	2	10	03/31/20
16IW09-200325	K2002643-003DUP	100	40	20	820	800	810	3	10	03/31/20
16IW09-200325-FD	K2002643-004DUP	100	40	20	820	820	820	<1	10	03/31/20
16IW03-200325	K2002643-005DUP	100	40	20	650	650	647	<1	10	03/31/20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002643
Project:	HS20031162	**Date Analyzed:**	03/31/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	675059

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2002643-LCS	23.2	25.0	93	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2002643
Project: HS20031162

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	675059	KQ2004390-01	03/31/20 13:11	25.0	24.9	100	90-110
CCV2	675059	KQ2004390-02	03/31/20 17:14	25.0	26.4	105	90-110
CCV3	675059	KQ2004390-03	03/31/20 22:24	25.0	24.5	98	90-110
CCV4	675059	KQ2004390-04	04/01/20 03:08	25.0	23.9	96	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2002643
Project: HS20031162

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	675059	KQ2004390-05	03/31/20 13:25	0.50	0.20	0.07	ND	U
CCB2	675059	KQ2004390-06	03/31/20 17:29	0.50	0.20	0.07	ND	U
CCB3	675059	KQ2004390-07	03/31/20 22:39	0.50	0.20	0.07	ND	U
CCB4	675059	KQ2004390-08	04/01/20 03:22	0.50	0.20	0.07	ND	U

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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Work Request # (Original) K2002616, 2617, 2626, 2643, 2669, 2615, 2627,

Tier: IV IV I IV II I I

Date Analyzed: 3/31/20

Analyst: BKD

Analysis: TOC

TOC: 675059, 675060

Run #

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K2002616-4/4d report a high %RSD due to suspected non-homogenous sample.

Final Approved by: _____ Date: 4/1/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675059 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002616-001	Carbon, Total Organic	N/A		Ground Water	5.88 mg/L	10 mL	5.88 mg/L	1	0.07	0.50			3/31/20 14:24:00	N	IV
K2002616-002	Carbon, Total Organic	N/A		Ground Water	7.86 mg/L	10 mL	7.86 mg/L	1	0.07	0.50			3/31/20 14:52:00	N	IV
K2002616-003	Carbon, Total Organic	N/A		Ground Water	18.28 mg/L	10 mL	18.3 mg/L	1	0.07	0.50			3/31/20 15:20:00	Y	IV
K2002616-004	Carbon, Total Organic	N/A		Ground Water	3.29 mg/L	10 mL	3.29 mg/L	1	0.07	0.50			3/31/20 16:18:00	N	IV
K2002616-005	Carbon, Total Organic	N/A		Ground Water	15.55 mg/L	10 mL	15.6 mg/L	1	0.07	0.50			3/31/20 16:46:00	N	IV
K2002616-006	Carbon, Total Organic	N/A		Ground Water	1.25 mg/L	10 mL	250 mg/L	200	20	100			3/31/20 17:44:00	N	IV
K2002616-007	Carbon, Total Organic	N/A		Ground Water	1.79 mg/L	10 mL	1.79 mg/L	1	0.07	0.50			3/31/20 18:12:00	N	IV
K2002617-001	Carbon, Total Organic	N/A		Water	1.97 mg/L	10 mL	1.97 mg/L	1	0.07	0.50			3/31/20 18:40:00	N	IV
K2002626-001	Carbon, Total Organic	N/A		Ground Water	1.96 mg/L	10 mL	78 mg/L	40	3	20			3/31/20 21:56:00	N	I
K2002626-002	Carbon, Total Organic	N/A		Ground Water	4.92 mg/L	10 mL	4.92 mg/L	1	0.07	0.50			3/31/20 23:23:00	N	I
K2002626-003	Carbon, Total Organic	N/A		Ground Water	8.93 mg/L	10 mL	8.93 mg/L	1	0.07	0.50			3/31/20 23:51:00	N	I
K2002643-001	Carbon, Total Organic	N/A		Ground Water	5.21 mg/L	10 mL	5.21 mg/L	1	0.07	0.50			3/31/20 19:08:00	N	IV
K2002643-002	Carbon, Total Organic	N/A		Ground Water	13.59 mg/L	10 mL	2720 mg/L	200	20	100			3/31/20 19:36:00	N	IV
K2002643-003	Carbon, Total Organic	N/A		Ground Water	4.10 mg/L	10 mL	820 mg/L	200	20	100			3/31/20 20:04:00	N	IV
K2002643-004	Carbon, Total Organic	N/A		Ground Water	4.10 mg/L	10 mL	820 mg/L	200	20	100			3/31/20 20:32:00	N	IV
K2002643-005	Carbon, Total Organic	N/A		Ground Water	3.23 mg/L	10 mL	650 mg/L	200	20	100			3/31/20 21:00:00	N	IV
K2002669-001	Carbon, Total Organic	N/A		Water	2.38 mg/L	10 mL	2.38 mg/L	1	0.07	0.50			3/31/20 21:28:00	N	II
KQ2004390-01	Carbon, Total Organic	CCV		Ground Water	24.90 mg/L	10 mL	24.9 mg/L	1					3/31/20 13:11:00	N	IV
KQ2004390-02	Carbon, Total Organic	CCV		Ground Water	26.36 mg/L	10 mL	26.4 mg/L	1					3/31/20 17:14:00	N	IV
KQ2004390-03	Carbon, Total Organic	CCV		Ground Water	24.52 mg/L	10 mL	24.5 mg/L	1					3/31/20 22:24:00	N	IV
KQ2004390-04	Carbon, Total Organic	CCV		Ground Water	23.88 mg/L	10 mL	23.9 mg/L	1					4/1/20 03:08:00	N	IV
KQ2004390-05	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 13:25:00	N	IV
KQ2004390-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 17:29:00	N	IV
KQ2004390-07	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 22:39:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675059 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2004390-08	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			4/1/20 03:22:00	N	IV
KQ2004390-09	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 13:40:00	N	IV
KQ2004390-10	Carbon, Total Organic	LCS		Ground Water	23.18 mg/L	10 mL	23.2 mg/L	1	0.07	0.50	93		3/31/20 13:55:00	N	IV
KQ2004390-11	Carbon, Total Organic	MS	K2002616-003	Ground Water	32.23 mg/L	10 mL	129 mg/L	4	0.3	2.0	111		3/31/20 15:49:00	N	IV
KQ2004390-12	Carbon, Total Organic	DUP	K2002616-002	Ground Water	8.19 mg/L	10 mL	8.19 mg/L	1	0.07	0.50		4	3/31/20 14:52:00	N	IV
KQ2004390-13	Carbon, Total Organic	DUP	K2002616-001	Ground Water	5.76 mg/L	10 mL	5.76 mg/L	1	0.07	0.50		2	3/31/20 14:24:00	N	IV
KQ2004390-14	Carbon, Total Organic	DUP	K2002616-003	Ground Water	17.94 mg/L	10 mL	17.9 mg/L	1	0.07	0.50		2	3/31/20 15:20:00	N	IV
KQ2004390-15	Carbon, Total Organic	DUP	K2002616-004	Ground Water	2.88 mg/L	10 mL	2.88 mg/L	1	0.07	0.50		13*	3/31/20 16:18:00	N	IV
KQ2004390-16	Carbon, Total Organic	DUP	K2002616-005	Ground Water	16.31 mg/L	10 mL	16.3 mg/L	1	0.07	0.50		5	3/31/20 16:46:00	N	IV
KQ2004390-17	Carbon, Total Organic	DUP	K2002616-006	Ground Water	1.19 mg/L	10 mL	240 mg/L	200	20	100		5	3/31/20 17:44:00	N	IV
KQ2004390-18	Carbon, Total Organic	DUP	K2002616-007	Ground Water	1.76 mg/L	10 mL	1.76 mg/L	1	0.07	0.50		1	3/31/20 18:12:00	N	IV
KQ2004390-19	Carbon, Total Organic	DUP	K2002617-001	Water	1.92 mg/L	10 mL	1.92 mg/L	1	0.07	0.50		3	3/31/20 18:40:00	N	IV
KQ2004390-20	Carbon, Total Organic	DUP	K2002626-003	Ground Water	9.15 mg/L	10 mL	9.15 mg/L	1	0.07	0.50		3	3/31/20 23:51:00	N	I
KQ2004390-21	Carbon, Total Organic	DUP	K2002626-001	Ground Water	1.84 mg/L	10 mL	74 mg/L	40	3	20		6	3/31/20 21:56:00	N	I
KQ2004390-22	Carbon, Total Organic	DUP	K2002626-002	Ground Water	4.82 mg/L	10 mL	4.82 mg/L	1	0.07	0.50		2	3/31/20 23:23:00	N	I
KQ2004390-23	Carbon, Total Organic	DUP	K2002643-002	Ground Water	13.82 mg/L	10 mL	2760 mg/L	200	20	100		2	3/31/20 19:36:00	N	IV
KQ2004390-24	Carbon, Total Organic	DUP	K2002643-001	Ground Water	5.01 mg/L	10 mL	5.01 mg/L	1	0.07	0.50		4	3/31/20 19:08:00	N	IV
KQ2004390-25	Carbon, Total Organic	DUP	K2002643-003	Ground Water	4.00 mg/L	10 mL	800 mg/L	200	20	100		3	3/31/20 20:04:00	N	IV
KQ2004390-26	Carbon, Total Organic	DUP	K2002643-004	Ground Water	4.10 mg/L	10 mL	820 mg/L	200	20	100		<1	3/31/20 20:32:00	N	IV
KQ2004390-27	Carbon, Total Organic	DUP	K2002643-005	Ground Water	3.23 mg/L	10 mL	650 mg/L	200	20	100		<1	3/31/20 21:00:00	N	IV
KQ2004390-28	Carbon, Total Organic	DUP	K2002669-001	Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50		1	3/31/20 21:28:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675060 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002615-001	Carbon, Total Organic	N/A		Water	3.82 mg/L	10 mL	3.82 mg/L	1	0.07	0.50			4/1/20 02:40:00	N	I
K2002615-002	Carbon, Total Organic	N/A		Water	1.99 mg/L	10 mL	1.99 mg/L	1	0.07	0.50			4/1/20 03:37:00	N	I
K2002615-003	Carbon, Total Organic	N/A		Water	1.84 mg/L	10 mL	1.84 mg/L	1	0.07	0.50			4/1/20 04:34:00	N	I
K2002615-004	Carbon, Total Organic	N/A		Water	1.94 mg/L	10 mL	1.94 mg/L	1	0.07	0.50			4/1/20 05:03:00	N	I
K2002615-005	Carbon, Total Organic	N/A		Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50			4/1/20 05:31:00	N	I
K2002627-001	Carbon, Total Organic	N/A		Ground Water	9.51 mg/L	10 mL	9.51 mg/L	1	0.07	0.50			4/1/20 00:19:00	N	I
K2002627-002	Carbon, Total Organic	N/A		Ground Water	17.26 mg/L	10 mL	17.3 mg/L	1	0.07	0.50			4/1/20 00:47:00	N	I
K2002627-003	Carbon, Total Organic	N/A		Ground Water	21.98 mg/L	10 mL	22.0 mg/L	1	0.07	0.50			4/1/20 01:15:00	N	I
K2002627-004	Carbon, Total Organic	N/A		Ground Water	16.50 mg/L	10 mL	16.5 mg/L	1	0.07	0.50			4/1/20 01:43:00	N	I
K2002627-005	Carbon, Total Organic	N/A		Ground Water	3.70 mg/L	10 mL	74 mg/L	20	2	10			4/1/20 02:11:00	N	I
KQ2004389-01	Carbon, Total Organic	MS	K2002615-002	Water	29.40 mg/L	10 mL	29.4 mg/L	1	0.07	0.50	110		4/1/20 04:05:00	N	I
KQ2004389-02	Carbon, Total Organic	CCV		Ground Water	24.52 mg/L	10 mL	24.5 mg/L	1					3/31/20 22:24:00	N	I
KQ2004389-03	Carbon, Total Organic	CCV		Ground Water	23.88 mg/L	10 mL	23.9 mg/L	1					4/1/20 03:08:00	N	I
KQ2004389-04	Carbon, Total Organic	CCV		Ground Water	24.14 mg/L	10 mL	24.1 mg/L	1					4/1/20 05:59:00	N	I
KQ2004389-05	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 22:39:00	N	I
KQ2004389-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			4/1/20 03:22:00	N	I
KQ2004389-07	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			4/1/20 06:14:00	N	I
KQ2004389-08	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 22:54:00	N	I
KQ2004389-09	Carbon, Total Organic	LCS		Ground Water	23.02 mg/L	10 mL	23.0 mg/L	1	0.07	0.50	92		3/31/20 23:08:00	N	I
KQ2004389-10	Carbon, Total Organic	DUP	K2002615-001	Water	3.86 mg/L	10 mL	3.86 mg/L	1	0.07	0.50		<1	4/1/20 02:40:00	N	I
KQ2004389-11	Carbon, Total Organic	DUP	K2002615-002	Water	2.06 mg/L	10 mL	2.06 mg/L	1	0.07	0.50		3	4/1/20 03:37:00	N	I
KQ2004389-12	Carbon, Total Organic	DUP	K2002615-003	Water	1.83 mg/L	10 mL	1.83 mg/L	1	0.07	0.50		<1	4/1/20 04:34:00	N	I
KQ2004389-13	Carbon, Total Organic	DUP	K2002615-004	Water	1.97 mg/L	10 mL	1.97 mg/L	1	0.07	0.50		1	4/1/20 05:03:00	N	I
KQ2004389-14	Carbon, Total Organic	DUP	K2002615-005	Water	1.77 mg/L	10 mL	1.77 mg/L	1	0.07	0.50		1	4/1/20 05:31:00	N	I
KQ2004389-15	Carbon, Total Organic	DUP	K2002627-001	Ground Water	9.27 mg/L	10 mL	9.27 mg/L	1	0.07	0.50		3	4/1/20 00:19:00	N	I
KQ2004389-16	Carbon, Total Organic	DUP	K2002627-002	Ground Water	16.99 mg/L	10 mL	17.0 mg/L	1	0.07	0.50		2	4/1/20 00:47:00	N	I
KQ2004389-17	Carbon, Total Organic	DUP	K2002627-003	Ground Water	22.16 mg/L	10 mL	22.2 mg/L	1	0.07	0.50		<1	4/1/20 01:15:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675060 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2004389-18	Carbon, Total Organic	DUP	K2002627-004	Ground Water	15.54 mg/L	10 mL	15.5 mg/L	1	0.07	0.50		6	4/1/20 01:43:00	N	I
KQ2004389-19	Carbon, Total Organic	DUP	K2002627-005	Ground Water	3.73 mg/L	10 mL	75 mg/L	20	2	10		<1	4/1/20 02:11:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

TOC: ~~675059~~ 675060 EOD 4/1/2020 675059

Schedule: 03312020

Version: 2
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/03/31 09:56 - Tuesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
75	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	6	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2002616-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2002616-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2002616-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2002616-003.01 ms 4x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
7	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
8	Sample	K2002616-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2002616-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2002616-006.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2002616-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2002617-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2002643-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2002643-002.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2002643-003.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2002643-004.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2002643-005.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2002669-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K2002626-001.03 40x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K2002626-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K2002626-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2002627-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2002627-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2002627-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2002627-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2002627-005.03 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2002615-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2002615-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K2002615-002.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
31	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
32	Sample	K2002615-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2002615-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K2002615-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Printed on: April 1, 2020 09:42:44

Fusion Report - 03312020
Tuesday, March 31, 2020 09:56 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/04/01 09:42 - Wednesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	03312020	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2)		
Comment:			

Report Results

Sample Type: Clean

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/03/31 09:56

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	14.29	20.33	6.04	49.65	05:22
2	TC Clean	48.76	52.68	3.92	49.97	04:04
3	TC Clean	23.02	27.18	4.16	50.02	03:48
4	TC Clean	16.99	20.98	3.99	49.98	03:47

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	75	TOC	RB	0.3482 ppm	0.3035 ppm	87.1600%	2020/03/31 10:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8670	8.6704	13.06	17.11	4.06	49.97	10:26
2	TOC	0.5444	5.4437	10.89	14.92	4.03	49.95	10:27
3	TOC	0.2892	2.8920	9.17	13.14	3.96	50.01	10:25
4	TOC	0.1915	1.9150	8.51	12.63	4.12	50.00	10:26
5	TOC	0.1109	1.1091	7.97	11.90	3.93	50.02	10:26
6	TOC	0.0864	0.8637	7.81	11.82	4.01	50.06	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2272 (IC) (v1367)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/03/31 11:39

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.69	17.32	4.63	49.59	05:20
2	TC Clean	5.58	9.55	3.97	49.97	04:00
3	TC Clean	3.49	7.47	3.98	49.97	03:46
4	TC Clean	3.19	7.07	3.88	50.08	03:44

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/03/31 12:00

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.98	4.91	3.92	49.61	05:11
2	TC Clean	7.38	11.45	4.07	50.06	04:05
3	TC Clean	2.70	6.66	3.96	49.97	03:52
4	TC Clean	2.62	6.74	4.12	50.04	03:54

Sample Type: Blank (Creating v1368) — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/03/31 12:22

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.99	4.94	3.95	49.76	05:21
2	TC Clean	6.55	10.65	4.10	50.01	04:03
3	TC Clean	2.47	6.68	4.21	49.97	03:54
4	TC Clean	2.37	6.44	4.07	50.00	03:54
5	Reagent Blank	2.81	6.93	4.12	50.03	05:06

6	Acid Blank	0.86	5.01	4.15	49.61	05:28

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.1360 ppm	0.0000 ppm	0.0000%	2020/03/31 12:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1360	1.3602	8.14	12.20	4.06	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9028 ppm (PASS)	0.0000 ppm	0%	2020/03/31 13:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9028	249.0277	175.29	179.38	4.09	50.03	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/31 13:25

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.09	10.24	4.15	50.07	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/31 13:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.63	9.78	4.15	50.03	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	23.1776 ppm (PASS)	0.0000 ppm	0%	2020/03/31 13:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.1776	231.7756	163.69	167.63	3.94	50.02	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.3678 ppm	0.0000 ppm	0.0000%	2020/03/31 14:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3678	3.6784	9.70	13.82	4.12	50.04	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K2002616-001.01	5.8203 ppm	0.0834 ppm	1.4300%	2020/03/31 14:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8792	58.7924	46.76	50.75	3.99	50.05	10:27
2	TOC	5.7613	57.6132	45.97	49.87	3.90	50.07	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
◈	4	TOC	K2002616-002.01	8.0252 ppm	0.2306 ppm	2.8700%	2020/03/31 14:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8621	78.6215	60.10	64.03	3.94	50.05	10:30
2	TOC	8.1882	81.8824	62.29	66.34	4.05	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K2002616-003.01	18.1073 ppm	0.2396 ppm	1.3200%	2020/03/31 15:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.2768	182.7676	130.13	134.06	3.92	50.07	10:29
2	TOC	17.9379	179.3788	127.86	131.72	3.86	50.08	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K2002616-003.01 ms 4x	32.2294 ppm	0.0000 ppm	0.0000%	2020/03/31 15:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.2294	322.2939	223.96	227.85	3.88	50.08	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	RB	0.1033 ppm	0.0000 ppm	0.0000%	2020/03/31 16:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1033	1.0330	7.92	11.83	3.92	50.11	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2002616-004.01	3.0809 ppm	0.2896 ppm	9.4000%	2020/03/31 16:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2856	32.8562	29.32	33.48	4.16	50.10	10:28
2	TOC	2.8761	28.7610	26.56	30.62	4.06	50.08	10:28

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K2002616-005.01	15.9327 ppm	0.5349 ppm	3.3600%	2020/03/31 16:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.5545	155.5452	111.83	115.79	3.96	50.06	10:29
2	TOC	16.3110	163.1095	116.91	121.05	4.14	50.06	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.3566 ppm (PASS)	0.0000 ppm	0%	2020/03/31 17:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.3566	263.5660	185.06	188.96	3.89	50.09	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/31 17:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.58	11.56	3.98	50.10	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K2002616-006.01 200x	1.2187 ppm	0.0421 ppm	3.4500%	2020/03/31 17:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2484	12.4844	15.62	19.50	3.88	50.11	10:29
2	TOC	1.1890	11.8896	15.22	19.07	3.85	50.09	10:25

Dilution 1:10

Blank Contribution (TC) 7.2233 (IC) (v1368)

Method CAS_salt_010711 (v4)

Calibration CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K2002616-007.01	1.7747 ppm	0.0154 ppm	0.8700%	2020/03/31 18:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7855	17.8554	19.23	23.17	3.94	50.06	10:32
2	TOC	1.7638	17.6383	19.08	22.95	3.86	50.08	10:24

Dilution 1:10

Blank Contribution (TC) 7.2233 (IC) (v1368)

Method CAS_salt_010711 (v4)

Calibration CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K2002617-001.01	1.9417 ppm	0.0365 ppm	1.8800%	2020/03/31 18:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9675	19.6755	20.45	24.36	3.91	50.05	10:29
2	TOC	1.9159	19.1595	20.11	24.00	3.90	50.07	10:24

Dilution 1:10

Blank Contribution (TC) 7.2233 (IC) (v1368)

Method CAS_salt_010711 (v4)

Calibration CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2002643-001.01	5.1094 ppm	0.1398 ppm	2.7400%	2020/03/31 19:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2083	52.0831	42.25	46.15	3.90	50.07	10:31
2	TOC	5.0105	50.1054	40.92	44.84	3.93	50.07	10:26

Dilution 1:10

Blank Contribution (TC) 7.2233 (IC) (v1368)

Method CAS_salt_010711 (v4)

Calibration CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2002643-002.01 200x	13.7052 ppm	0.1570 ppm	1.1500%	2020/03/31 19:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.5942	135.9421	98.64	102.59	3.94	50.12	10:27
2	TOC	13.8162	138.1622	100.14	104.12	3.99	50.10	10:25

Dilution 1:10

Blank Contribution (TC) 7.2233 (IC)

Method CAS_salt_010711

Calibration CAS_salt_010711

(v1368) (v4) (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K2002643-003.01 200x	4.0489 ppm	0.0728 ppm	1.8000%	2020/03/31 20:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1003	41.0035	34.80	38.76	3.96	50.11	10:30
2	TOC	3.9974	39.9745	34.11	38.24	4.13	50.08	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K2002643-004.01 200x	4.0983 ppm	0.0005 ppm	0.0100%	2020/03/31 20:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0980	40.9797	34.78	38.80	4.01	50.07	10:29
2	TOC	4.0987	40.9871	34.79	38.58	3.79	50.11	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K2002643-005.01 200x	3.2333 ppm	0.0011 ppm	0.0300%	2020/03/31 21:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2340	32.3402	28.97	32.78	3.80	50.06	10:28
2	TOC	3.2325	32.3254	28.96	32.83	3.86	50.08	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K2002669-001.01	2.3631 ppm	0.0214 ppm	0.9100%	2020/03/31 21:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3783	23.7826	23.22	27.17	3.95	50.04	10:25
2	TOC	2.3479	23.4792	23.01	26.81	3.80	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K2002626-001.03 40x	1.8987 ppm	0.0801 ppm	4.2200%	2020/03/31 21:56

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	1.9554	19.5536	20.37	24.04	3.67	50.04	10:30
2	TOC	1.8420	18.4205	19.61	23.45	3.84	50.05	10:30

Dilution: 1:10

Blank Contribution: (TC) 7.2233 (IC) (v1368)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5215 ppm (PASS)	0.0000 ppm	0%	2020/03/31 22:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5215	245.2150	172.72	176.49	3.77	50.04	10:29

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v32)

STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/31 22:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.75	9.68	3.93	50.03	10:32

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v32)

STD Conc - Pos D: 0 ppmC

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/31 22:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.38	9.25	3.86	50.02	10:30

Dilution: 1:10

Blank Contribution: (TC) 7.2233 (IC) (v1368)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	23.0156 ppm (PASS)	0.0000 ppm	0%	2020/03/31 23:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.0156	230.1562	162.60	166.47	3.87	50.01	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K2002626-002.03	4.8696 ppm	0.0768 ppm	1.5800%	2020/03/31 23:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.9238	49.2384	40.34	44.20	3.87	50.02	10:26
2	TOC	4.8153	48.1529	39.61	43.50	3.90	50.01	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K2002626-003.03	9.0398 ppm	0.1610 ppm	1.7800%	2020/03/31 23:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9259	89.2594	67.25	71.09	3.84	50.00	10:29
2	TOC	9.1536	91.5360	68.78	72.65	3.87	50.01	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K2002627-001.03	9.3889 ppm	0.1660 ppm	1.7700%	2020/04/01 00:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.5063	95.0632	71.15	75.01	3.86	49.99	10:26
2	TOC	9.2715	92.7152	69.57	73.58	4.01	50.01	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K2002627-002.03	17.1223 ppm	0.1942 ppm	1.1300%	2020/04/01 00:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	17.2597	172.5966	123.29	127.22	3.92	49.99	10:30
2	TOC	16.9850	169.8501	121.45	125.30	3.85	50.00	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2002627-003.03	22.0681 ppm	0.1309 ppm	0.5900%	2020/04/01 01:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.9755	219.7551	155.01	158.98	3.97	50.02	10:29
2	TOC	22.1606	221.6064	156.25	160.15	3.89	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K2002627-004.03	16.0202 ppm	0.6826 ppm	4.2600%	2020/04/01 01:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.5029	165.0293	118.20	122.21	4.01	49.98	10:27
2	TOC	15.5376	155.3757	111.71	115.69	3.97	50.00	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K2002627-005.03 20x	3.7166 ppm	0.0182 ppm	0.4900%	2020/04/01 02:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.7038	37.0376	32.13	36.14	4.01	50.00	10:29
2	TOC	3.7295	37.2949	32.30	36.31	4.01	49.99	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K2002615-001.01	3.8382 ppm	0.0252 ppm	0.6600%	2020/04/01 02:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8203	38.2034	32.92	36.90	3.98	49.98	10:25

2	TOC	3.8560	38.5603	33.16	37.04	3.89	49.98	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) 1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.8767 ppm (PASS)	0.0000 ppm	0%	2020/04/01 03:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8767	238.7674	168.39	172.35	3.96	50.00	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/04/01 03:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.05	8.96	3.91	49.97	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2002615-002.01	2.0222 ppm	0.0481 ppm	2.3800%	2020/04/01 03:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9882	19.8822	20.59	24.65	4.06	49.96	10:27
2	TOC	2.0562	20.5617	21.05	24.93	3.88	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	30	TOC	K2002615-002.01 ms	29.3992 ppm	0.0000 ppm	0.0000%	2020/04/01 04:05

Rep	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.3992	293.9919	204.93	208.92	3.98	49.99	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/04/01 04:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.36	9.23	3.87	49.97	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2002615-003.01	1.8307 ppm	0.0076 ppm	0.4100%	2020/04/01 04:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8361	18.3610	19.57	23.47	3.90	49.97	10:25
2	TOC	1.8254	18.2539	19.50	23.43	3.93	50.01	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2002615-004.01	1.9548 ppm	0.0196 ppm	1.0000%	2020/04/01 05:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9409	19.4093	20.28	24.36	4.08	49.97	10:27
2	TOC	1.9686	19.6859	20.46	24.51	4.05	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K2002615-005.01	1.7603 ppm	0.0131 ppm	0.7500%	2020/04/01 05:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7510	17.5104	19.00	23.08	4.08	50.00	10:25
2	TOC	1.7696	17.6963	19.12	22.94	3.82	49.98	10:27

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.1353 ppm (PASS)	0.0000 ppm	0%	2020/04/01 05:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1353	241.3533	170.13	174.09	3.97	49.99	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/04/01 06:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	4.66	8.60	3.94	49.99	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1367	0.9567	1.0790	0.0000	0.0000	0.0000	2020/03/28 23:52	Fusion1 (Fusion1)
v1368	0.9373	0.8610	0.0000	0.0000	0.0000	2020/03/31 12:56	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v32	Calibration curve formula:	TOC: y = 6.725x + 7.818
Ver Creation:	2020/03/11 15:55	r^2 value:	TOC: r^2 = 0.99921
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	5.8640	0.0000		2020/03/11 14:28
0.500 ppm	9.5210	0.5000		2020/03/11 14:42
1.0 ppm	12.5930	1.0000		2020/03/11 14:56
5.0 ppm	40.5270	5.0000		2020/03/11 15:10
10 ppm	79.5310	10.0000		2020/03/11 15:25
25 ppm	181.4610	25.0000		2020/03/11 15:39
50 ppm	340.5610	50.0000		2020/03/11 15:53

Methods

Name: CAS_salt_010711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/02/21 17:57		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0

LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/04/01 06:29

ALS Environmental

StarLIMS Run: 675059, 675060

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/11/2020

ICAL ID: 19-GEN-8-7-E->J

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-9-H

21 % H3PO4: 19-GEN-08-10-G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By:	Date Analyzed: 3/31/20
Reviewed By:	Date Reviewed: 4/1/20

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 2008833

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2364 (259940)

General Set Information: There were eight field samples in this Work Order. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field sample 2008833001 was re-analyzed and reported from a 1:10 dilution. Samples 2008833005/06/07 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:5. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 701487) was less than 1/2 the CRDL. The recovery for the LCS (701484) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on sample 2008833003 (Client ID: 16IW09-200325). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MS/MSD (701512/13) failed QC acceptance criteria for percent recoveries. The relative percent difference (RPD) passed acceptance criteria. The 83/85 ion ratio also failed. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 701485) is reported from the analysis of the Laboratory Control Sample (LCS – 701484) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafiles 31MARD10/11/18/19/21.

Thomas Bosch April 01, 2020
Analyst Date

ANALYTICAL REPORT

Report Date: April 01, 2020

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-2008833**
Project ID: HS20031162
Purchase Order: HS20031162
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
16WW55-200325	2008833001	03/25/20	03/27/20	
16IW10-200325	2008833002	03/25/20	03/27/20	
16IW09-200325	2008833003	03/25/20	03/27/20	
16IW09-200325-FD	2008833004	03/25/20	03/27/20	
16EW06-200325	2008833005	03/25/20	03/27/20	
16EW03-200325	2008833006	03/25/20	03/27/20	
16EW07-200325	2008833007	03/25/20	03/27/20	
16IW03-200325	2008833008	03/25/20	03/27/20	

ANALYTICAL REPORT

Workorder: 34-2008833
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16WW55-200325** | Sampling Site: NA | Collected: 03/25/2020
Lab ID: 2008833001 | Media: 125 mL Nalgene | Received: 03/27/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2364 (HBN: 259940) | **%Solids:** NA
Analyzed: 03/31/2020 13:13 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**360**	10	20	40	10	

Sample ID: **16IW10-200325** | Sampling Site: NA | Collected: 03/25/2020
Lab ID: 2008833002 | Media: 125 mL Nalgene | Received: 03/27/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2364 (HBN: 259940) | **%Solids:** NA
Analyzed: 03/31/2020 11:20 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16IW09-200325** | Sampling Site: NA | Collected: 03/25/2020
Lab ID: 2008833003 | Media: 125 mL Nalgene | Received: 03/27/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2364 (HBN: 259940) | **%Solids:** NA
Analyzed: 03/31/2020 11:34 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16IW09-200325-FD** | Sampling Site: NA | Collected: 03/25/2020
Lab ID: 2008833004 | Media: 125 mL Nalgene | Received: 03/27/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2364 (HBN: 259940) | **%Solids:** NA
Analyzed: 03/31/2020 11:48 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-2008833
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16EW06-200325** | Sampling Site: NA | Collected: 03/25/2020
Lab ID: 2008833005 | Media: 125 mL Nalgene | Received: 03/27/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2364 (HBN: 259940) | **%Solids:** NA
Analyzed: 03/31/2020 14:36 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	5.0	10	20	5	U

Sample ID: **16EW03-200325** | Sampling Site: NA | Collected: 03/25/2020
Lab ID: 2008833006 | Media: 125 mL Nalgene | Received: 03/27/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2364 (HBN: 259940) | **%Solids:** NA
Analyzed: 03/31/2020 14:50 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	5.0	10	20	5	U

Sample ID: **16EW07-200325** | Sampling Site: NA | Collected: 03/25/2020
Lab ID: 2008833007 | Media: 125 mL Nalgene | Received: 03/27/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2364 (HBN: 259940) | **%Solids:** NA
Analyzed: 03/31/2020 15:04 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	5.0	10	20	5	U

Sample ID: **16IW03-200325** | Sampling Site: NA | Collected: 03/25/2020
Lab ID: 2008833008 | Media: 125 mL Nalgene | Received: 03/27/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2364 (HBN: 259940) | **%Solids:** NA
Analyzed: 03/31/2020 12:45 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-2008833
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Comments

Quality Control: EPA 6850, DoD QSM - (HBN: 259940)

Field sample 2008833001 was re-analyzed and reported from a 1:10 dilution. Samples 2008833005/06/07 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:5. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 04/01/2020 07:49	/S/ Stephen Brose 04/01/2020 20:31

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
The following was provided by the client: Sample ID, Collection Date, Sampling Location, Media Type, Sampling Parameter.
Collection Date, Media Type, and Sampling Parameter can potentially affect the validity of the results.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L17-506	http://www.pjlabs.com
	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Iowa (TNI)	IA# 376	http://www.shl.uiowa.edu/labcert/idnr/
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L18-606	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

ANALYTICAL REPORT

Workorder: 34-2008833
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 2008833

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2364 (HBN: 259940)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 701487
Analyzed: 03/31/2020 10:52
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 701484
Analyzed: 03/31/2020 10:24
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.14	3.00	105	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	2008833003	**MS:**	701512	**MSD:**	701513
Analyzed:	03/31/2020 11:34	**Analyzed:**	03/31/2020 14:08	**Analyzed:**	03/31/2020 14:22
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	2.14	3	# 71.4	78.8	123.8	2.12	# 70.7	0.957	0.0	20.0

Comments

Field sample 2008833001 was re-analyzed and reported from a 1:10 dilution. Samples 2008833005/06/07 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:5. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
04/01/2020 07:52	04/01/2020 20:31

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable



10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

18698/#2

SAMPLING STATE: **Dept of Defense** **COC ID: 13593**

2008833

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20031162
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20031162-01**	**16WW55-200325**	**Groundwater**	**25 Mar 2020 08:25**
	SUB_Perch-6850			03 Apr 2020
2.	**HS20031162-02**	**16IW10-200325**	**Groundwater**	**25 Mar 2020 09:15**
	SUB_Perch-6850			03 Apr 2020
3.	**HS20031162-03**	**16IW09-200325**	**Groundwater**	**25 Mar 2020 10:25**
	SUB_Perch-6850			03 Apr 2020
4.	**HS20031162-04**	**16IW09-200325-FD**	**Groundwater**	**25 Mar 2020 10:25**
	SUB_Perch-6850			03 Apr 2020
5.	**HS20031162-05**	**16EW06-200325**	**Groundwater**	**25 Mar 2020 11:35**
	SUB_Perch-6850			03 Apr 2020
6.	**HS20031162-06**	**16EW03-200325**	**Groundwater**	**25 Mar 2020 13:00**
	SUB_Perch-6850			03 Apr 2020
7.	**HS20031162-07**	**16EW07-200325**	**Groundwater**	**25 Mar 2020 13:45**
	SUB_Perch-6850			03 Apr 2020
8.	**HS20031162-08**	**16IW03-200325**	**Groundwater**	**25 Mar 2020 14:35**
	SUB_Perch-6850			03 Apr 2020

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13593**

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. Maurer Date/Time: 3/26/20 18:00

Received By: Date/Time: 3/27/20 09:33

Cooler ID(s): Temperature(s):

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS20031162	***Split:***	**Workorder ID:** 2008833	**Level:** ENV_LVL4	**Requested Analysis**
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly	
Comments:			**Preservatives**	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 6850, DoD QSM
1	03/25/2020 08:25	16WW55-200325	2008833001		Water	A	1	A
2	03/25/2020 09:15	16IW10-200325	2008833002		Water	A	1	A
3	03/25/2020 10:25	16IW09-200325	2008833003		Water	A	1	A
4	03/25/2020 10:25	16IW09-200325-FD	2008833004	FLDDUP	Water	A	1	A
5	03/25/2020 11:35	16EW06-200325	2008833005		Water	A	1	A
6	03/25/2020 13:00	16EW03-200325	2008833006		Water	A	1	A
7	03/25/2020 13:45	16EW07-200325	2008833007		Water	A	1	A
8	03/25/2020 14:35	16IW03-200325	2008833008		Water	A	1	A

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	03/27/2020 09:33	ALS Sample Receiving	Sample Login
[signature] 3/27/20 1400		13C	Storage
R.33.1 3-30-20/08:20		T. Bosch	CL04 analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS HOUSTON — Project/Task/Site: 2008833

Date/Time of Receipt: 3/27/20 09:33 — Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA	VOA Headspace Present?	Yes/No/NA
	Frozen/Melted/NA		

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	Good	2 °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: Jaylynn Britain (Signature) — Jaylynn Britain (Printed Name) — 3/27/20 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

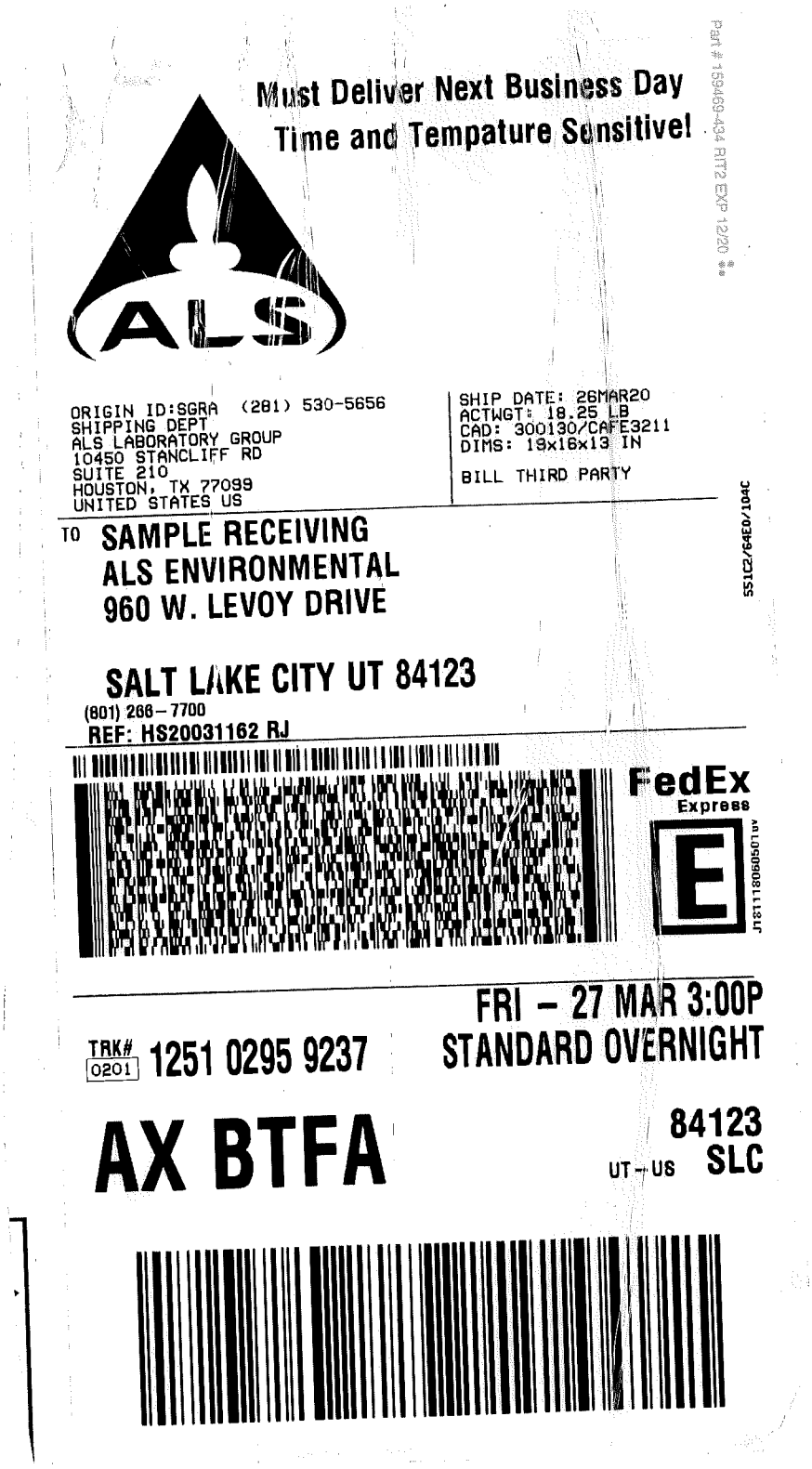
Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____



Must Deliver Next Business Day
Time and Tempature Sensitive!

Part # 159469-434 RIT2 EXP 12/20 **

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 26MAR20
ACTWGT: 18.25 LB
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS20031162 RJ

551C2/64E0/104C

FedEx Express

J131118060501aw

FRI - 27 MAR 3:00P
STANDARD OVERNIGHT

TRK# 0201 1251 0295 9237

AX BTFA

84123
UT - US SLC

Batch Worklist

Batch: ELMS/ 2364 Created: 3/31/2020 09:40 Instrument: HBN: 259940

Rule: EPA 6850, DoD QSM Water Analyst: T. Bosch Status: WP

Workorder: 2008833 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	701483	CCV for HBN 259940 [ELMS/2364]				CCV	3		E685041C3Q	5311		4/9/2020	
2	701484	LCS for HBN 259940 [ELMS/2364]				LCS	3		E6850Q413Q	5311		4/9/2020	
3	701485	RLVS for HBN 259940 [ELMS/2364				RLVS	3		E685041C3Q	5311		4/9/2020	
4	701486	ICS for HBN 259940 [ELMS/2364]				ICS	3		E6850..D3Q	5311		4/9/2020	
5	701487	LMB for HBN 259940 [ELMS/2364]				LMB	3		E6850Q413Q	5311		4/9/2020	
6	2008833001	16WW55-200325				SAMPLE	3	2008833001-A	E6850Q41.3	5480	4/22/2020	4/9/2020	
7	2008833002	16IW10-200325				SAMPLE	3	2008833002-A	E6850Q41.3	5480	4/22/2020	4/9/2020	
8	2008833003	16IW09-200325				SAMPLE	3	2008833003-A	E6850Q41.3	5480	4/22/2020	4/9/2020	
9	701512	16IW09-200325(2008833003MS)				MS	3		E6850Q413Q	5311		4/9/2020	
10	701513	16IW09-200325(2008833003MSD)				MSD	3		E6850Q413Q	5311		4/9/2020	
11	2008833004	16IW09-200325-FD				FLDDUP	3	2008833004-A	E6850Q41.3	5480	4/22/2020	4/9/2020	
12	2008833005	16EW06-200325				SAMPLE	3	2008833005-A	E6850Q41.3	5480	4/22/2020	4/9/2020	
13	2008833006	16EW03-200325				SAMPLE	3	2008833006-A	E6850Q41.3	5480	4/22/2020	4/9/2020	
14	2008833007	16EW07-200325				SAMPLE	3	2008833007-A	E6850Q41.3	5480	4/22/2020	4/9/2020	
15	2008833008	16IW03-200325				SAMPLE	3	2008833008-A	E6850Q41.3	5480	4/22/2020	4/9/2020	
16	701488	CCV for HBN 259940 [ELMS/2364]				CCV	3		E685041C3Q	5311		4/9/2020	
17	701514	CCV for HBN 259940 [ELMS/2364]				CCV	3		E685041C3Q	5311		4/9/2020	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 2008833 (001-08)
ELMS Batch/HBN ID: 2364 (259940)
Prep Date: 03/30/2020 Analysis Date: 03/31/2020 Analyst: Tom Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2020\MAR\31MAR0D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Tom Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution (ISTD) Horizon# 47863. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 10 Injection Volume: 40µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 47516 was used for LCS 701484; Target = 3.0µg/L. ASTM type II water was used for LMB 701487.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on sample 2008833003 (Client ID: 16IW09-200325). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field sample 2008833001 was re-analyzed and reported from a 1:10 dilution. Samples 2008833005/06/07 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:5. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The MS/MSD (701512/13) failed QC acceptance criteria for percent recoveries. The relative percent difference (RPD) passed acceptance criteria. The 83/85 ion ratio also failed. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2020\MAR\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2020\DOD\259940-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 701485) is reported from the analysis of the Laboratory Control Sample (LCS – 701484) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEP103) along with datafiles 30MARD10/11/18/19/21.

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELMS: 2364 HBN: 259940 **Sample Set IDs if Applicable:** 20088 33	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SB
Standards traceability checked and meets criteria	TB	SB
Standard curve coefficients evaluated and meet criteria	TB	SB
ICVs analyzed and meet acceptance criteria	TB	SB
CCVs analyzed and meet acceptance criteria	TB	SB
Retention Time Windows checked	TB	SB
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	SB-
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SB
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SB
RLVS analyzed	TB	SB
Preparation and analysis hold times met	TB	SB
Preparation deviations and re-preparations noted when performed	TB	SB
Analysis deviations and re-analyses noted when performed	TB	SB
Sample dilution factors noted on reports	TB	SB
Electronic records in HBN transcription accuracy and completeness	TB	SB
Preparation and analysis calculations checked	TB	SB
NCRs are completed as necessary NC/CAR#_____	TB	SB
Report forms are complete and accurate	TB	SB
Manual integrations checked	TB	SB

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L	
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL	
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020	
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes	
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK	

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK	Description - 6850 WKG Std 100.ug/L

Standard: 49948 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 09/20/2019 03:09PM **Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		Description - 6850 Stock AccStd 1,000ug/mL
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT		Description - 6850 Intermdt AccStd 10.ug/mL
Standard: 49947	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		**Description - 6850 QC Stock STD 1,000ug/mL**
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 47515
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM

Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification: ≥98%

MW*: 130.44
*For isotopically labeled compounds, MW listed is for the fully enriched product.

$NaCl^{18}O_4$

Labeled CAS Number: NA

Unlabeled CAS Number: 7601-89-0

Chemical Formula: NaCl*O4

Storage: Store at room temperature away from light and moisture.
Stability: See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

01089234

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	701483 CCV@25	Vial 71	1	Control	1	1.21939e6	7.591	25.21144
*	701484 LCS@3.	Vial 72	1	Control	2	1.39732e5	7.480	3.13829
*	701486 ICS@3.0	Vial 73	1	Control	3	9.37669e4	7.466	2.86284
*	701487 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2008833001	Vial 75	1	Sample	5	2.27165e7	6.861	221.62004
*	2008833002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2008833003	Vial 77	1	Sample	7	0.00000	0.000	0.00000
*	2008833004	Vial 78	1	Sample	8	0.00000	0.000	0.00000
*	2008833005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	2008833006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	2008833007	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	2008833008	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	701488 CCV@25	Vial 71	1	Control	13	1.24970e6	6.682	26.55550
*	2008833001 10X	Vial 91	1	Sample	14	2.49790e6	6.496	356.64558
*	701512 88333MS	Vial 83	1	Sample	18	1.17919e5	6.398	2.14216
*	701513 88333SD	Vial 84	1	Sample	19	1.11155e5	6.378	2.12176
*	2008833005 5X	Vial 61	1	Sample	20	0.00000	0.000	0.00000
*	2008833006 5X	Vial 62	1	Sample	21	0.00000	0.000	0.00000
*	2008833007 5X	Vial 63	1	Sample	22	0.00000	0.000	0.00000
*	701514 CCV@25	Vial 71	1	Control	23	1.31348e6	6.552	26.21653

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	701483 CCV@25	Vial 71	1	Control	1	1.65119e5	7.603	5.00000
*	701484 LCS@3.	Vial 72	1	Control	2	1.63918e5	7.511	5.00000
*	701486 ICS@3.0	Vial 73	1	Control	3	1.20434e5	7.488	5.00000
*	701487 LMB	Vial 74	1	Control	4	1.73418e5	7.751	5.00000
*	2008833001	Vial 75	1	Sample	5	1.91216e5	6.875	5.00000
*	2008833002	Vial 76	1	Sample	6	1.30814e5	6.673	5.00000
*	2008833003	Vial 77	1	Sample	7	1.96731e5	7.220	5.00000
*	2008833004	Vial 78	1	Sample	8	1.99348e5	7.209	5.00000
*	2008833005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	2008833006	Vial 80	1	Sample	10	1.67254e4	5.841	5.00000
*	2008833007	Vial 81	1	Sample	11	9366.31934	6.918	5.00000
*	2008833008	Vial 82	1	Sample	12	1.44207e5	6.328	5.00000
*	701488 CCV@25	Vial 71	1	Control	13	1.59774e5	6.705	5.00000
*	2008833001 10X	Vial 91	1	Sample	14	2.29152e5	6.518	50.00000
*	701512 88333MS	Vial 83	1	Sample	18	2.01162e5	6.421	5.00000
*	701513 88333SD	Vial 84	1	Sample	19	1.91394e5	6.401	5.00000
*	2008833005 5X	Vial 61	1	Sample	20	2.24981e5	6.915	25.00000
*	2008833006 5X	Vial 62	1	Sample	21	1.52808e5	6.367	25.00000
*	2008833007 5X	Vial 63	1	Sample	22	2.40184e5	6.893	25.00000
*	701514 CCV@25	Vial 71	1	Control	23	1.70336e5	6.576	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	701483 CCV@25	Vial 71	1	Control	1	3.86989e5	7.602	26.14963
*	701484 LCS@3.	Vial 72	1	Control	2	4.77273e4	7.485	3.42687
*	701486 ICS@3.0	Vial 73	1	Control	3	3.77590e4	7.488	3.69829
*	701487 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2008833001	Vial 75	1	Sample	5	7.31970e6	6.875	234.78057
*	2008833002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2008833003	Vial 77	1	Sample	7	0.00000	0.000	0.00000
*	2008833004	Vial 78	1	Sample	8	0.00000	0.000	0.00000

Batch Report: C:\HPCHEM\1\DATA\31MAR20D\31MAR20S.B

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	2008833005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	2008833006	Vial 80	1	Sample	10	0.00000	0.000	0.00000
*	2008833007	Vial 81	1	Sample	11	0.00000	0.000	0.00000
*	2008833008	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	701488 CCV@25	Vial 71	1	Control	13	4.09202e5	6.706	28.34266
*	2008833001 10X	Vial 91	1	Sample	14	7.84842e5	6.511	367.37669
*	701512 88333MS	Vial 83	1	Sample	18	7.13579e4	6.455	4.19680
*	701513 88333SD	Vial 84	1	Sample	19	6.85066e4	6.444	4.23550
*	2008833005 5X	Vial 61	1	Sample	20	0.00000	0.000	0.00000
*	2008833006 5X	Vial 62	1	Sample	21	0.00000	0.000	0.00000
*	2008833007 5X	Vial 63	1	Sample	22	0.00000	0.000	0.00000
*	701514 CCV@25	Vial 71	1	Control	23	4.19196e5	6.574	27.33698

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2020\MAR\31MAR20D.S

Sequence Table:

Method and Injection Info Part:

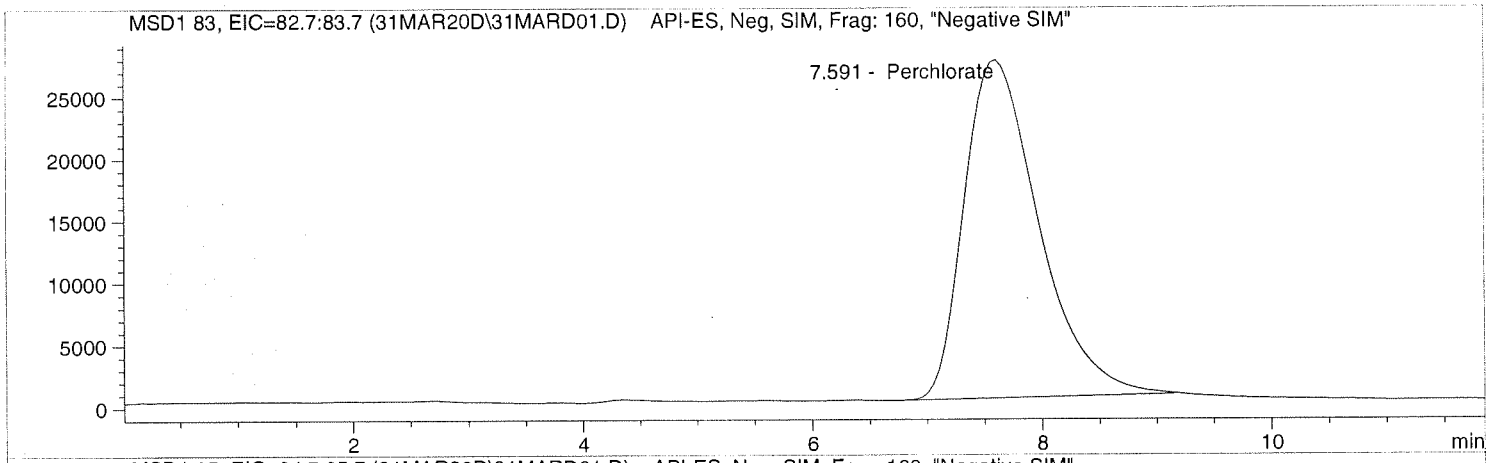
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	701483	CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	701484	LCS@3.	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	701486	ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	701487	LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	2008833001		CLO4-AQN	1	Sample		
6	Vial 76	2008833002		CLO4-AQN	1	Sample		
7	Vial 77	2008833003		CLO4-AQN	1	Sample		
8	Vial 78	2008833004		CLO4-AQN	1	Sample		
9	Vial 79	2008833005		CLO4-AQN	1	Sample		
10	Vial 80	2008833006		CLO4-AQN	1	Sample		
11	Vial 81	2008833007		CLO4-AQN	1	Sample		
12	Vial 82	2008833008		CLO4-AQN	1	Sample		
13	Vial 71	701488	CCV@25	CLO4-AQN	1	Ctrl Samp		
14	Vial 91	2008833001	10X	CLO4-AQN	1	Sample		
15	Vial 95	2008833005	10X	CLO4-AQN	1	Sample		
16	Vial 96	2008833006	10X	CLO4-AQN	1	Sample		
17	Vial 97	2008833007	10X	CLO4-AQN	1	Sample		
18	Vial 83	701512	88333MS	CLO4-AQN	1	Sample		
19	Vial 84	701513	88333SD	CLO4-AQN	1	Sample		
20	Vial 61	2008833005	5X	CLO4-AQN	1	Sample		
21	Vial 62	2008833006	5X	CLO4-AQN	1	Sample		
22	Vial 63	2008833007	5X	CLO4-AQN	1	Sample		
23	Vial 71	701514	CCV@25	CLO4-AQN	1	Ctrl Samp		

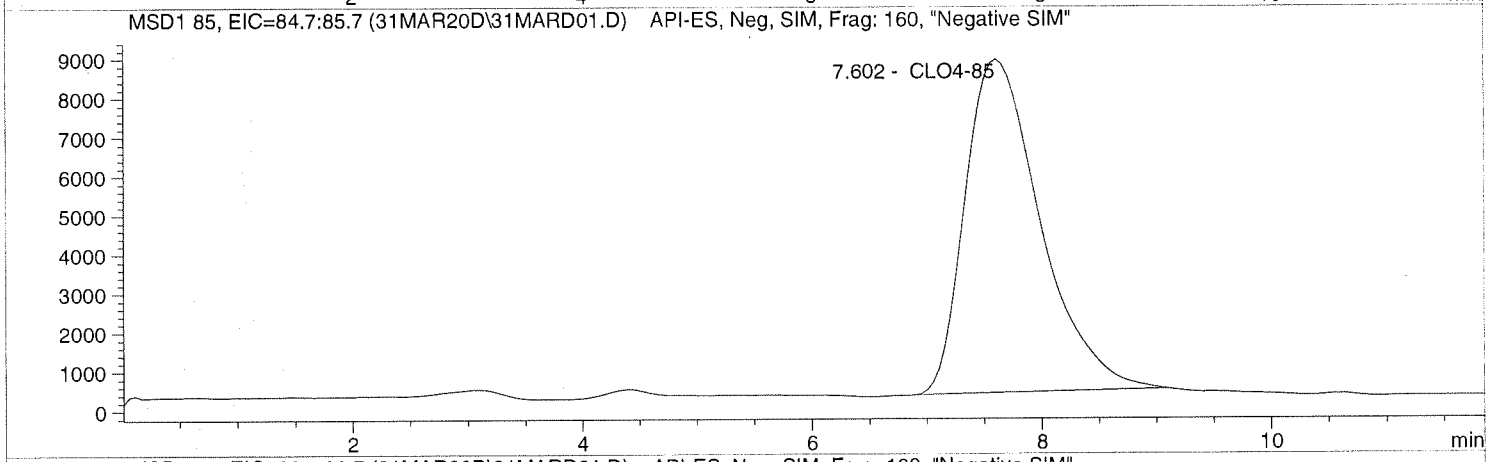
Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD01.D Sample Name: 701483 CCV@25

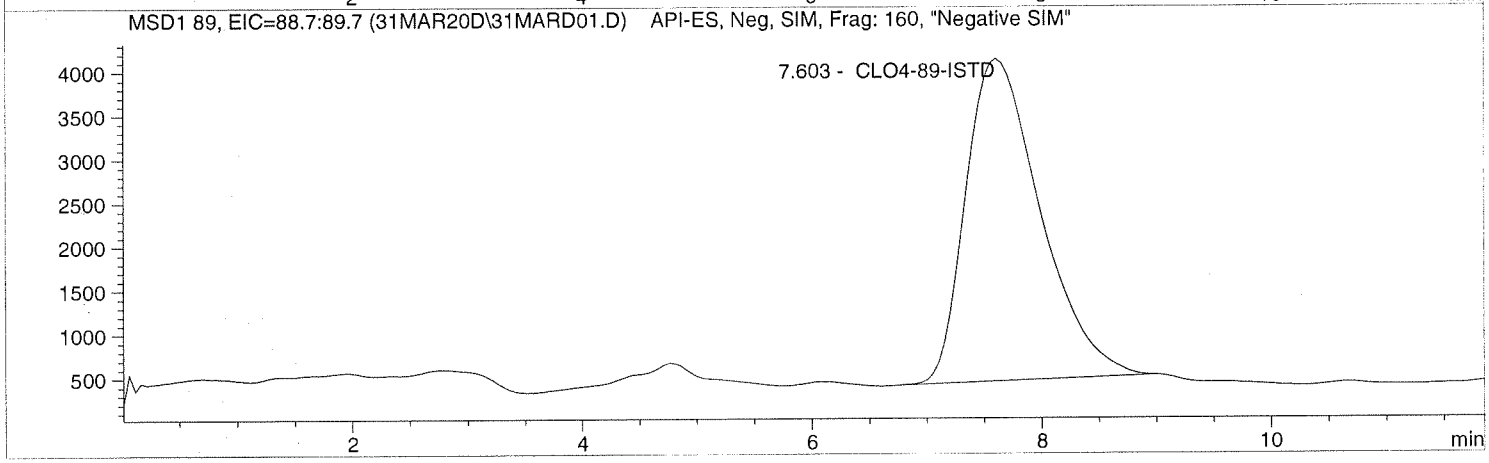
Injection Date:	3/31/2020 10:10:54	Seq Line:	1
Sample Name:	701483 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD01.D Sample Name: 701483 CCV@25

Injection Date:	3/31/2020 10:10:54	Seq Line:	1
Sample Name:	701483 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.591	PBA	1219385.0	25.2114	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.602	PBA	386989.2	26.1496	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.603	PBA	165119.5	5.0000	CLO4-89-ISTD

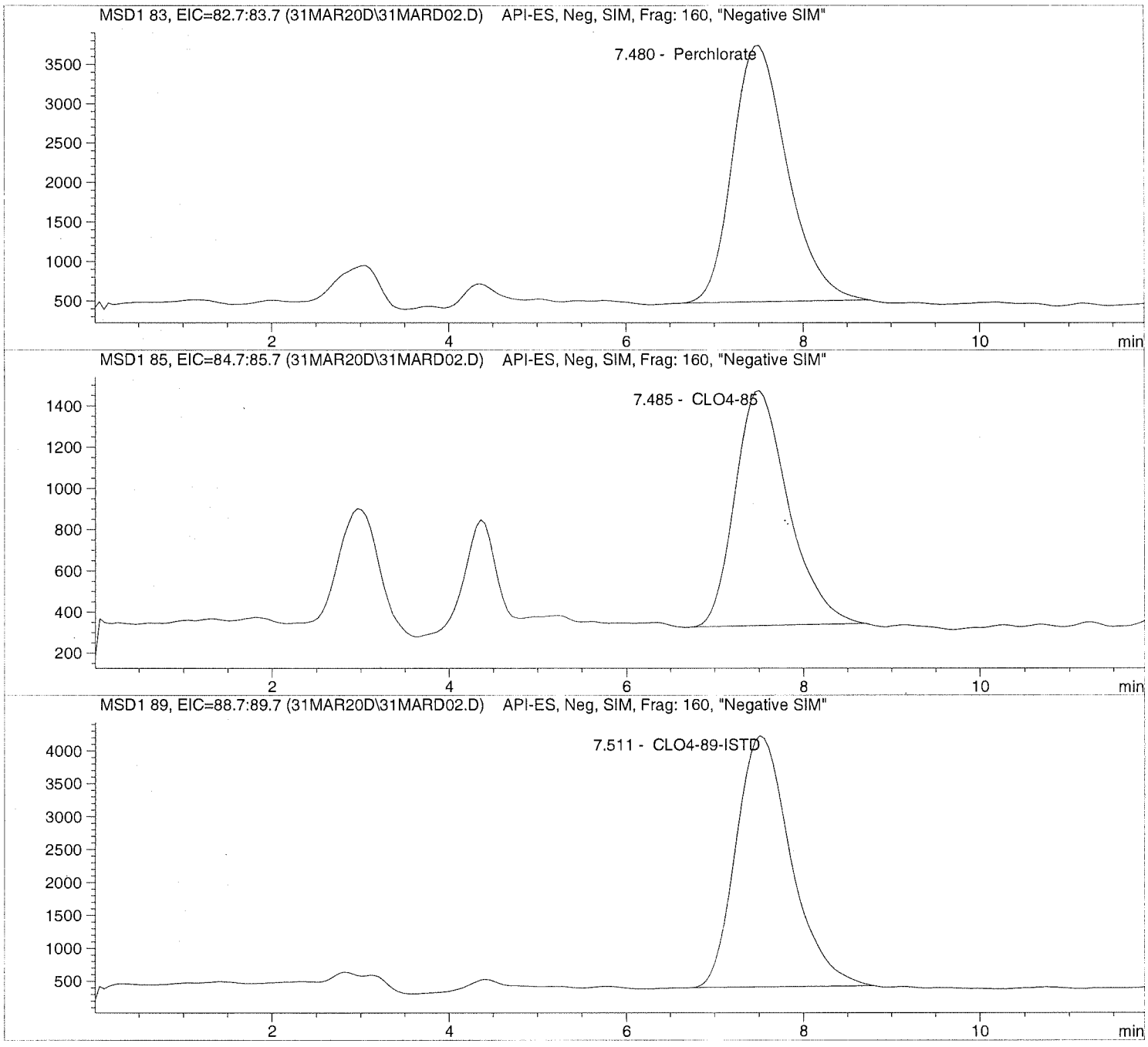
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD02.D Sample Name: 701484 LCS@3.

Injection Date:	3/31/2020 10:24:50	Seq Line:	2
Sample Name:	701484 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD02.D Sample Name: 701484 LCS@3.

Injection Date:	3/31/2020 10:24:50	Seq Line:	2
Sample Name:	701484 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.480	PBA	139731.9	3.1383	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.485	PBA	47727.3	3.4269	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.511	PBA	163917.6	5.0000	CLO4-89-ISTD

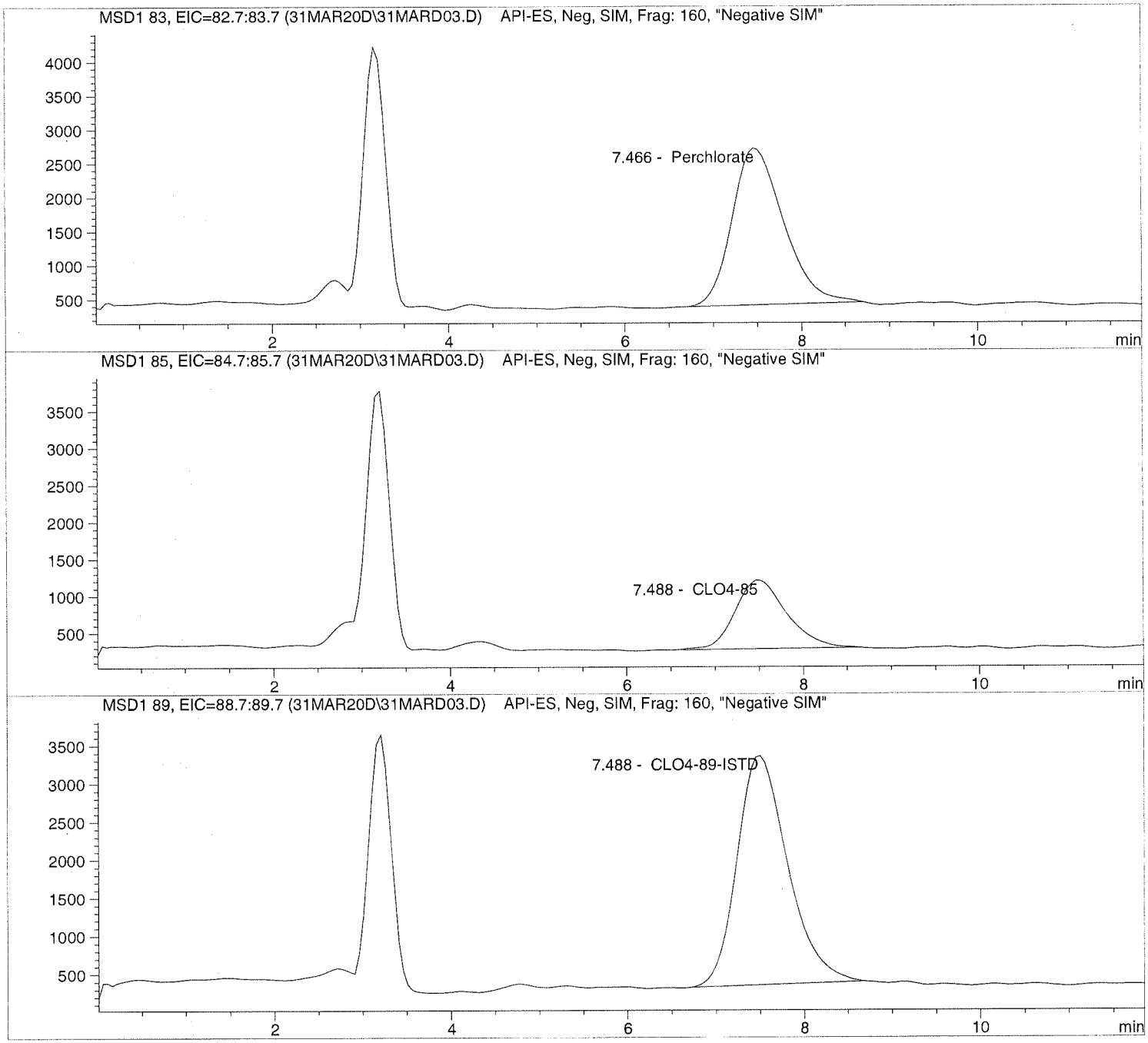
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD03.D Sample Name: 701486 ICS@3.0

Injection Date:	3/31/2020 10:38:56	Seq Line:	3
Sample Name:	701486 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD03.D Sample Name: 701486 ICS@3.0

Injection Date:	3/31/2020 10:38:56	Seq Line:	3
Sample Name:	701486 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.466	PBA	93766.9	2.8628	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.488	BBA	37759.0	3.6983	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.488	PBA	120433.6	5.0000	CLO4-89-ISTD

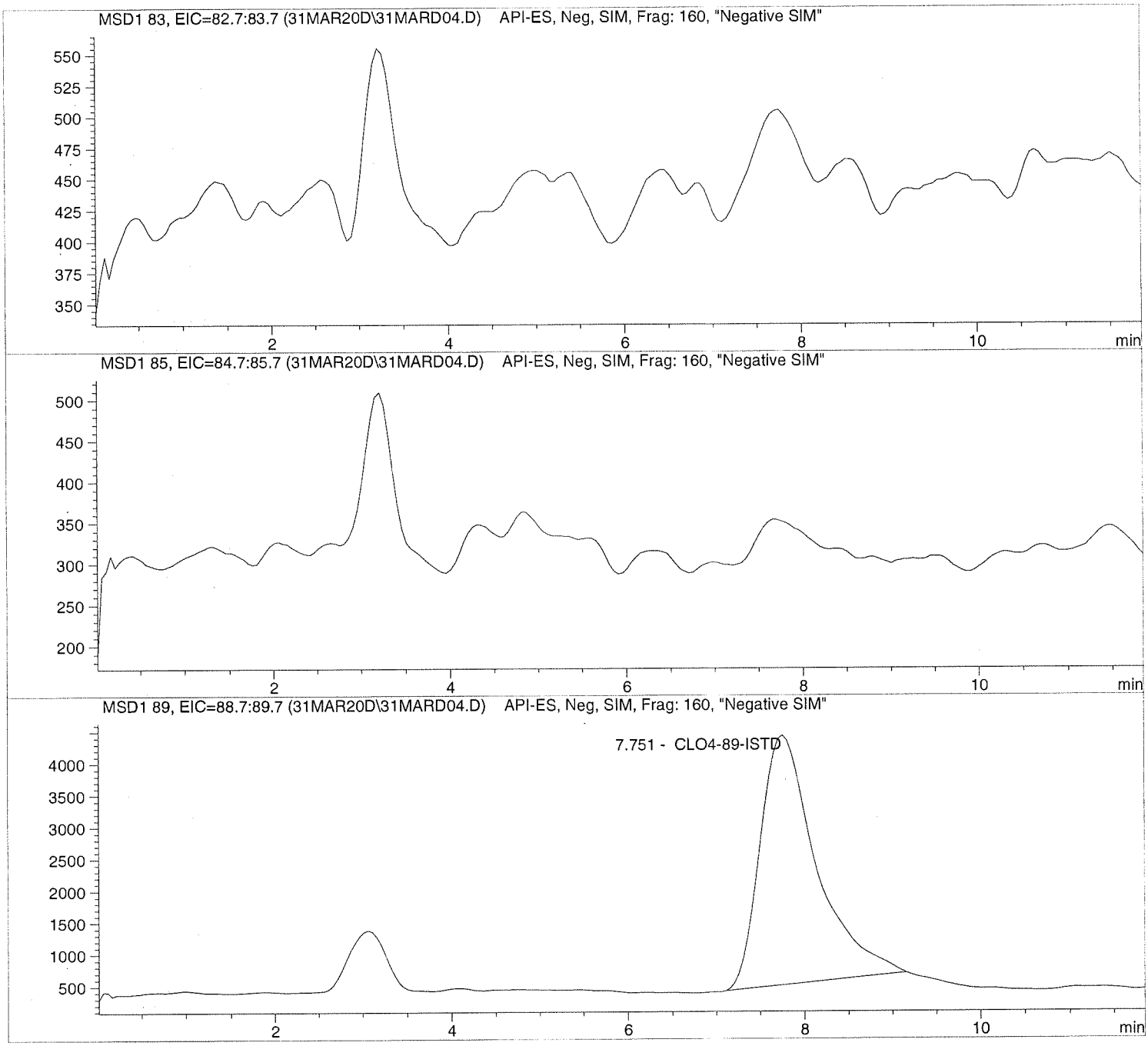
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD04.D Sample Name: 701487 LMB

Injection Date:	3/31/2020 10:52:57	Seq Line:	4
Sample Name:	701487 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD04.D Sample Name: 701487 LMB

Injection Date:	3/31/2020 10:52:57	Seq Line:	4
Sample Name:	701487 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.751	PBA	173418.5	5.0000	CLO4-89-ISTD

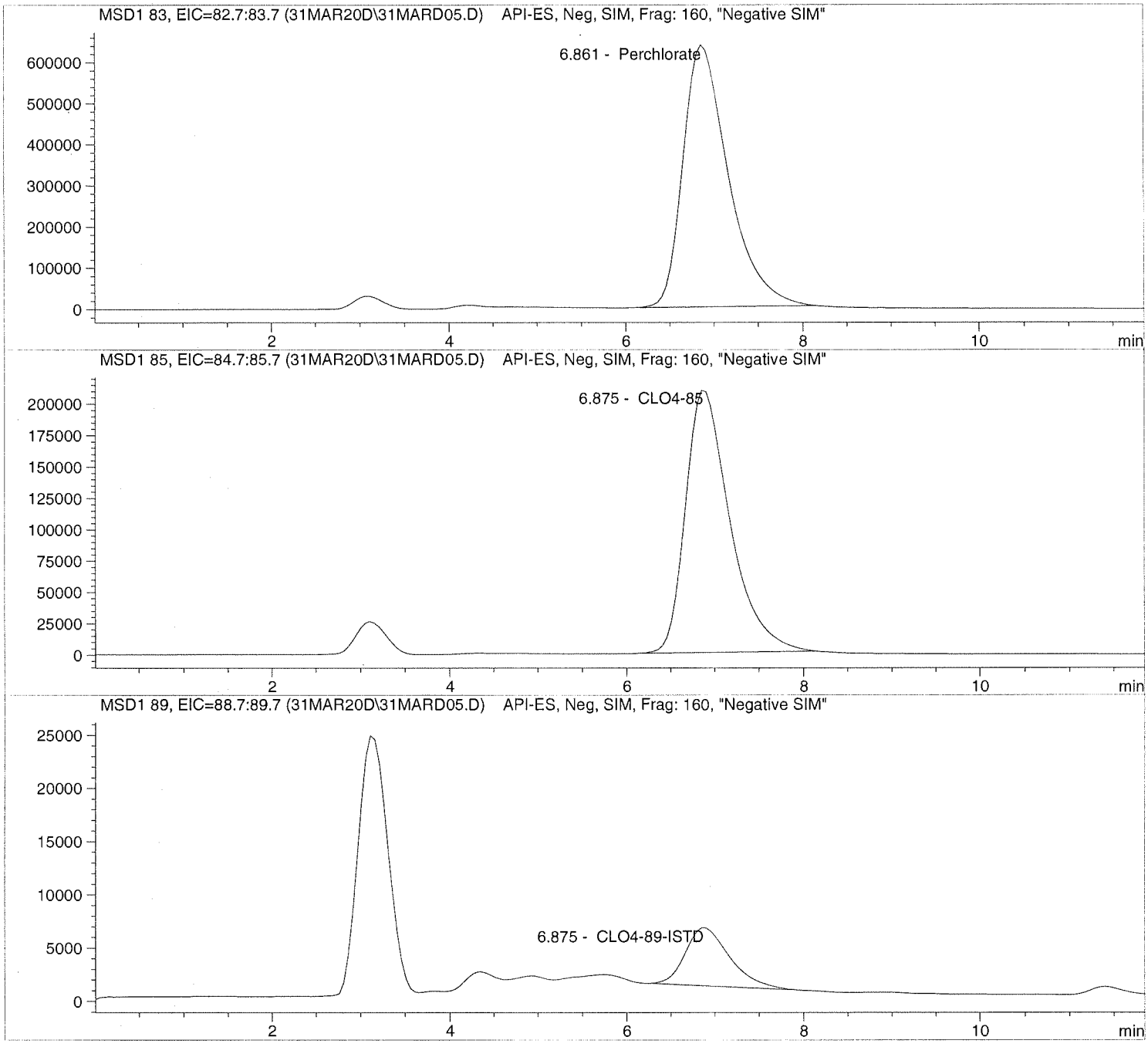
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD05.D Sample Name: 2008833001

Injection Date:	3/31/2020 11:06:57	Seq Line:	5
Sample Name:	2008833001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD05.D Sample Name: 2008833001

Injection Date:	3/31/2020 11:06:57	Seq Line:	5
Sample Name:	2008833001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.861	BBA	22716540.0	221.6200	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.875	PBA	7319700.0	234.7806	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.875	PBA	191215.5	5.0000	CLO4-89-ISTD

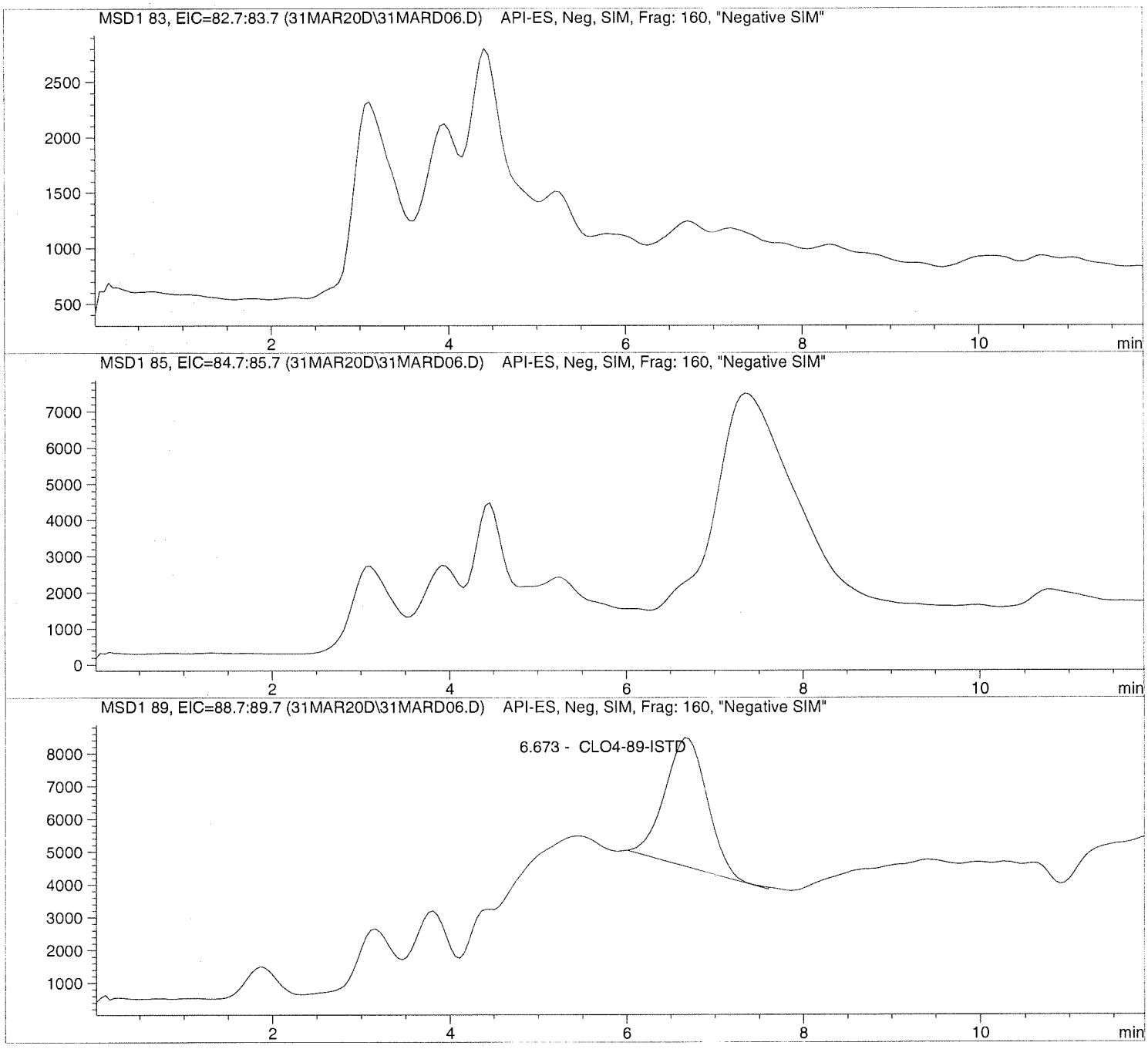
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD06.D Sample Name: 2008833002

Injection Date:	3/31/2020 11:20:56	Seq Line:	6
Sample Name:	2008833002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD06.D Sample Name: 2008833002

Injection Date:	3/31/2020 11:20:56	Seq Line:	6
Sample Name:	2008833002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.673	VBA	130814.4	5.0000	CLO4-89-ISTD

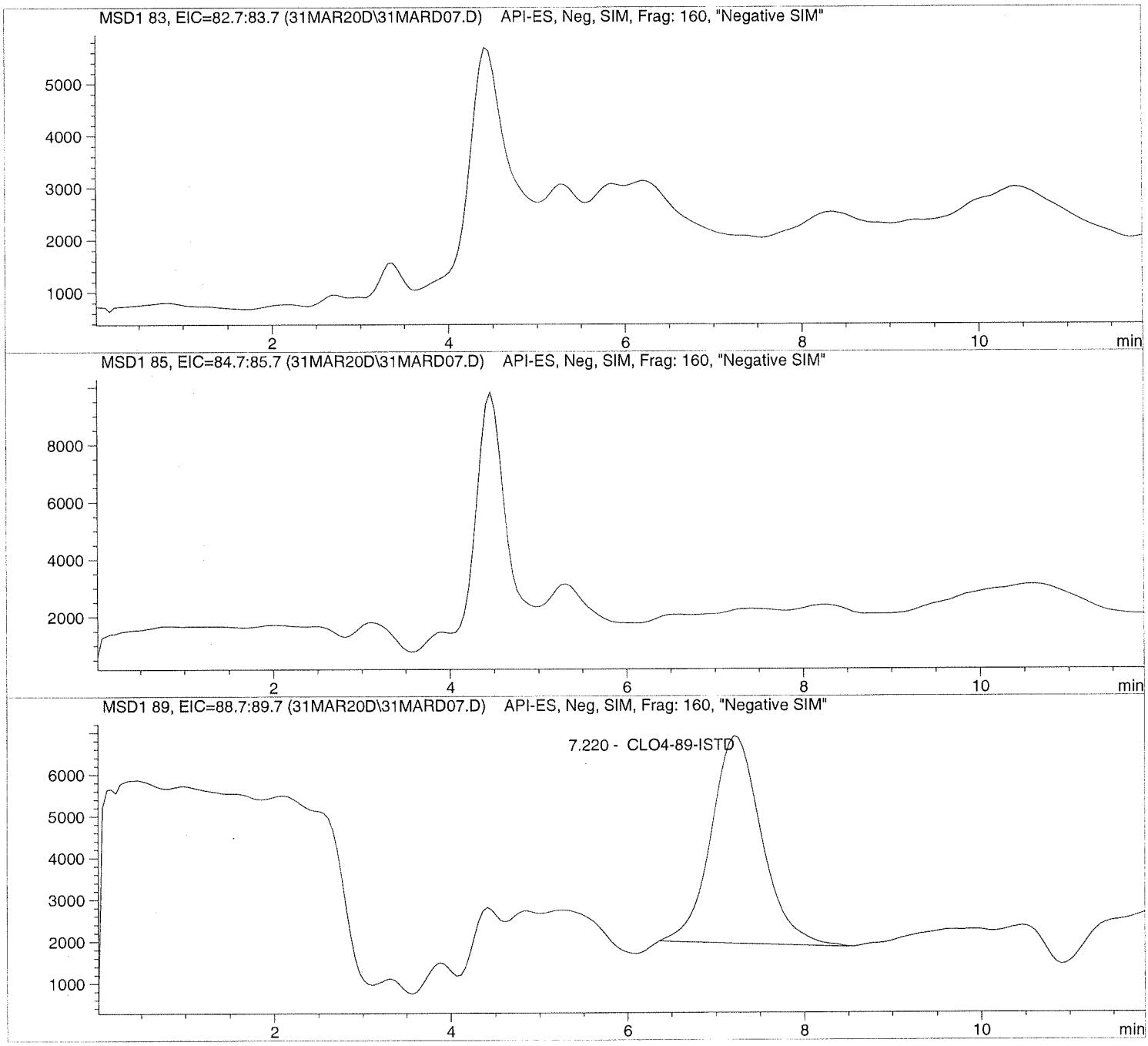
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD07.D Sample Name: 2008833003

Injection Date:	3/31/2020 11:34:55	Seq Line:	7
Sample Name:	2008833003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD07.D Sample Name: 2008833003

Injection Date:	3/31/2020 11:34:55	Seq Line:	7
Sample Name:	2008833003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.220	PBA	196731.4	5.0000	CLO4-89-ISTD

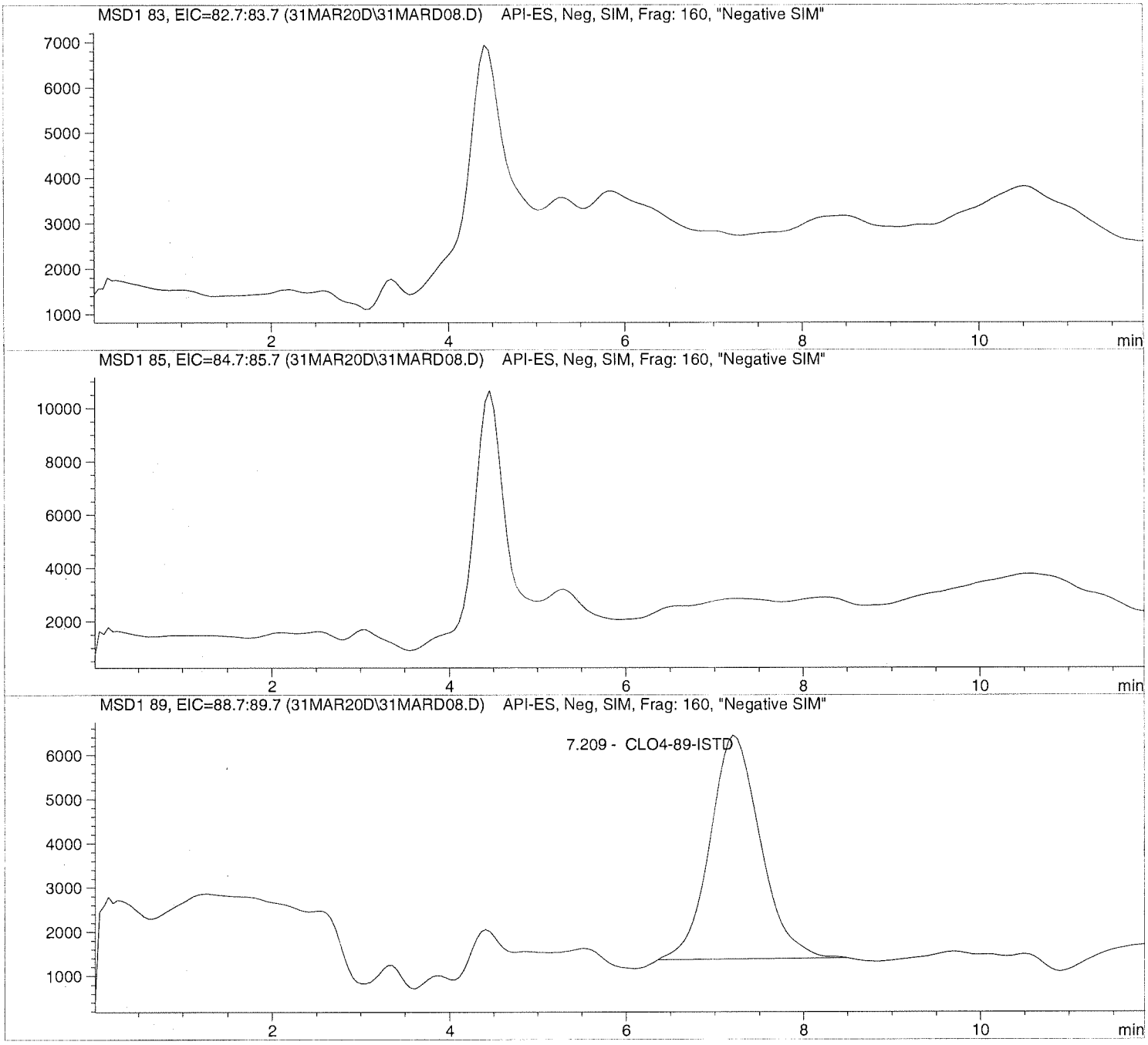
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD08.D Sample Name: 2008833004

Injection Date:	3/31/2020 11:48:58	Seq Line:	8
Sample Name:	2008833004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD08.D Sample Name: 2008833004

Injection Date:	3/31/2020 11:48:58	Seq Line:	8
Sample Name:	2008833004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.209	PBA	199348.3	5.0000	CLO4-89-ISTD

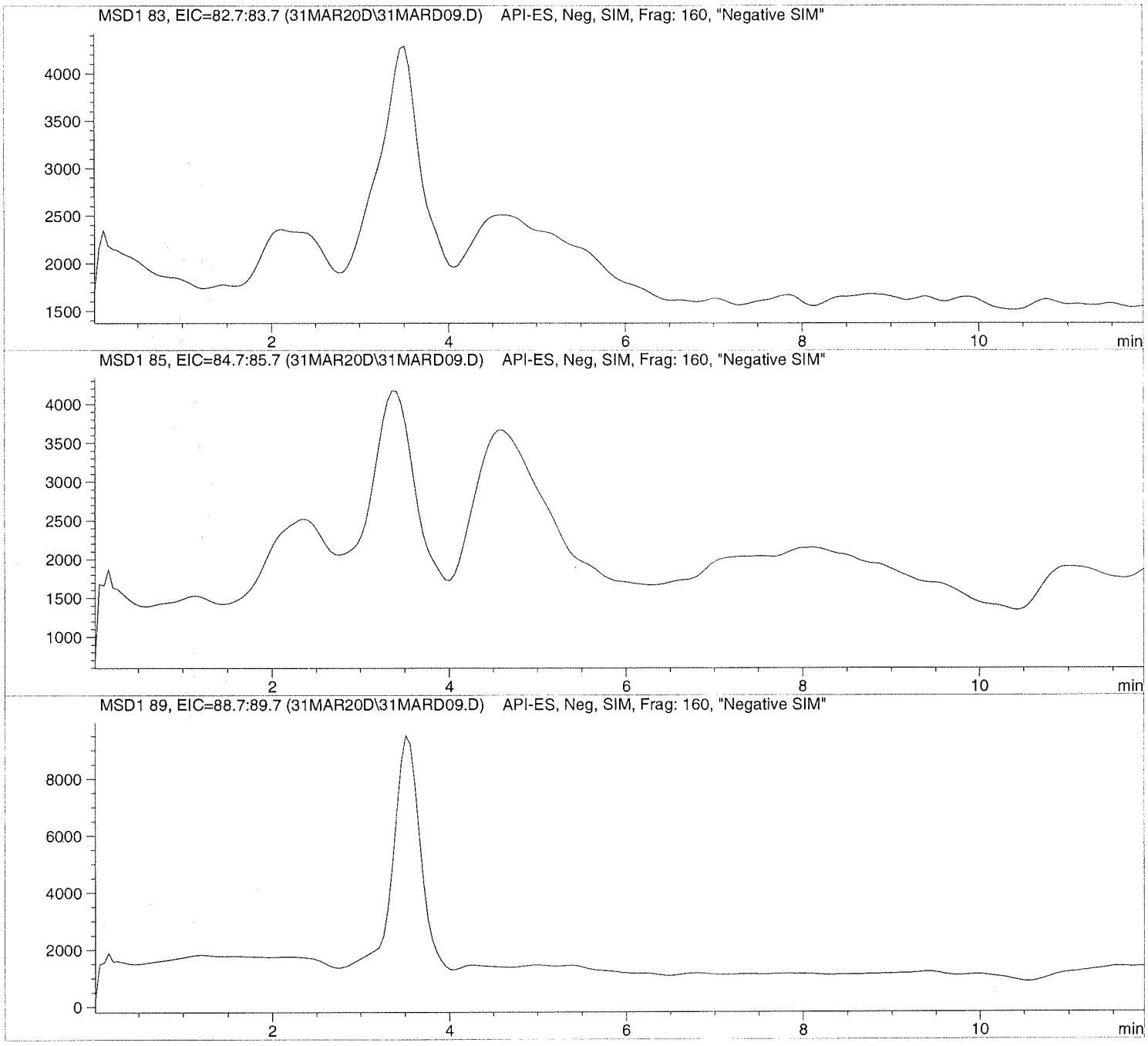
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD09.D Sample Name: 2008833005

Injection Date:	3/31/2020 12:03:06	Seq Line:	9
Sample Name:	2008833005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD09.D Sample Name: 2008833005

Injection Date:	3/31/2020 12:03:06	Seq Line:	9
Sample Name:	2008833005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-89-ISTD

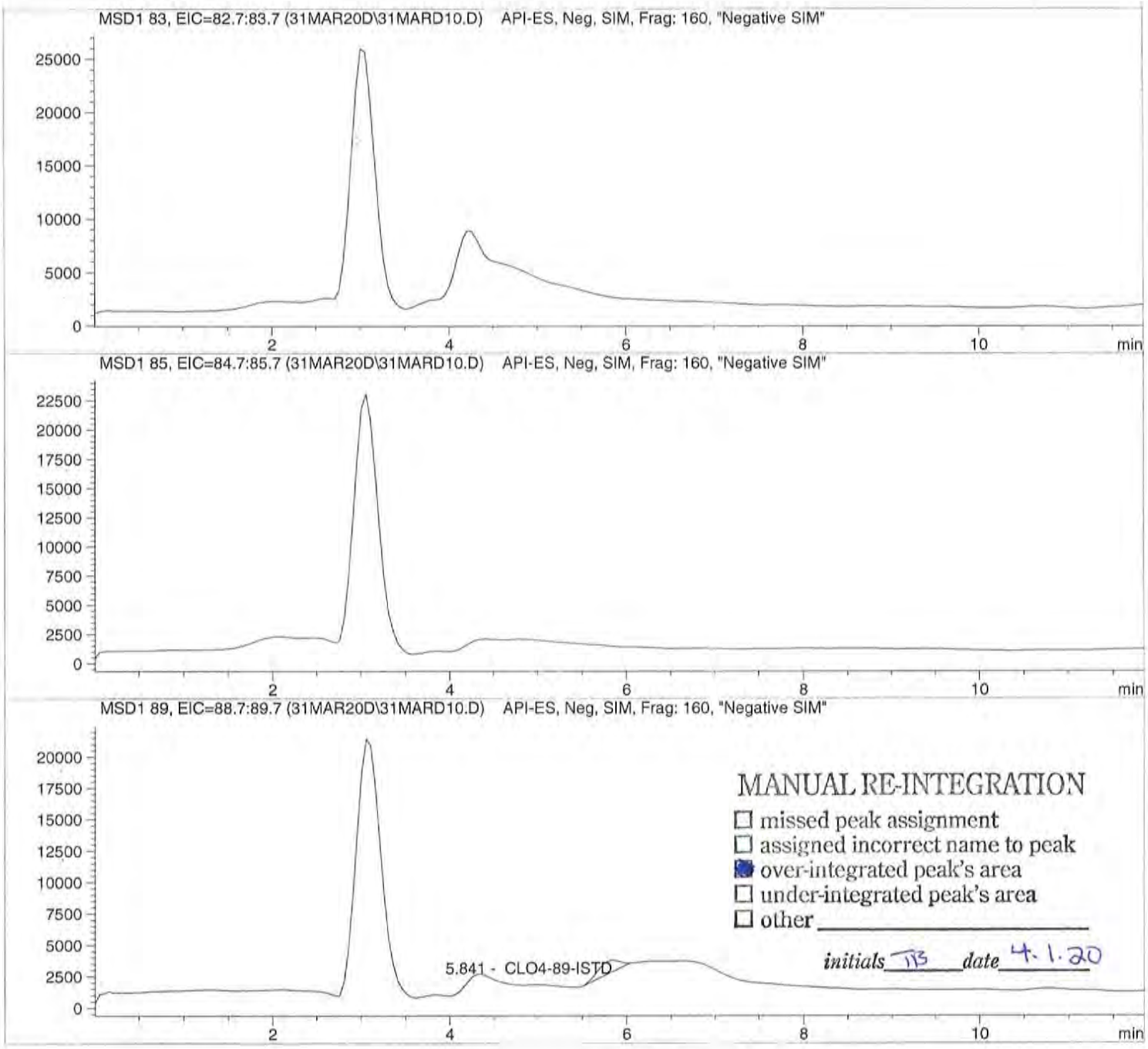
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD10.D Sample Name: 2008833006

Injection Date:	3/31/2020 12:17:06	Seq Line:	10
Sample Name:	2008833006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



MANUAL RE-INTEGRATION
☐ missed peak assignment
☐ assigned incorrect name to peak
■ over-integrated peak's area
☐ under-integrated peak's area
☐ other _____
initials TB *date* 4.1.20

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD10.D Sample Name: 2008833006

Injection Date:	3/31/2020 12:17:06	Seq Line:	10
Sample Name:	2008833006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.841	MM	16725.4	5.0000	CLO4-89-ISTD

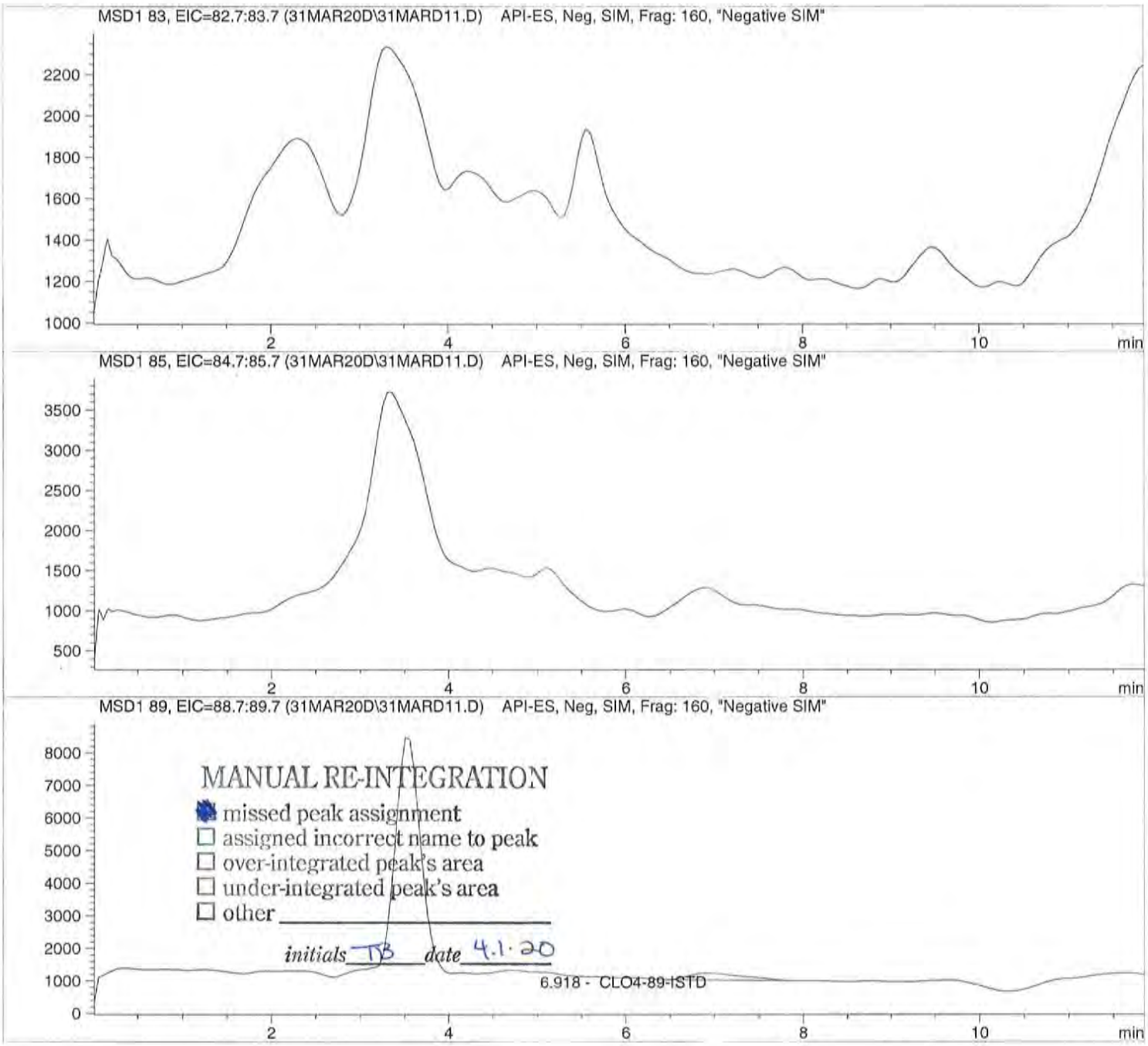
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD11.D Sample Name: 2008833007

Injection Date:	3/31/2020 12:31:04	Seq Line:	11
Sample Name:	2008833007	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD11.D Sample Name: 2008833007

Injection Date:	3/31/2020 12:31:04	Seq Line:	11
Sample Name:	2008833007	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.918	MM	9366.3	5.0000	CLO4-89-ISTD

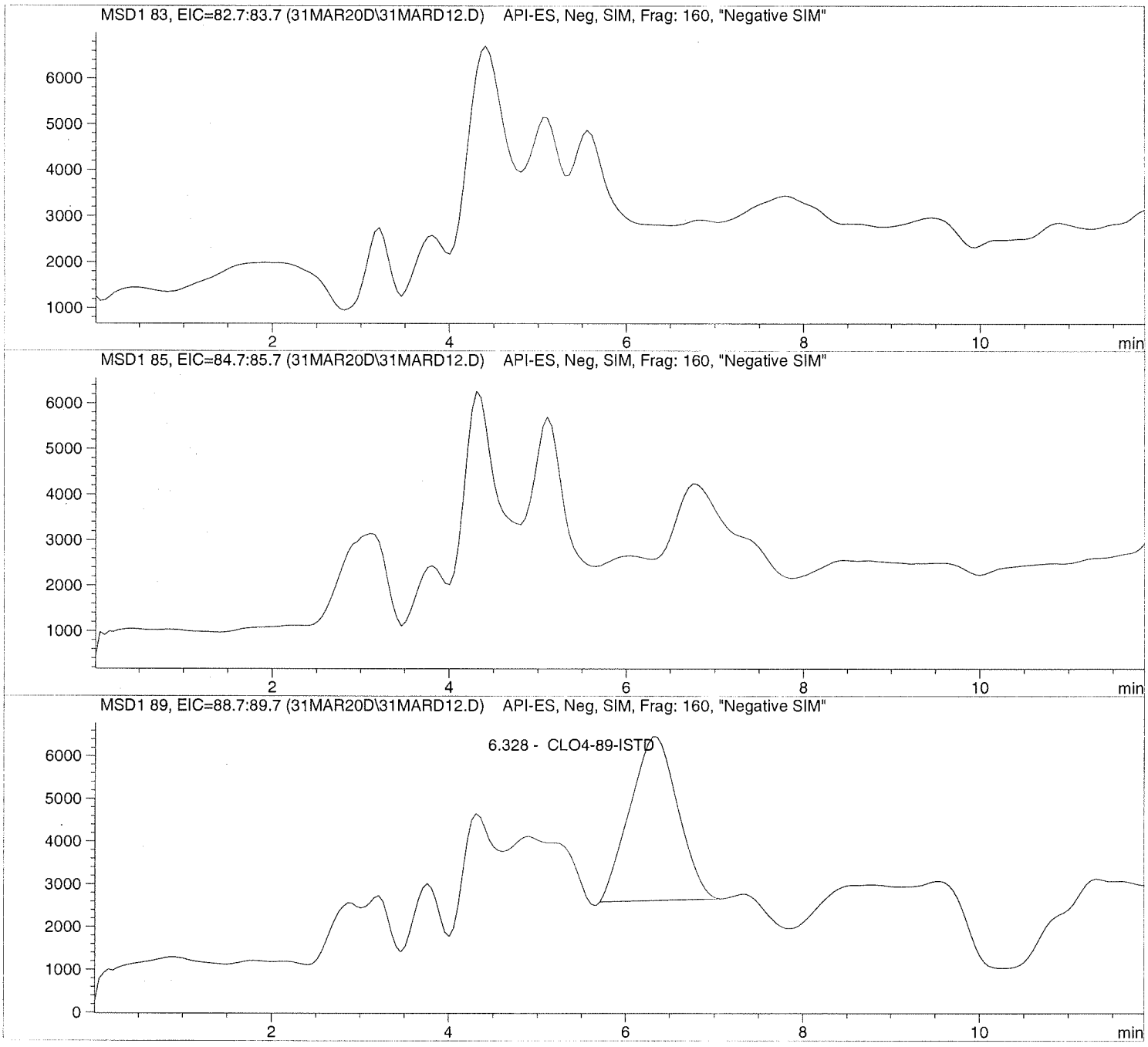
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD12.D Sample Name: 2008833008

Injection Date:	3/31/2020 12:45:07	Seq Line:	12
Sample Name:	2008833008	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD12.D Sample Name: 2008833008

Injection Date:	3/31/2020 12:45:07	Seq Line:	12
Sample Name:	2008833008	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.328	PBA	144207.4	5.0000	CLO4-89-ISTD

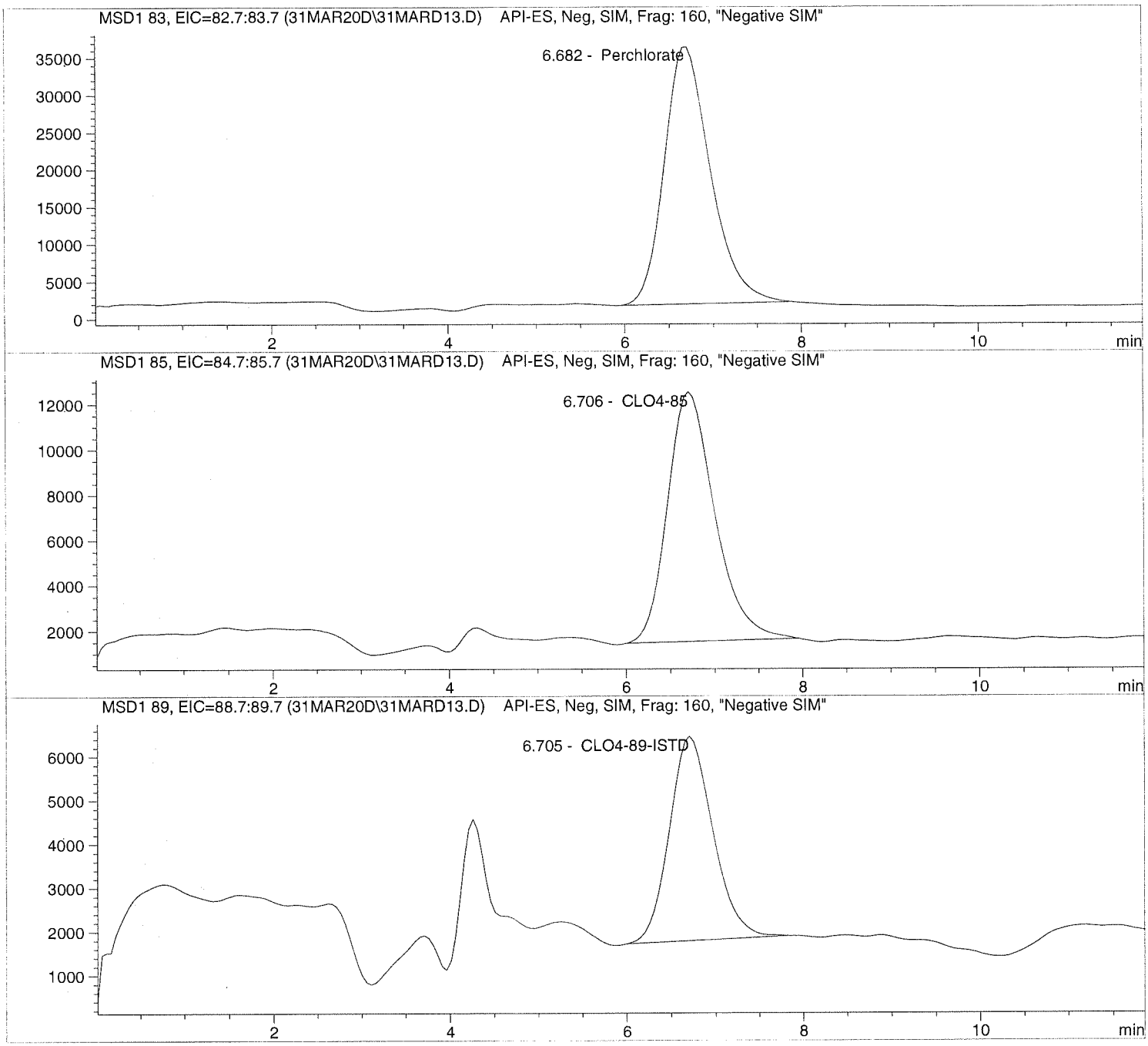
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD13.D Sample Name: 701488 CCV@25

Injection Date:	3/31/2020 12:59:06	Seq Line:	13
Sample Name:	701488 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD13.D Sample Name: 701488 CCV@25

Injection Date:	3/31/2020 12:59:06	Seq Line:	13
Sample Name:	701488 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.682	PBA	1249703.9	26.5555	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.706	PBA	409201.6	28.3427	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.705	PBA	159773.6	5.0000	CLO4-89-ISTD

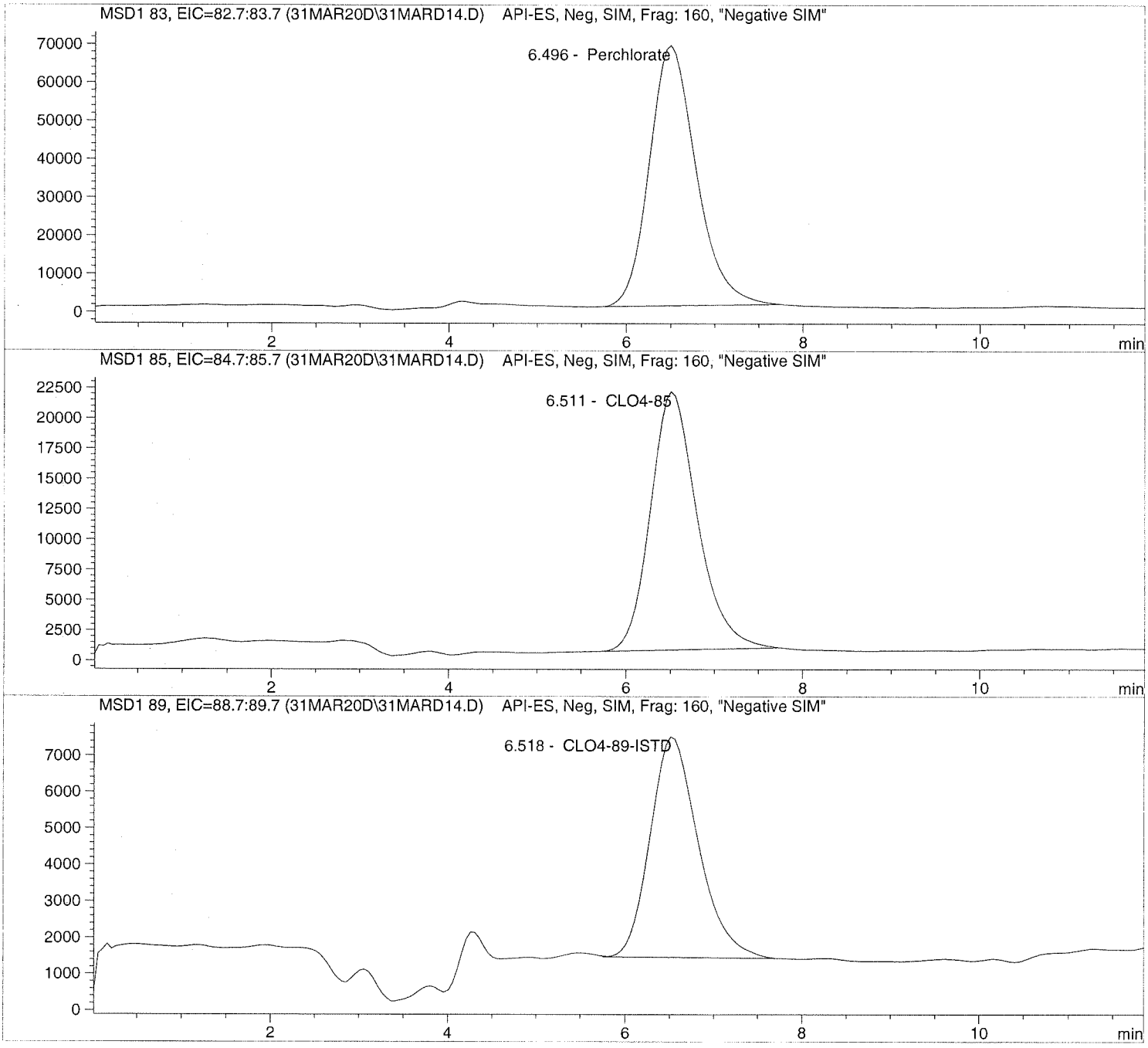
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD14.D Sample Name: 2008833001 10X

Injection Date:	3/31/2020 13:13:01	Seq Line:	14
Sample Name:	2008833001 10X	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD14.D Sample Name: 2008833001 10X

Injection Date:	3/31/2020 13:13:01	Seq Line:	14
Sample Name:	2008833001 10X	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.496	PBA	2497901.5	356.6456	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.511	BBA	784841.6	367.3767	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.518	BBA	229152.0	50.0000	CLO4-89-ISTD

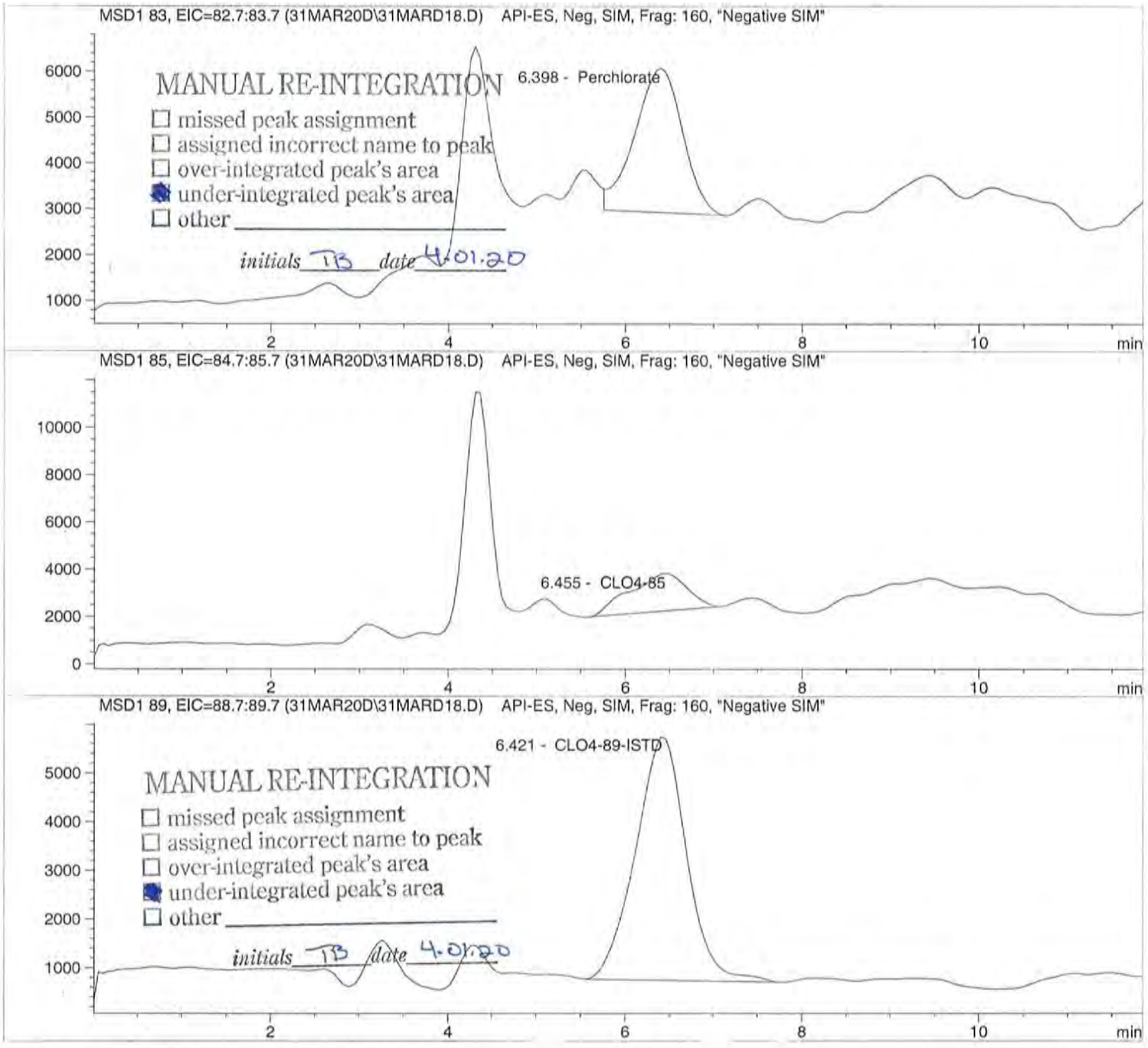
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD18.D Sample Name: 701512 88333MS

Injection Date:	3/31/2020 14:08:53	Seq Line:	18
Sample Name:	701512 88333MS	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD18.D Sample Name: 701512 88333MS

Injection Date:	3/31/2020 14:08:53	Seq Line:	18
Sample Name:	701512 88333MS	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.398	FM	117919.3	2.1422	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.455	PB	71357.9	4.1968	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

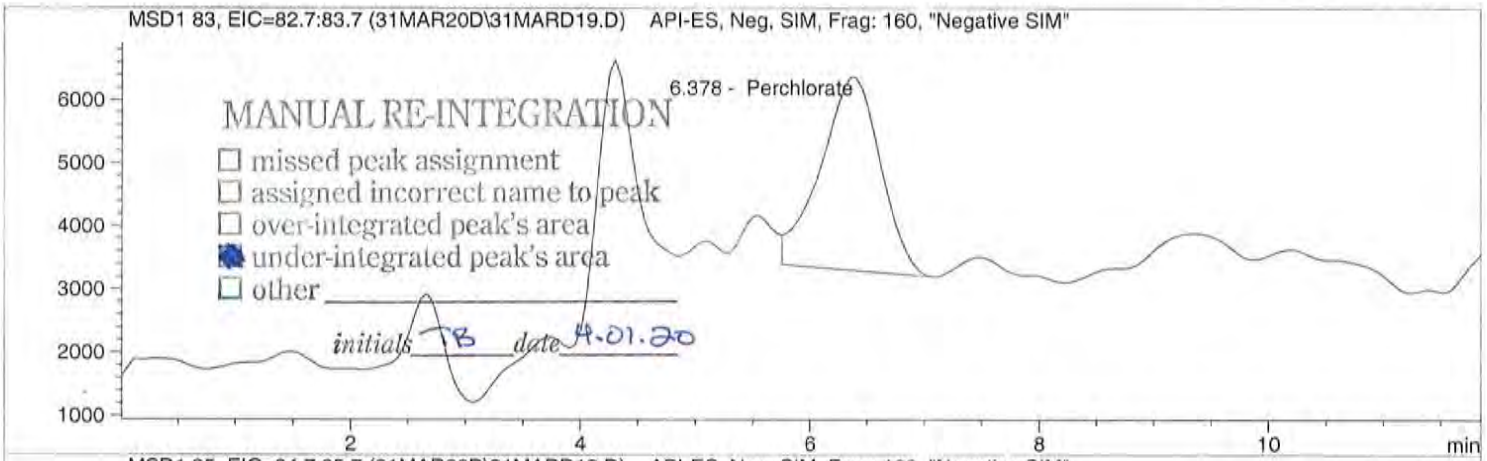
RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.421	MM	201162.1	5.0000	CLO4-89-ISTD

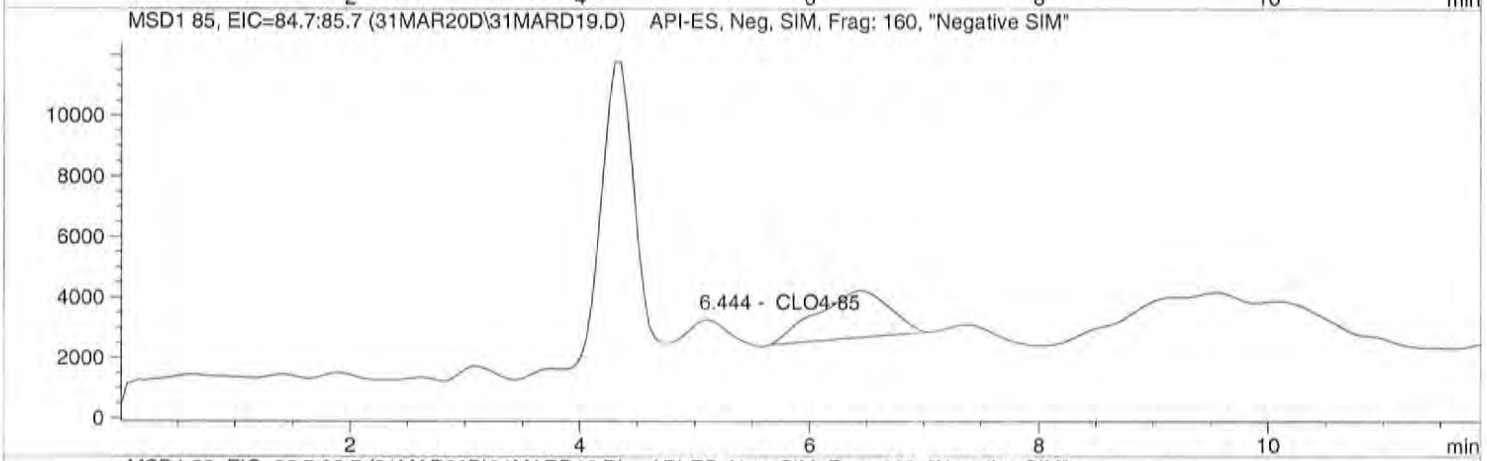
*** End of Report ***

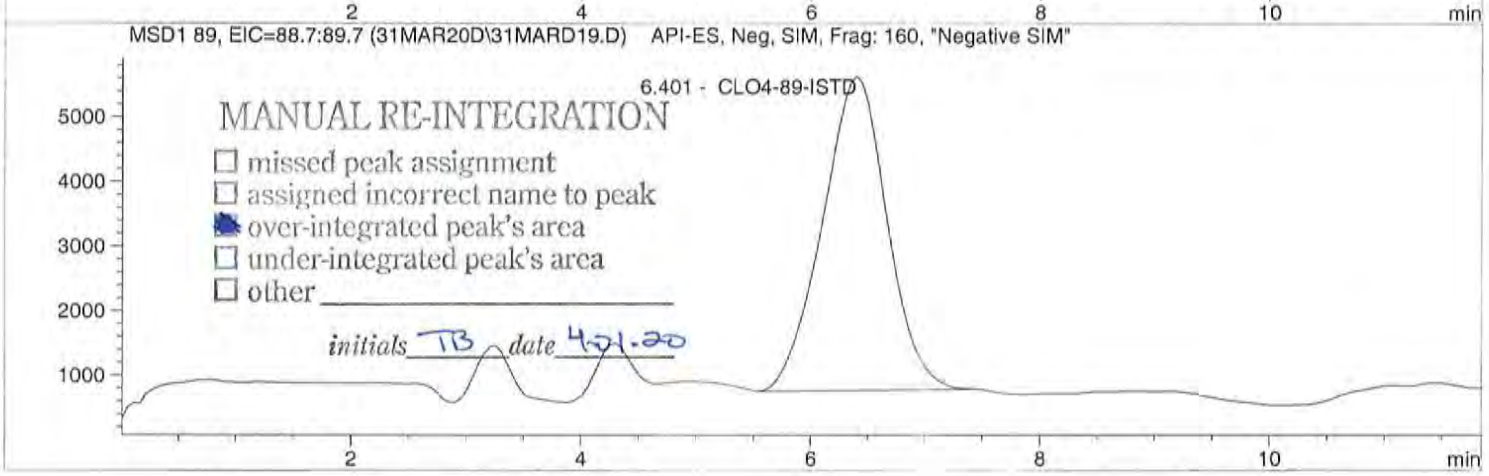
```
Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD19.D       Sample Name: 701513   88333SD
==============================================================================
Injection Date:    3/31/2020  14:22:50          Seq Line:            19
Sample Name:       701513   88333SD             Location:       Vial 84
Acq Operator:      TNB                          Inj. No.:            1
                                                Inj. Vol.:       40 µl

Acq. Method:       CLO4-AQN.M
Analysis Method:   C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:      2/17/2020  15:42:52

Perchlorate analysis
==============================================================================
```







Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD19.D Sample Name: 701513 88333SD

Injection Date:	3/31/2020 14:22:50	Seq Line:	19
Sample Name:	701513 88333SD	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.378	FM	111154.6	2.1218	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.444	PB	68506.6	4.2355	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.401	MM	191393.9	5.0000	CLO4-89-ISTD

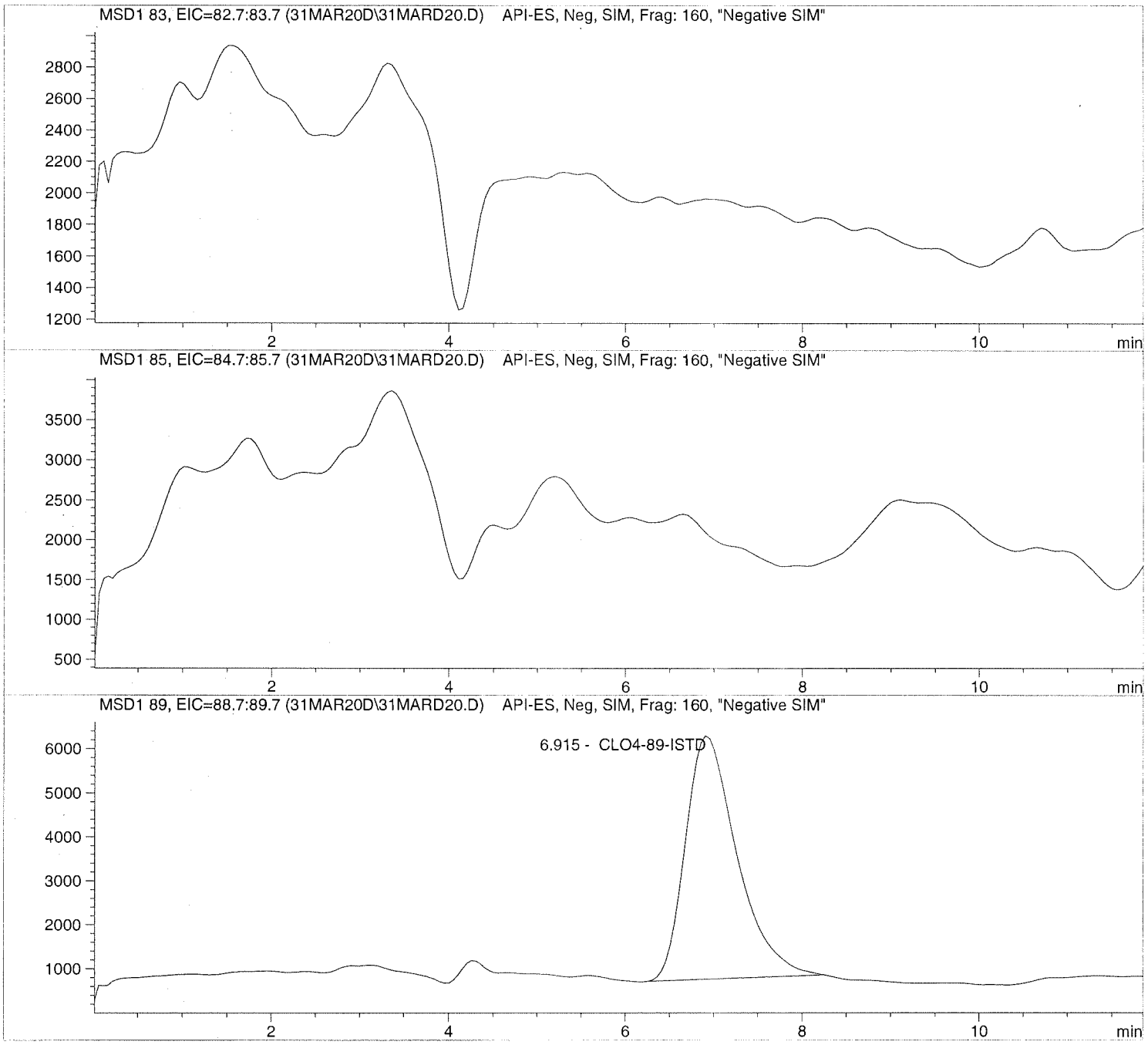
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD20.D Sample Name: 2008833005 5X

Injection Date:	3/31/2020 14:36:48	Seq Line:	20
Sample Name:	2008833005 5X	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD20.D Sample Name: 2008833005 5X

Injection Date:	3/31/2020 14:36:48	Seq Line:	20
Sample Name:	2008833005 5X	Location:	Vial 61
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.915	PBA	224981.0	25.0000	CLO4-89-ISTD

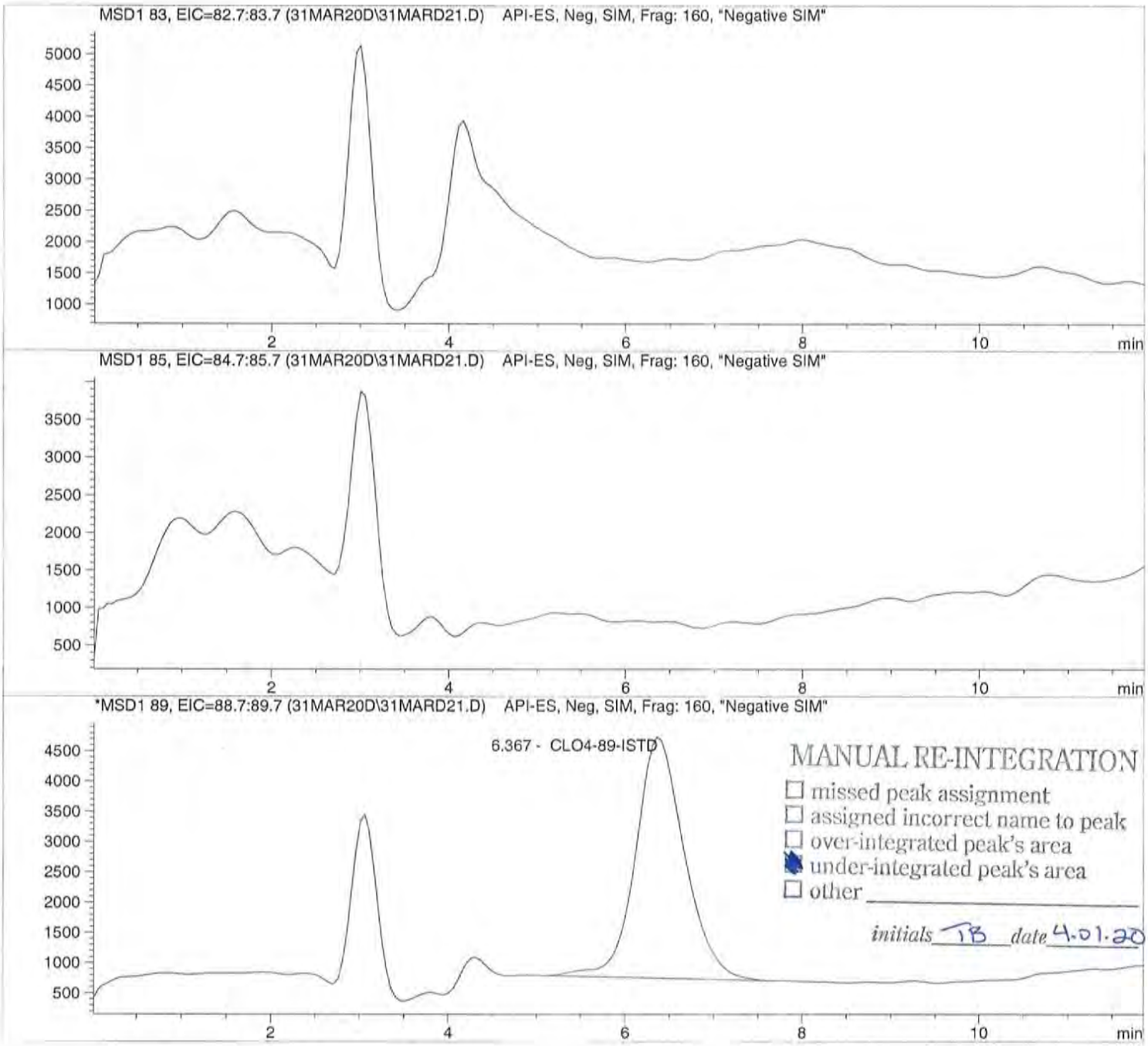
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD21.D Sample Name: 2008833006 5X

Injection Date:	3/31/2020 14:50:46	Seq Line:	21
Sample Name:	2008833006 5X	Location:	Vial 62
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD21.D Sample Name: 2008833006 5X

Injection Date:	3/31/2020 14:50:46	Seq Line:	21
Sample Name:	2008833006 5X	Location:	Vial 62
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.367	MM	152808.1	25.0000	CLO4-89-ISTD

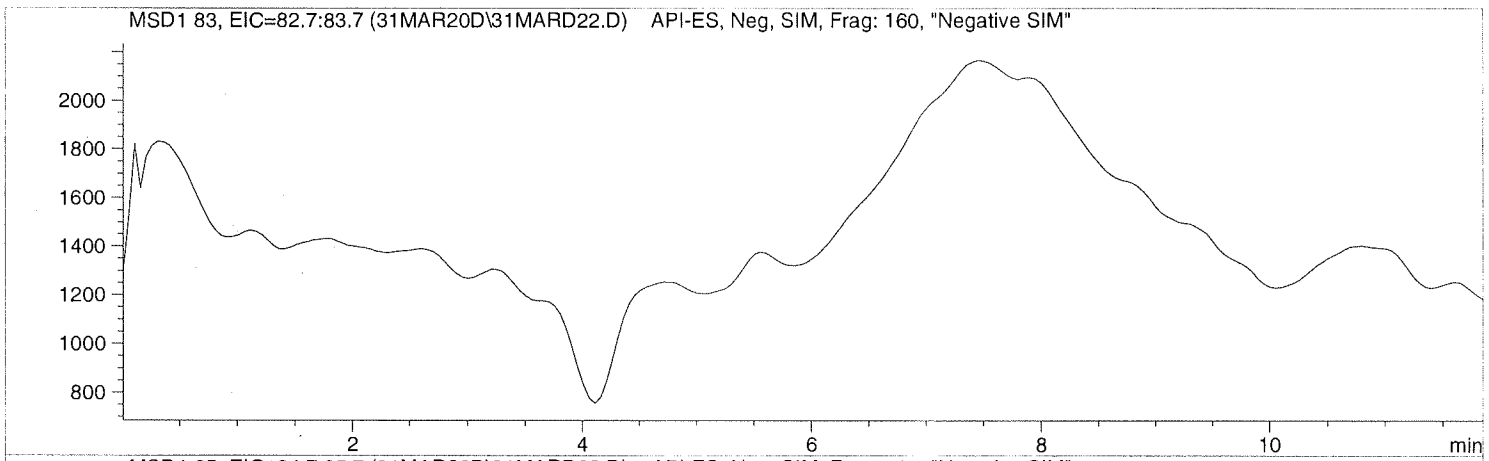
*** End of Report ***

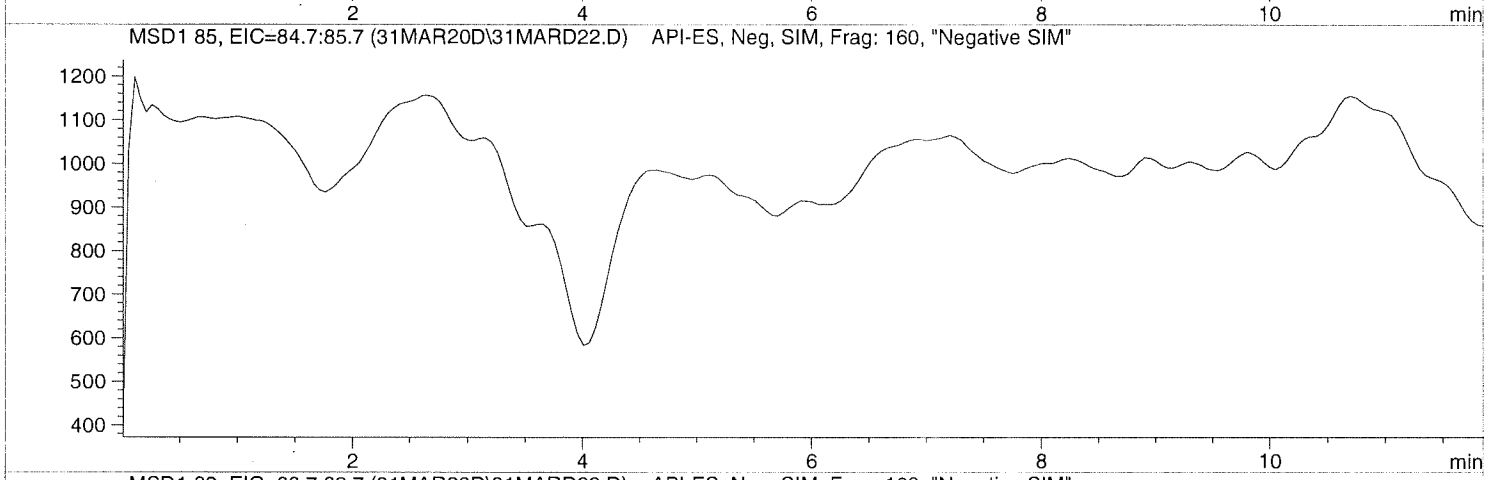
Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD22.D Sample Name: 2008833007 5X

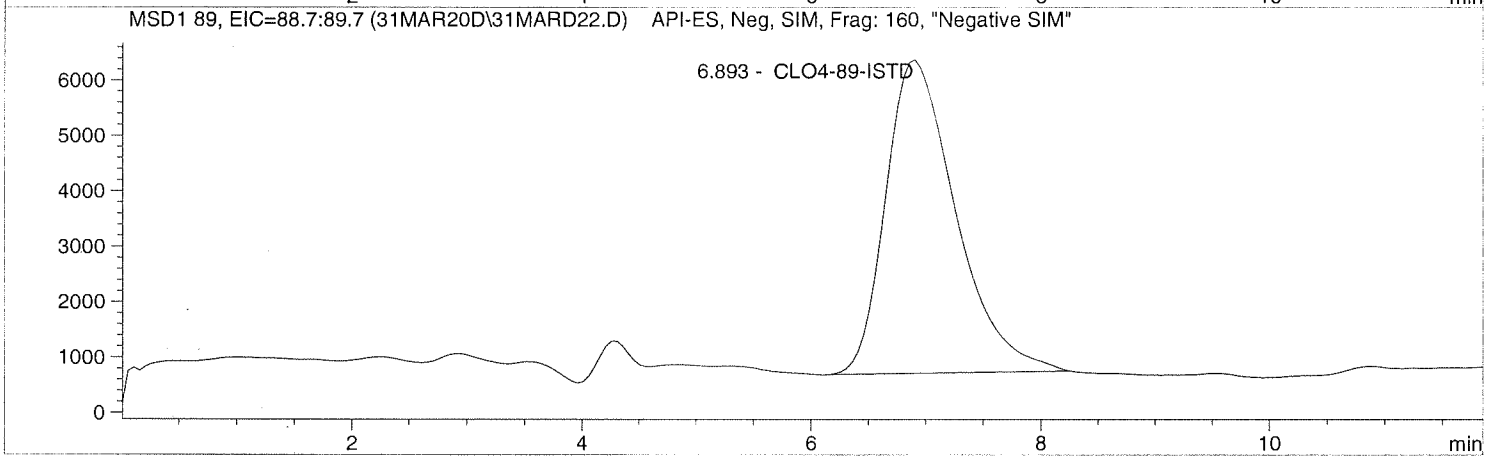
Injection Date:	3/31/2020 15:04:46	Seq Line:	22
Sample Name:	2008833007 5X	Location:	Vial 63
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD22.D Sample Name: 2008833007 5X

Injection Date:	3/31/2020 15:04:46	Seq Line:	22
Sample Name:	2008833007 5X	Location:	Vial 63
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.893	PBA	240184.2	25.0000	CLO4-89-ISTD

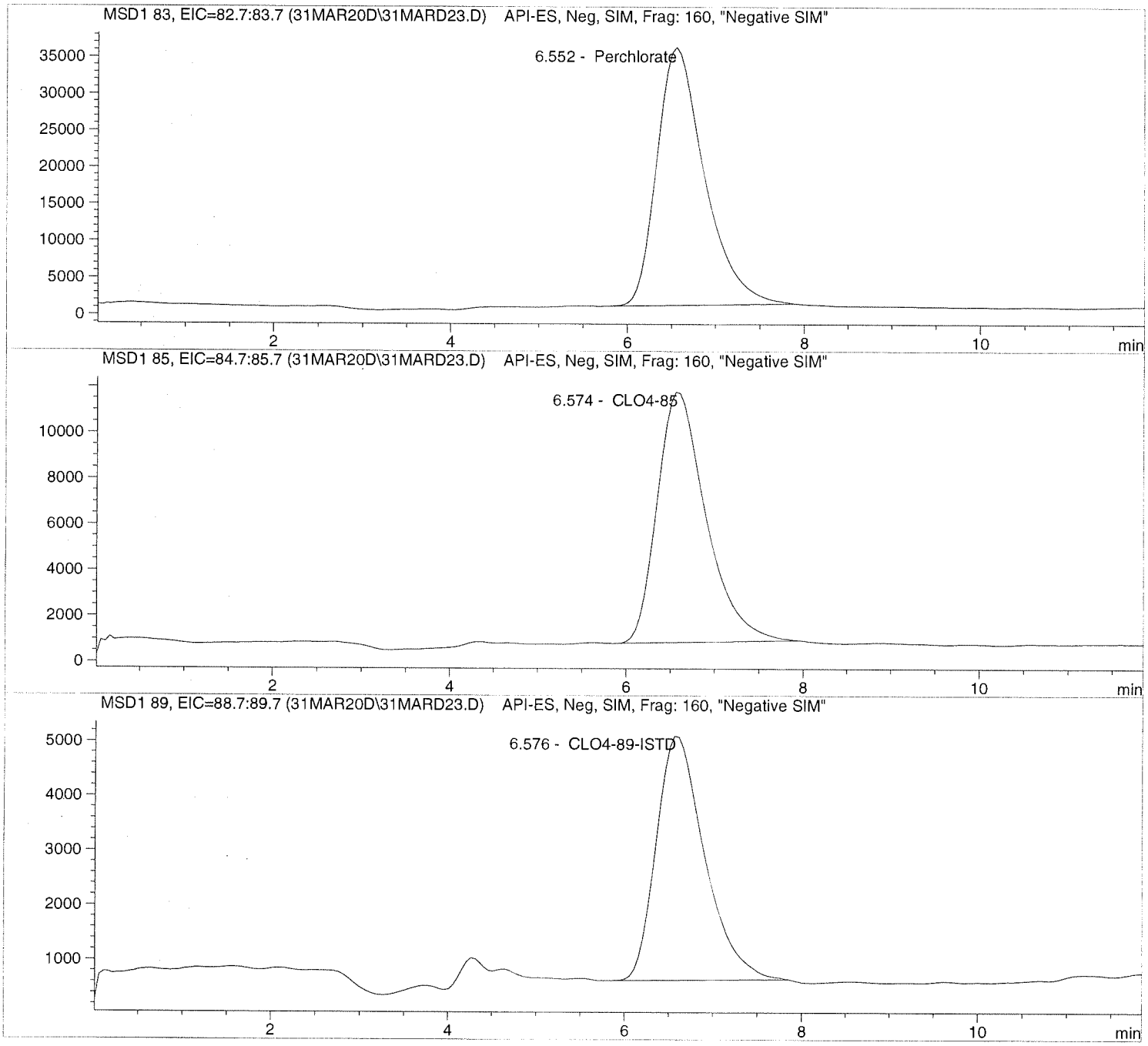
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD23.D Sample Name: 701514 CCV@25

Injection Date:	3/31/2020 15:19:27	Seq Line:	23
Sample Name:	701514 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD23.D Sample Name: 701514 CCV@25

Injection Date:	3/31/2020 15:19:27	Seq Line:	23
Sample Name:	701514 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.552	PBA	1313481.8	26.2165	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.574	PBA	419196.3	27.3370	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.576	PBA	170336.0	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5	1		Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5	1		CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
	9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

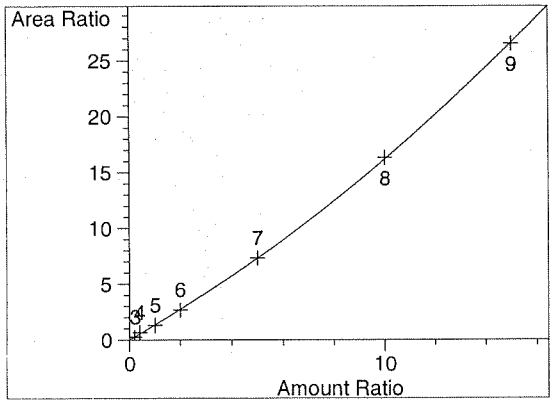
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

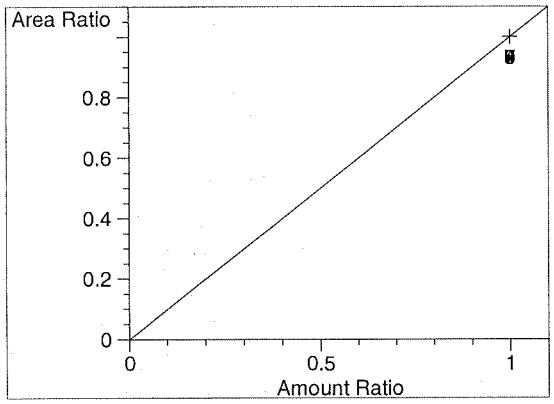
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

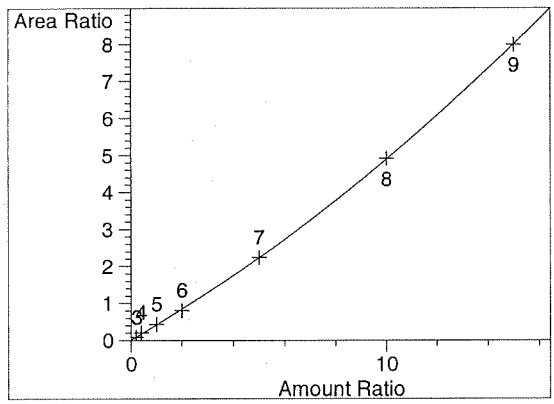
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

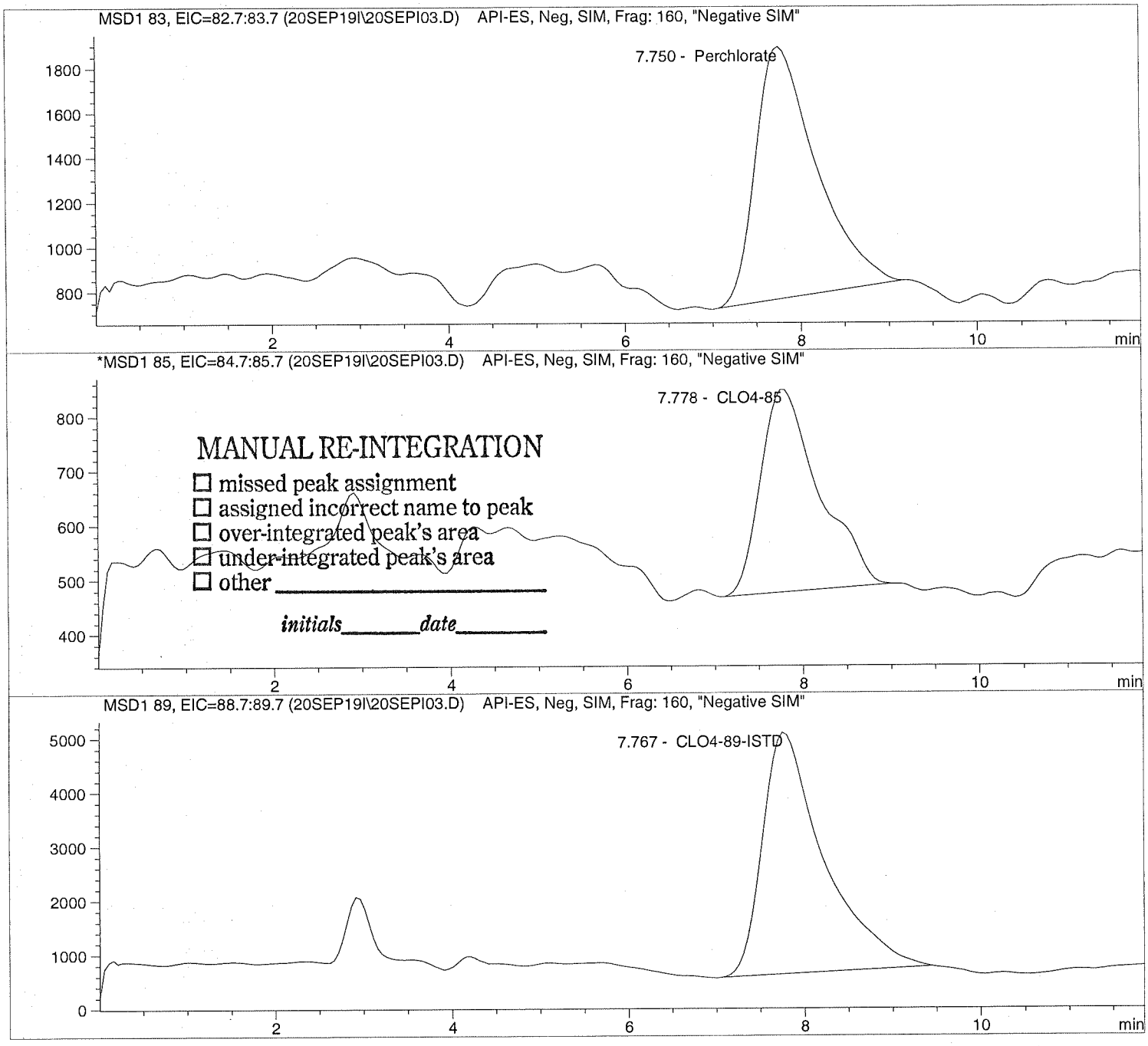
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

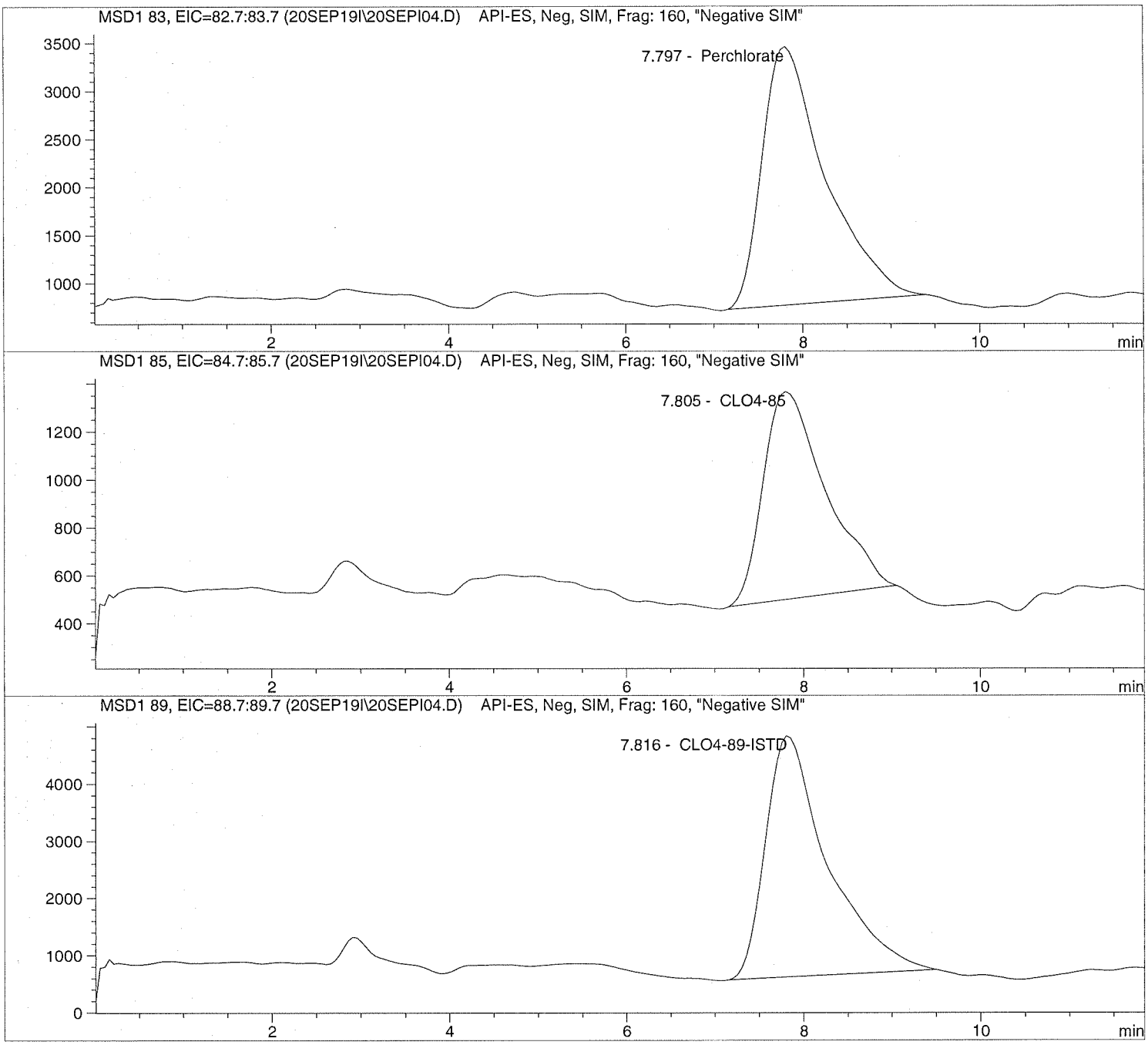
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

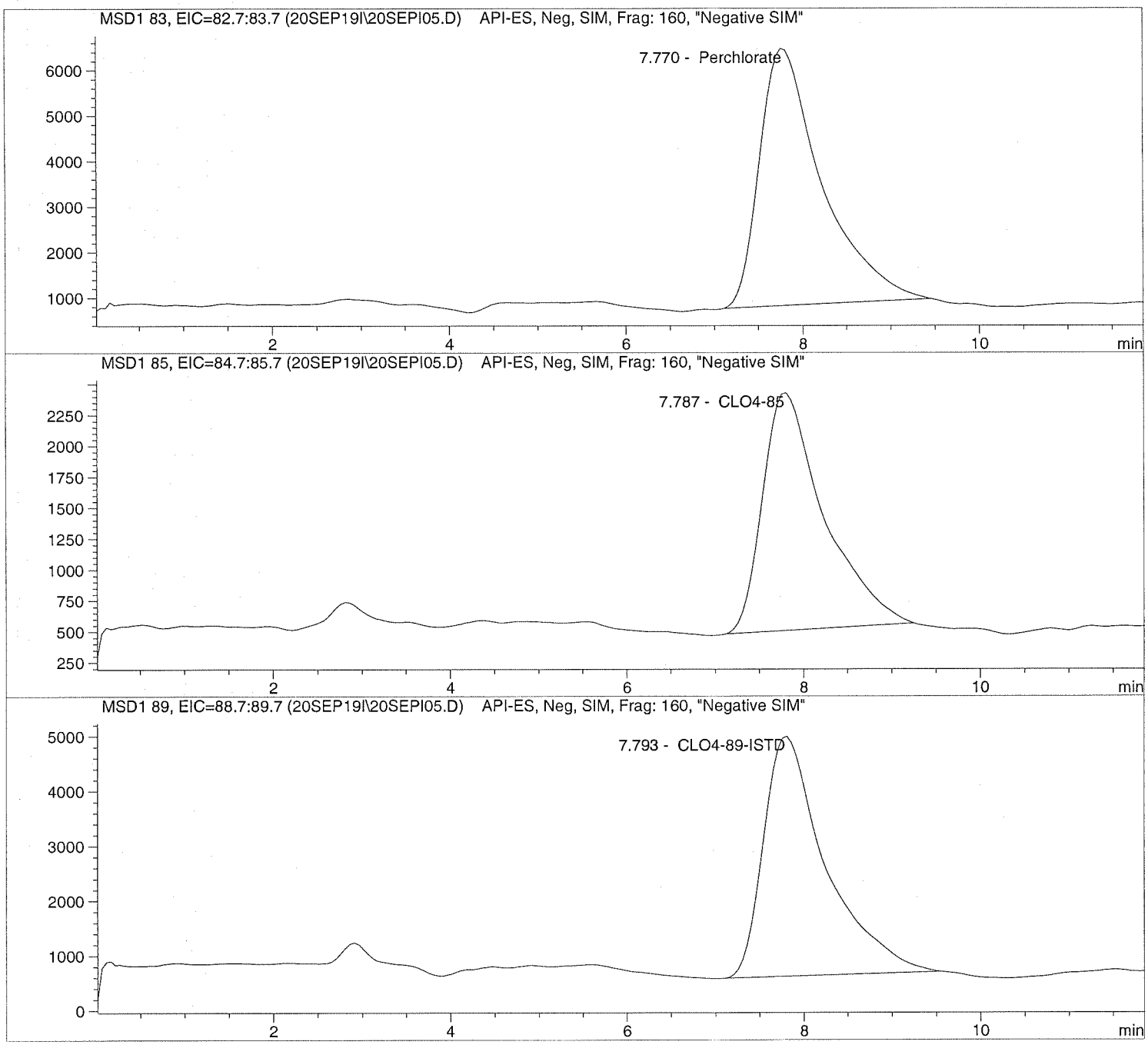
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

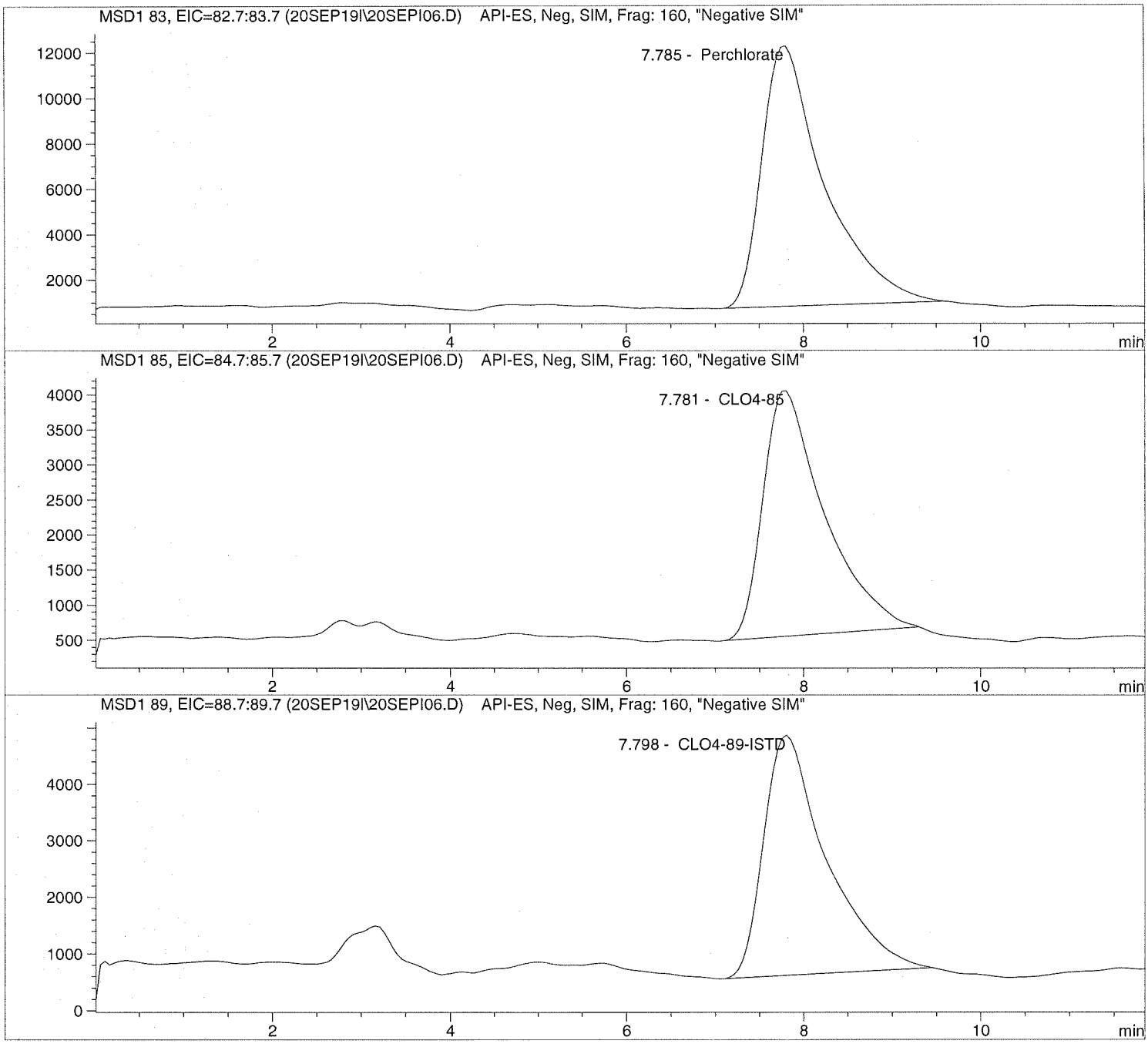
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

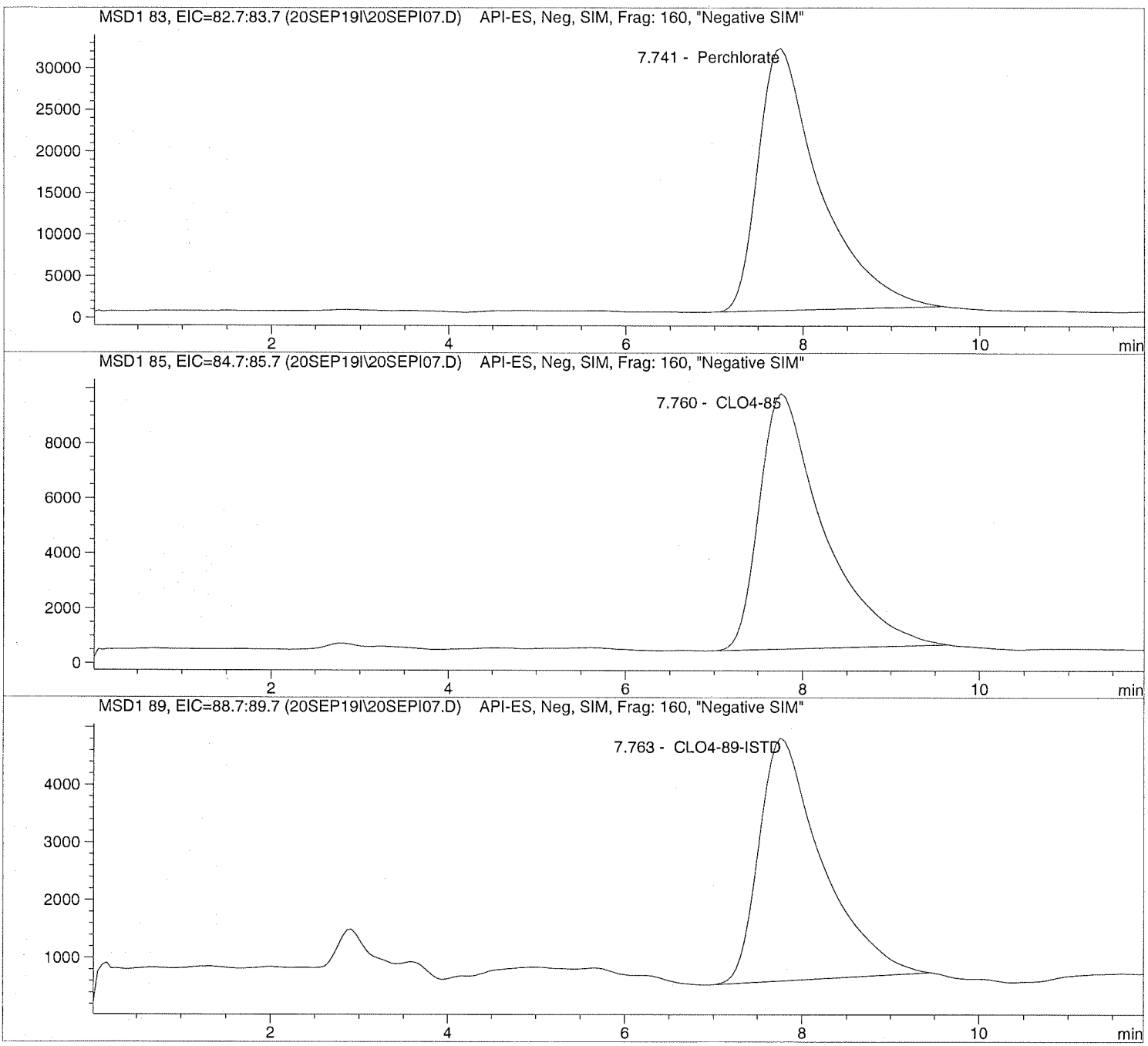
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

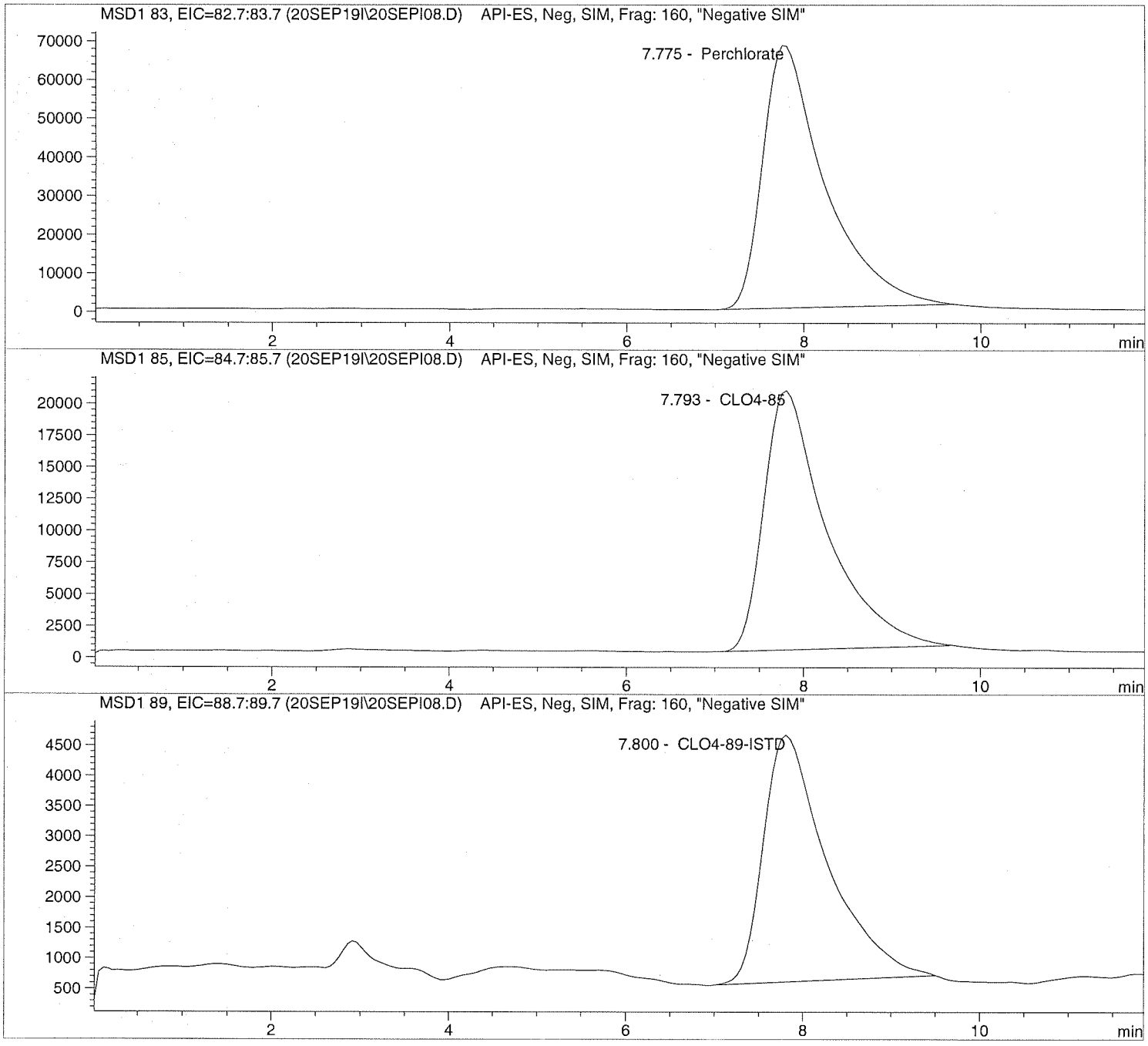
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

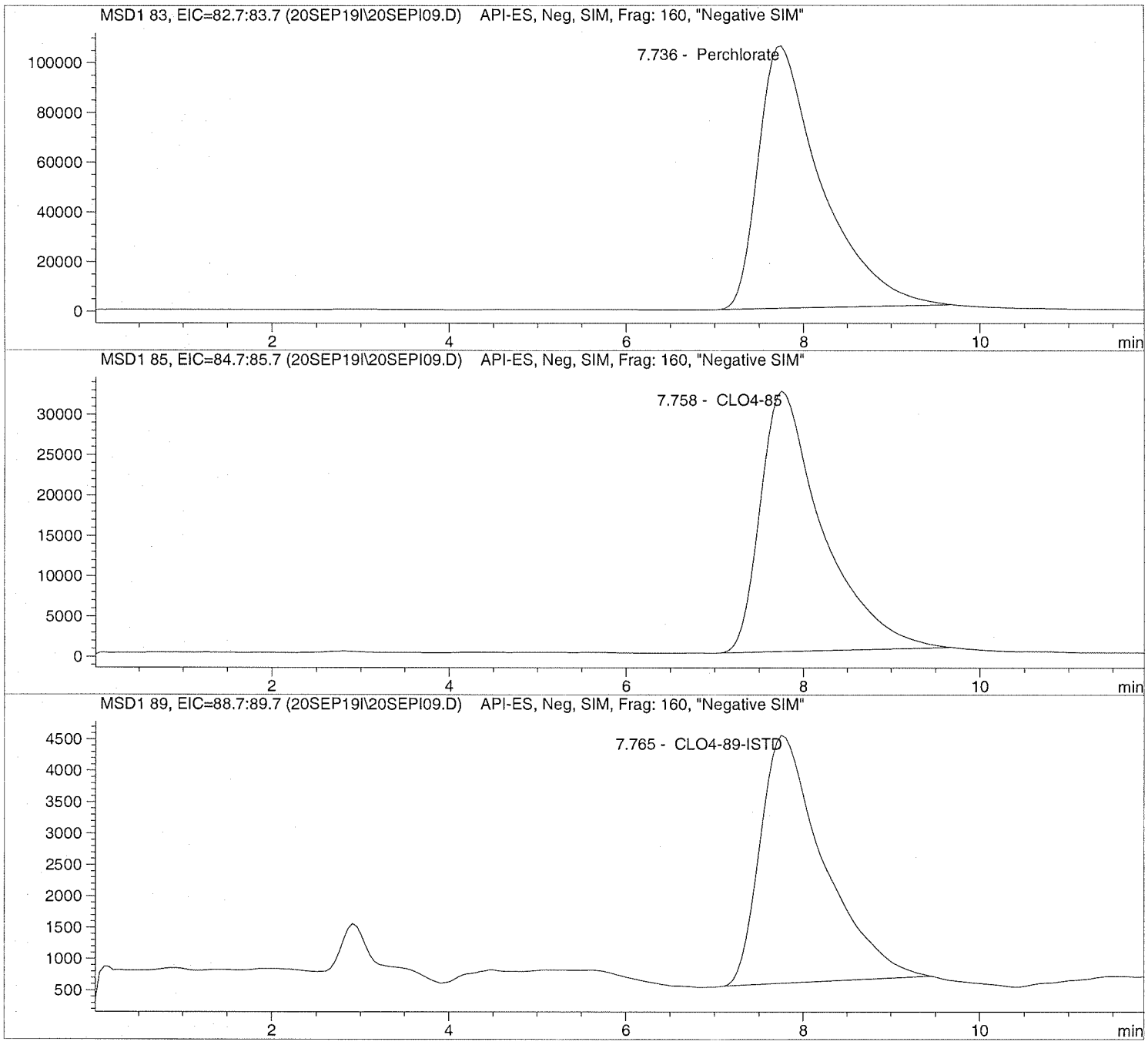
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

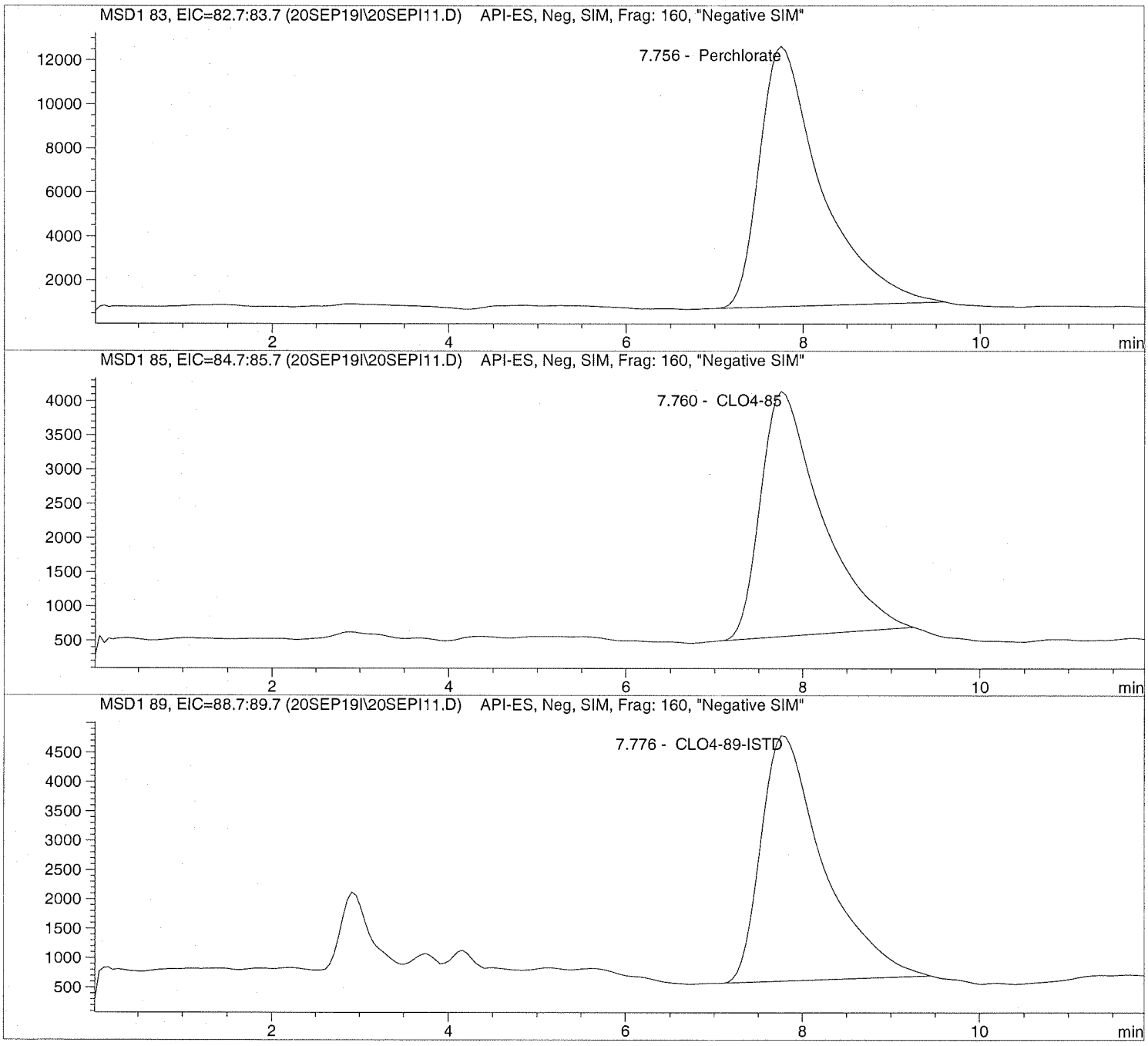
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

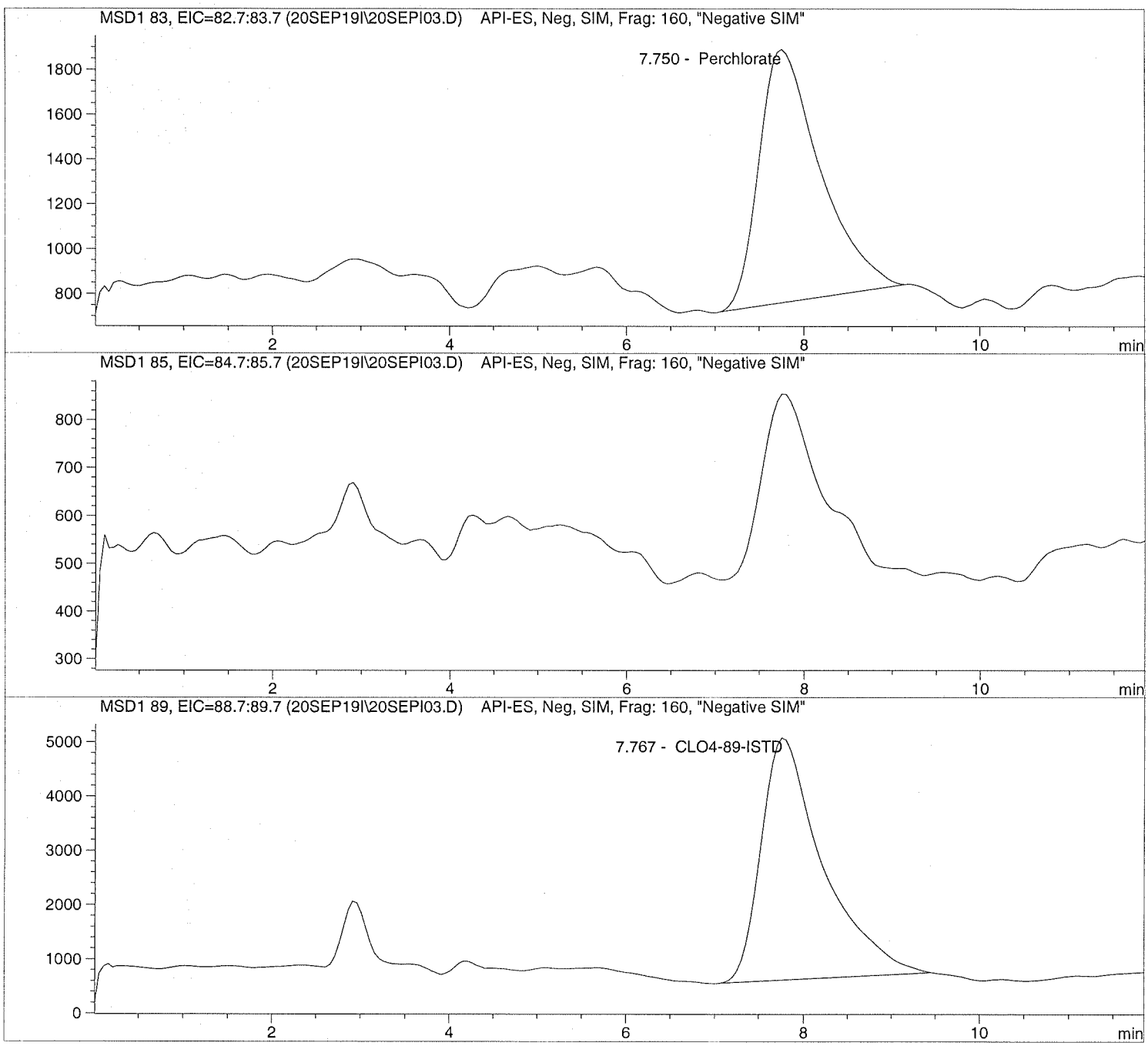
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

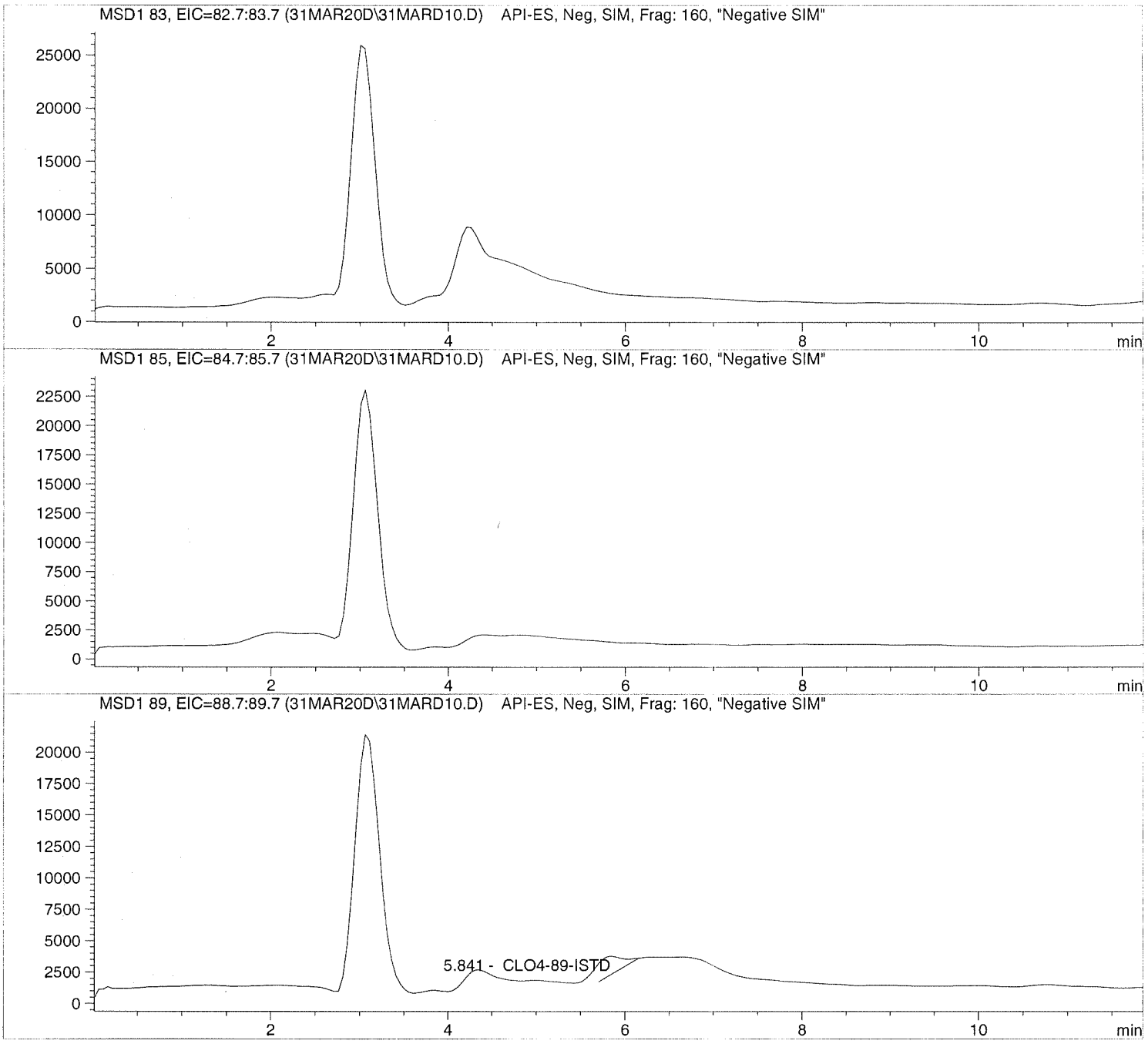
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD10.D Sample Name: 2008833006

Injection Date:	3/31/2020 12:17:06	Seq Line:	10
Sample Name:	2008833006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD10.D Sample Name: 2008833006

Injection Date:	3/31/2020 12:17:06	Seq Line:	10
Sample Name:	2008833006	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.841	PBA	24956.6	5.0000	CLO4-89-ISTD

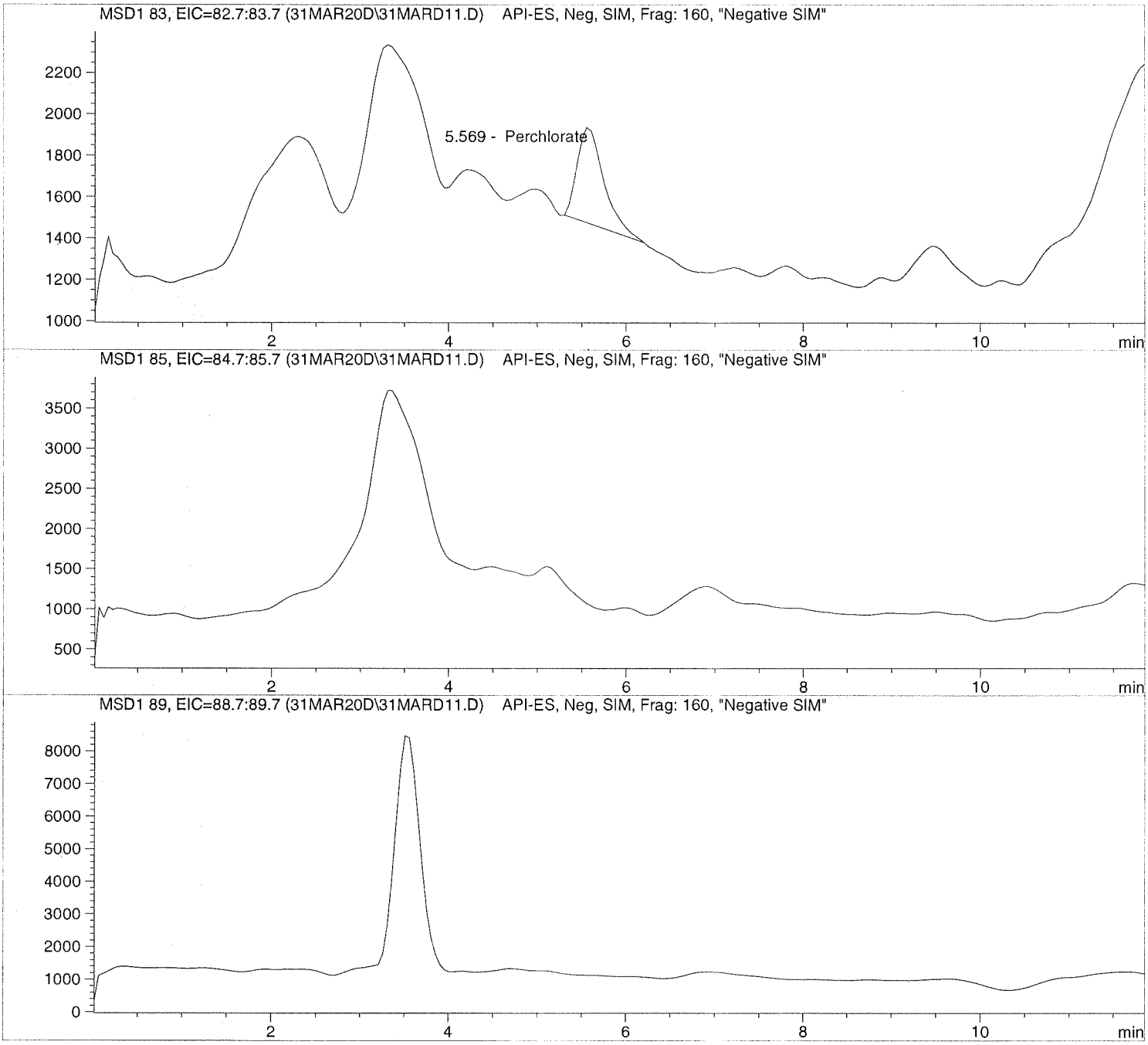
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD11.D Sample Name: 2008833007

Injection Date:	3/31/2020 12:31:04	Seq Line:	11
Sample Name:	2008833007	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD11.D Sample Name: 2008833007

Injection Date:	3/31/2020 12:31:04	Seq Line:	11
Sample Name:	2008833007	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.569	PBA	9666.9	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-89-ISTD

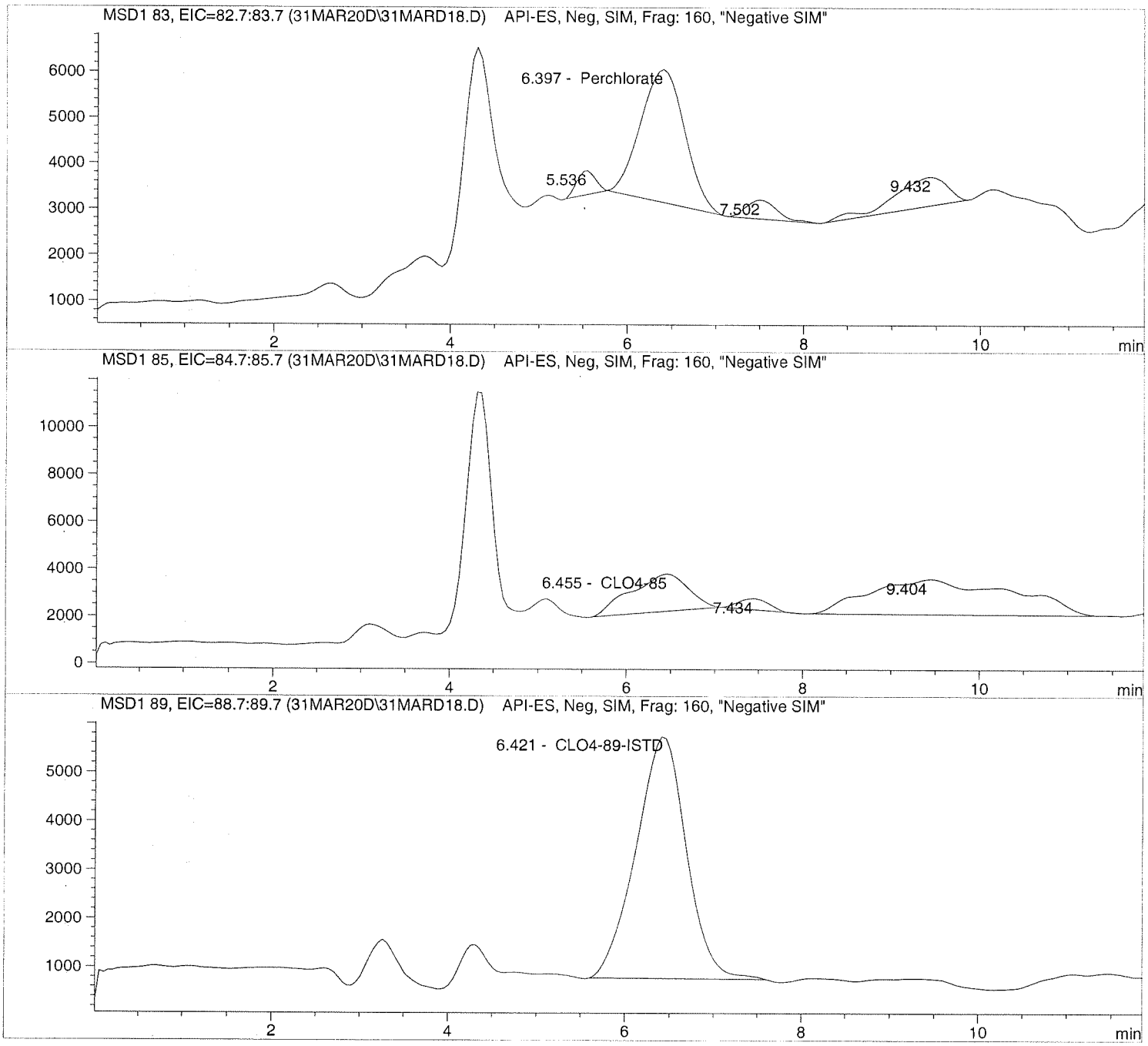
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD18.D Sample Name: 701512 88333MS

Injection Date:	3/31/2020 14:08:53	Seq Line:	18
Sample Name:	701512 88333MS	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD18.D Sample Name: 701512 88333MS

Injection Date:	3/31/2020 14:08:53	Seq Line:	18
Sample Name:	701512 88333MS	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.536	PB	7721.0	0.0000	
6.397	VB	100166.5	1.8539	Perchlorate
7.502	VB	10039.0	0.0000	
9.432	VBA	26802.0	0.0000	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.455	PB	71357.9	4.2971	CLO4-85
7.434	VB	11213.9	0.0000	
9.404	VBA	169650.0	0.0000	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.421	PBA	196556.5	5.0000	CLO4-89-ISTD

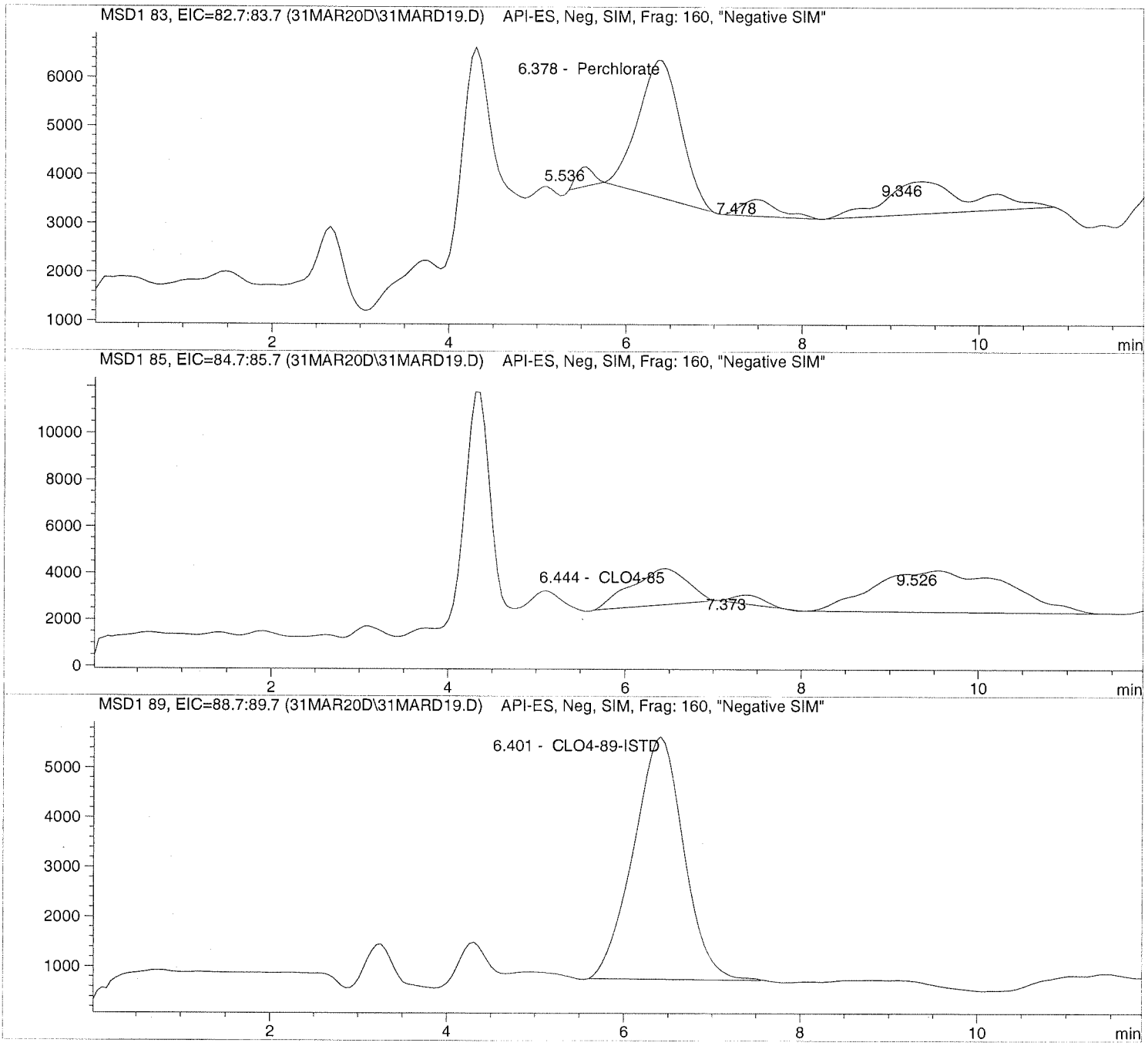
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD19.D Sample Name: 701513 88333SD

Injection Date:	3/31/2020 14:22:50	Seq Line:	19
Sample Name:	701513 88333SD	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD19.D Sample Name: 701513 88333SD

Injection Date:	3/31/2020 14:22:50	Seq Line:	19
Sample Name:	701513 88333SD	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
5.536	PB	5336.7	0.0000	
6.378	VB	93385.6	1.7636	Perchlorate
7.478	VBA	9975.3	0.0000	
9.346	VBA	44986.2	0.0000	

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.444	PB	68506.6	4.2153	CLO4-85
7.373	VB	9391.6	0.0000	
9.526	VBA	192188.8	0.0000	

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.401	PBA	192295.2	5.0000	CLO4-89-ISTD

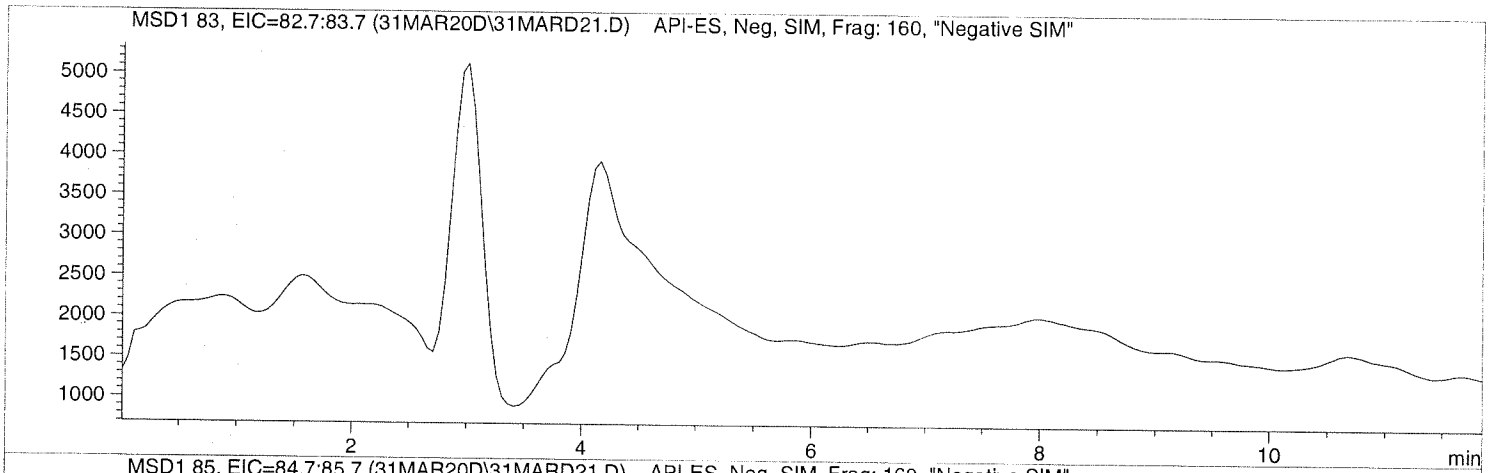
*** End of Report ***

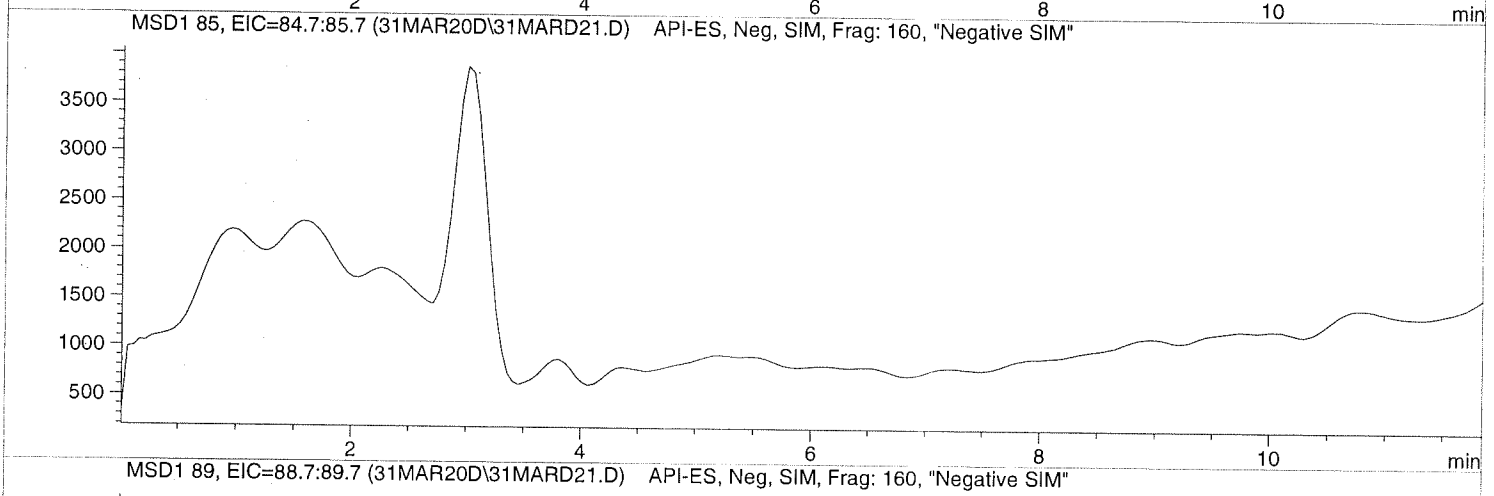
Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD21.D Sample Name: 2008833006 5X

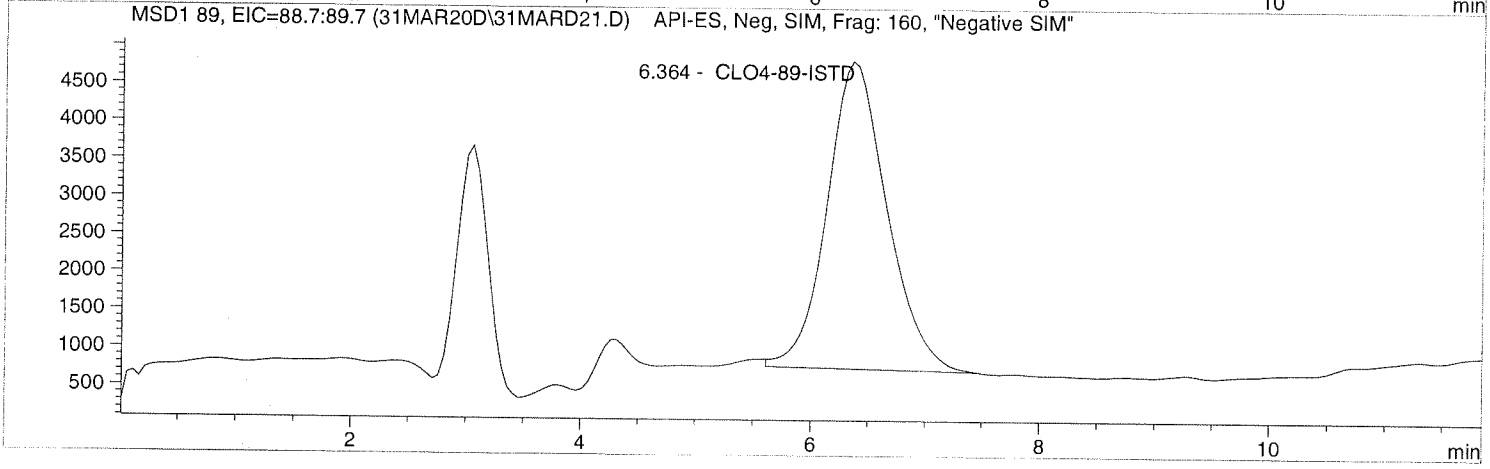
Injection Date:	3/31/2020 14:50:46	Seq Line:	21
Sample Name:	2008833006 5X	Location:	Vial 62
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\31MAR20D\31MARD21.D Sample Name: 2008833006 5X

Injection Date:	3/31/2020 14:50:46	Seq Line:	21
Sample Name:	2008833006 5X	Location:	Vial 62
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	5.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.364	BBA	148836.6	25.0000	CLO4-89-ISTD

*** End of Report ***

10450 Stancliff Rd. Suite 210
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April 14, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20031299**

Laboratory Results for: **Longhorn Army Ammunition Plant LHAAP-16**

Dear Susan,

ALS Environmental received 6 sample(s) on Mar 31, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
Work Order: HS20031299

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20031299-01	16WW30-200330	Groundwater		30-Mar-2020 08:55	31-Mar-2020 08:40	☐
HS20031299-02	16WW29-200330	Groundwater		30-Mar-2020 09:45	31-Mar-2020 08:40	☐
HS20031299-03	16WW48-200330	Groundwater		30-Mar-2020 10:55	31-Mar-2020 08:40	☐
HS20031299-04	16WW48-200330-FD	Groundwater		30-Mar-2020 10:55	31-Mar-2020 08:40	☐
HS20031299-05	16EW05-200330	Groundwater		30-Mar-2020 12:15	31-Mar-2020 08:40	☐
HS20031299-06	Trip blank-200330	Water	CG 111519 -107	30-Mar-2020 00:00	31-Mar-2020 08:40	☐

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant LHAAP-16
Work Order: HS20031299

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.
- The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached.

GC Semivolatiles by Method RSK-175

Batch ID: R359571

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

GCMS Volatiles by Method SW8260

Batch ID: R359376

Sample ID: 16EW05-200330 (HS20031299-05)

- Lowest practical dilution for sample HS20031299-05 due to matrix.

Wet Chemistry by Method SW9056

Batch ID: R359468

Sample ID: 16WW29-200330 (HS20031299-02MS)

- The recovery of the Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS/MSD may be due to sample matrix interference. Bromide

WetChemistry by Method SM2320B

Batch ID: 152606

Sample ID: 16EW05-200330 (HS20031299-05)

- Sample reported at 10x due to sample matrix.

Batch ID: R359308

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: 152386

Sample ID: 16EW05-200330 (HS20031299-05)

- Sample reported at 5x due to sample matrix.

Sample ID: HS20040044-01MS

- MS and MSD are for an unrelated sample

Batch ID: R359468

Sample ID: 16WW48-200330 (HS20031299-03)

- The reporting limit(s) is/are elevated due to dilution for high concentrations of non-target analytes.

Sample ID: 16WW48-200330-FD (HS20031299-04)

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant LHAAP-16
Work Order: HS20031299

WetChemistry by Method SW9056

Batch ID: R359468

- The reporting limit(s) is/are elevated due to dilution for high concentrations of non-target analytes.

Sample ID: 16WW29-200330 (HS20031299-02MS)

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Sulfate

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-16 WorkOrder:HS20031299
Sample ID: 16WW30-200330 Lab ID:HS20031299-01
Collection Date: 30-Mar-2020 08:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Apr-2020 13:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 13:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 13:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 13:45
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	01-Apr-2020 13:45
Trichloroethene	**14**		**0.20**	**0.50**	**1.0**	**UG/L**	1	01-Apr-2020 13:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 13:45
Surr: 1,2-Dichloroethane-d4	*87.5*			**0**	*81-118*	*%REC*	*1*	*01-Apr-2020 13:45*
Surr: 4-Bromofluorobenzene	*96.4*			**0**	*85-114*	*%REC*	*1*	*01-Apr-2020 13:45*
Surr: Dibromofluoromethane	*94.3*			**0**	*80-119*	*%REC*	*1*	*01-Apr-2020 13:45*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*01-Apr-2020 13:45*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: MZD
Bromide	**1.05**		**0.150**	**0.500**	**0.500**	**mg/L**	5	31-Mar-2020 18:27
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	09-Apr-2020 11:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-16 WorkOrder:HS20031299
Sample ID: 16WW29-200330 Lab ID:HS20031299-02
Collection Date: 30-Mar-2020 09:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Apr-2020 14:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 14:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 14:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 14:09
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	01-Apr-2020 14:09
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 14:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 14:09
Surr: 1,2-Dichloroethane-d4	*89.0*			**0**	*81-118*	*%REC*	*1*	*01-Apr-2020 14:09*
Surr: 4-Bromofluorobenzene	*97.1*			**0**	*85-114*	*%REC*	*1*	*01-Apr-2020 14:09*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*1*	*01-Apr-2020 14:09*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*01-Apr-2020 14:09*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000275**	J	**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	02-Apr-2020 06:57
Ethene	**0.000864**	J	**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	02-Apr-2020 06:57
Methane	**0.0355**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	02-Apr-2020 06:57
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**65.2**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	31-Mar-2020 18:43
ANIONS BY SW9056A		**Method:SW9056**						Analyst: MZD
Bromide	**1.16**		**0.150**	**0.500**	**0.500**	**mg/L**	5	31-Mar-2020 19:03
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	31-Mar-2020 18:45
Sulfate	**1,560**		**4.00**	**10.0**	**10.0**	**mg/L**	20	01-Apr-2020 00:11
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	09-Apr-2020 11:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-16 WorkOrder:HS20031299
Sample ID: 16WW48-200330 Lab ID:HS20031299-03
Collection Date: 30-Mar-2020 10:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	10	U	6.0	10	20	UG/L	20	01-Apr-2020 14:57
1,1-Dichloroethene	**12**	J	**4.0**	**10**	**20**	**UG/L**	20	01-Apr-2020 14:57
1,2-Dichloroethane	**19**	J	**4.0**	**10**	**20**	**UG/L**	20	01-Apr-2020 14:57
cis-1,2-Dichloroethene	**5,000**		**50**	**120**	**250**	**UG/L**	250	01-Apr-2020 15:22
Methylene chloride	20	U	8.0	20	40	UG/L	20	01-Apr-2020 14:57
Trichloroethene	**7,100**		**50**	**120**	**250**	**UG/L**	250	01-Apr-2020 15:22
Vinyl chloride	10	U	4.0	10	20	UG/L	20	01-Apr-2020 14:57
Surr: 1,2-Dichloroethane-d4	*89.8*			**0**	*81-118*	*%REC*	*20*	*01-Apr-2020 14:57*
Surr: 1,2-Dichloroethane-d4	*89.8*			**0**	*81-118*	*%REC*	*250*	*01-Apr-2020 15:22*
Surr: 4-Bromofluorobenzene	*96.1*			**0**	*85-114*	*%REC*	*20*	*01-Apr-2020 14:57*
Surr: 4-Bromofluorobenzene	*96.1*			**0**	*85-114*	*%REC*	*250*	*01-Apr-2020 15:22*
Surr: Dibromofluoromethane	*94.8*			**0**	*80-119*	*%REC*	*20*	*01-Apr-2020 14:57*
Surr: Dibromofluoromethane	*95.8*			**0**	*80-119*	*%REC*	*250*	*01-Apr-2020 15:22*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*20*	*01-Apr-2020 14:57*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*250*	*01-Apr-2020 15:22*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	02-Apr-2020 07:26
Ethene	**0.000244**	J	**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	02-Apr-2020 07:26
Methane	**0.00112**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	02-Apr-2020 07:26
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**312**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	31-Mar-2020 19:24
ANIONS BY SW9056A		**Method:SW9056**						Analyst: MZD
Bromide	**4.55**		**0.150**	**0.500**	**0.500**	**mg/L**	5	31-Mar-2020 20:34
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	31-Mar-2020 20:34
Sulfate	**2,020**		**10.0**	**25.0**	**25.0**	**mg/L**	50	01-Apr-2020 06:14
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	09-Apr-2020 11:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-16 WorkOrder:HS20031299
Sample ID: 16WW48-200330-FD Lab ID:HS20031299-04
Collection Date: 30-Mar-2020 10:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	10	U	6.0	10	20	UG/L	20	01-Apr-2020 15:46
1,1-Dichloroethene	**13**	J	**4.0**	**10**	**20**	**UG/L**	20	01-Apr-2020 15:46
1,2-Dichloroethane	**18**	J	**4.0**	**10**	**20**	**UG/L**	20	01-Apr-2020 15:46
cis-1,2-Dichloroethene	**4,800**		**50**	**120**	**250**	**UG/L**	250	01-Apr-2020 16:10
Methylene chloride	20	U	8.0	20	40	UG/L	20	01-Apr-2020 15:46
Trichloroethene	**6,900**		**50**	**120**	**250**	**UG/L**	250	01-Apr-2020 16:10
Vinyl chloride	10	U	4.0	10	20	UG/L	20	01-Apr-2020 15:46
Surr: 1,2-Dichloroethane-d4	*89.5*			**0**	*81-118*	*%REC*	*20*	*01-Apr-2020 15:46*
Surr: 1,2-Dichloroethane-d4	*88.3*			**0**	*81-118*	*%REC*	*250*	*01-Apr-2020 16:10*
Surr: 4-Bromofluorobenzene	*94.4*			**0**	*85-114*	*%REC*	*20*	*01-Apr-2020 15:46*
Surr: 4-Bromofluorobenzene	*96.7*			**0**	*85-114*	*%REC*	*250*	*01-Apr-2020 16:10*
Surr: Dibromofluoromethane	*95.1*			**0**	*80-119*	*%REC*	*20*	*01-Apr-2020 15:46*
Surr: Dibromofluoromethane	*93.0*			**0**	*80-119*	*%REC*	*250*	*01-Apr-2020 16:10*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*20*	*01-Apr-2020 15:46*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*250*	*01-Apr-2020 16:10*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	0.000500	U	0.000144	0.000500	0.00100	mg/L	1	02-Apr-2020 07:35
Ethene	**0.000546**	J	**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	02-Apr-2020 07:35
Methane	**0.00148**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	02-Apr-2020 07:35
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**313**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	31-Mar-2020 19:36
ANIONS BY SW9056A		**Method:SW9056**						Analyst: MZD
Bromide	**4.62**		**0.150**	**0.500**	**0.500**	**mg/L**	5	31-Mar-2020 20:52
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	31-Mar-2020 20:52
Sulfate	**2,010**		**10.0**	**25.0**	**25.0**	**mg/L**	50	01-Apr-2020 06:50
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	09-Apr-2020 11:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-16 WorkOrder:HS20031299
Sample ID: 16EW05-200330 Lab ID:HS20031299-05
Collection Date: 30-Mar-2020 12:15 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	50	U	30	50	100	UG/L	100	01-Apr-2020 14:33
1,1-Dichloroethene	50	U	20	50	100	UG/L	100	01-Apr-2020 14:33
1,2-Dichloroethane	50	U	20	50	100	UG/L	100	01-Apr-2020 14:33
cis-1,2-Dichloroethene	50	U	20	50	100	UG/L	100	01-Apr-2020 14:33
Methylene chloride	100	U	40	100	200	UG/L	100	01-Apr-2020 14:33
Trichloroethene	50	U	20	50	100	UG/L	100	01-Apr-2020 14:33
Vinyl chloride	50	U	20	50	100	UG/L	100	01-Apr-2020 14:33
Surr: 1,2-Dichloroethane-d4	*87.9*			**0**	*81-118*	*%REC*	*100*	*01-Apr-2020 14:33*
Surr: 4-Bromofluorobenzene	*92.3*			**0**	*85-114*	*%REC*	*100*	*01-Apr-2020 14:33*
Surr: Dibromofluoromethane	*95.1*			**0**	*80-119*	*%REC*	*100*	*01-Apr-2020 14:33*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*100*	*01-Apr-2020 14:33*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.00916**		**0.000144**	**0.000500**	**0.00100**	**mg/L**	1	02-Apr-2020 07:45
Ethene	**0.00222**		**0.000234**	**0.000500**	**0.00100**	**mg/L**	1	02-Apr-2020 07:45
Methane	**0.248**		**0.00107**	**0.00500**	**0.00500**	**mg/L**	10	02-Apr-2020 08:34
ALKALINITY BY SM2320B		**Method:SM2320B**				Prep:ASTM Leachate / 09-Apr-2020		Analyst: TH
Alkalinity, Total (As CaCO3)	102	aU	102	102	102	mg/Kg	10	09-Apr-2020 17:41
ANIONS BY SW9056A		**Method:SW9056**				Prep:SW9056 / 02-Apr-2020		Analyst: JHD
Bromide	5.00	U	1.50	5.00	5.00	mg/Kg	5	03-Apr-2020 02:29
Nitrogen, Nitrate (As N)	5.00	U	1.50	5.00	5.00	mg/Kg	5	03-Apr-2020 02:29
Sulfate	25.0	U	10.0	25.0	25.0	mg/Kg	5	03-Apr-2020 02:29
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	09-Apr-2020 11:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
ANALYTICAL REPORT
Project: Longhorn Army Ammunition Plant LHAAP-16 WorkOrder:HS20031299
Sample ID: Trip blank-200330 Lab ID:HS20031299-06
Collection Date: 30-Mar-2020 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	01-Apr-2020 13:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 13:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 13:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 13:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	01-Apr-2020 13:21
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 13:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	01-Apr-2020 13:21
Surr: 1,2-Dichloroethane-d4	*88.4*			**0**	*81-118*	*%REC*	*1*	*01-Apr-2020 13:21*
Surr: 4-Bromofluorobenzene	*95.4*			**0**	*85-114*	*%REC*	*1*	*01-Apr-2020 13:21*
Surr: Dibromofluoromethane	*94.7*			**0**	*80-119*	*%REC*	*1*	*01-Apr-2020 13:21*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*01-Apr-2020 13:21*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Aptim Environmental & Infrastucture, Inc.

Project: Longhorn Army Ammunition Plant LHAAP-16

WorkOrder: HS20031299

Batch ID: 152386 **Start Date:** 02 Apr 2020 10:22 **End Date:** 02 Apr 2020 12:00

Method: 9056 ANIONS SOIL PREP **Prep Code:** 9056_S_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20031299-05		4.9989 (g)	50 (mL)	10

Batch ID: 152606 **Start Date:** 09 Apr 2020 16:00 **End Date:** 09 Apr 2020 17:00

Method: ALK LEACH **Prep Code:** ALK LEACH PREP

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20031299-05		4.8817 (grams)	50 (mL)	10.24

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 152386 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20031299-05	16EW05-200330	30 Mar 2020 12:15		02 Apr 2020 10:22	03 Apr 2020 02:29	5
Batch ID: 152606 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS20031299-05	16EW05-200330	30 Mar 2020 12:15		09 Apr 2020 16:00	09 Apr 2020 17:41	10
Batch ID: R359308 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS20031299-02	16WW29-200330	30 Mar 2020 09:45			31 Mar 2020 18:43	1
HS20031299-03	16WW48-200330	30 Mar 2020 10:55			31 Mar 2020 19:24	1
HS20031299-04	16WW48-200330-FD	30 Mar 2020 10:55			31 Mar 2020 19:36	1
Batch ID: R359376 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20031299-06	Trip blank-200330	30 Mar 2020 00:00			01 Apr 2020 13:21	1
Batch ID: R359376 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20031299-01	16WW30-200330	30 Mar 2020 08:55			01 Apr 2020 13:45	1
HS20031299-02	16WW29-200330	30 Mar 2020 09:45			01 Apr 2020 14:09	1
HS20031299-03	16WW48-200330	30 Mar 2020 10:55			01 Apr 2020 15:22	250
HS20031299-03	16WW48-200330	30 Mar 2020 10:55			01 Apr 2020 14:57	20
HS20031299-04	16WW48-200330-FD	30 Mar 2020 10:55			01 Apr 2020 16:10	250
HS20031299-04	16WW48-200330-FD	30 Mar 2020 10:55			01 Apr 2020 15:46	20
HS20031299-05	16EW05-200330	30 Mar 2020 12:15			01 Apr 2020 14:33	100
Batch ID: R359468 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20031299-01	16WW30-200330	30 Mar 2020 08:55			31 Mar 2020 18:27	5
HS20031299-02	16WW29-200330	30 Mar 2020 09:45			31 Mar 2020 19:03	5
HS20031299-02	16WW29-200330	30 Mar 2020 09:45			31 Mar 2020 18:45	1
HS20031299-02	16WW29-200330	30 Mar 2020 09:45			01 Apr 2020 00:11	20
HS20031299-03	16WW48-200330	30 Mar 2020 10:55			31 Mar 2020 20:34	5
HS20031299-03	16WW48-200330	30 Mar 2020 10:55			01 Apr 2020 06:14	50
HS20031299-04	16WW48-200330-FD	30 Mar 2020 10:55			31 Mar 2020 20:52	5
HS20031299-04	16WW48-200330-FD	30 Mar 2020 10:55			01 Apr 2020 06:50	50
Batch ID: R359571 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS20031299-02	16WW29-200330	30 Mar 2020 09:45			02 Apr 2020 06:57	1
HS20031299-03	16WW48-200330	30 Mar 2020 10:55			02 Apr 2020 07:26	1
HS20031299-04	16WW48-200330-FD	30 Mar 2020 10:55			02 Apr 2020 07:35	1
HS20031299-05	16EW05-200330	30 Mar 2020 12:15			02 Apr 2020 08:34	10
HS20031299-05	16EW05-200330	30 Mar 2020 12:15			02 Apr 2020 07:45	1

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R359711 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20031299-01	16WW30-200330	30 Mar 2020 08:55			09 Apr 2020 11:00	1
HS20031299-02	16WW29-200330	30 Mar 2020 09:45			09 Apr 2020 11:00	1
HS20031299-03	16WW48-200330	30 Mar 2020 10:55			09 Apr 2020 11:00	1
HS20031299-04	16WW48-200330-FD	30 Mar 2020 10:55			09 Apr 2020 11:00	1
HS20031299-05	16EW05-200330	30 Mar 2020 12:15			09 Apr 2020 11:00	1
Batch ID: R359852 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20031299-01	16WW30-200330	30 Mar 2020 08:55			13 Apr 2020 10:47	1
HS20031299-02	16WW29-200330	30 Mar 2020 09:45			13 Apr 2020 10:47	1
HS20031299-03	16WW48-200330	30 Mar 2020 10:55			13 Apr 2020 10:47	1
HS20031299-04	16WW48-200330-FD	30 Mar 2020 10:55			13 Apr 2020 10:47	1
HS20031299-05	16EW05-200330	30 Mar 2020 12:15			13 Apr 2020 10:47	1

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

QC BATCH REPORT

Batch ID: R359571 (0) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-200402** Units: **mg/L** Analysis Date: **02-Apr-2020 06:49**
Client ID: Run ID: **FID-4_359571** SeqNo: **5545776** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000500	0.00100								U
Ethene	0.000500	0.00100								U
Methane	0.000500	0.000500								U

LCS Sample ID: **LCS-200402** Units: **mg/L** Analysis Date: **02-Apr-2020 06:26**
Client ID: Run ID: **FID-4_359571** SeqNo: **5545774** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0156	0.00100	0.01804	0	86.4	75 - 125				
Ethene	0.0164	0.00100	0.0168	0	97.6	75 - 125				
Methane	0.00936	0.000500	0.009647	0	97.0	75 - 125				

LCSD Sample ID: **LCSD-200402** Units: **mg/L** Analysis Date: **02-Apr-2020 06:35**
Client ID: Run ID: **FID-4_359571** SeqNo: **5545775** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0146	0.00100	0.01804	0	80.7	75 - 125	0.01559	6.87	30	
Ethene	0.0140	0.00100	0.0168	0	83.6	75 - 125	0.01639	15.4	30	
Methane	0.00726	0.000500	0.009647	0	75.2	75 - 125	0.009359	25.3	30	

MS Sample ID: **HS20031299-02MS** Units: **mg/L** Analysis Date: **02-Apr-2020 07:07**
Client ID: **16WW29-200330** Run ID: **FID-4_359571** SeqNo: **5545778** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0189	0.00100	0.01804	0.0002752	103	75 - 125				
Ethene	0.0174	0.00100	0.0168	0.0008638	98.7	75 - 125				
Methane	0.0467	0.000500	0.009647	0.03548	116	75 - 125				E

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

QC BATCH REPORT

Batch ID: R359571 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MSD Sample ID: **HS20031299-02MSD** Units: **mg/L** Analysis Date: **02-Apr-2020 07:16**
Client ID: **16WW29-200330** Run ID: **FID-4_359571** SeqNo: **5545779** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0187	0.00100	0.01804	0.0002752	102	75 - 125	0.01887	1.04	30	
Ethene	0.0177	0.00100	0.0168	0.0008638	100	75 - 125	0.01745	1.5	30	
Methane	0.0463	0.000500	0.009647	0.03548	112	75 - 125	0.04668	0.794	30	E

The following samples were analyzed in this batch: HS20031299-02 HS20031299-03 HS20031299-04 HS20031299-05

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

QC BATCH REPORT

Batch ID: R359376 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200401** Units: **UG/L** Analysis Date: **01-Apr-2020 12:09**
Client ID: Run ID: **VOA6_359376** SeqNo: **5541389** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.07*	*1.0*	*50*	*0*	*88.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*47.74*	*1.0*	*50*	*0*	*95.5*	*85 - 114*				
Surr: Dibromofluoromethane	*46.5*	*1.0*	*50*	*0*	*93.0*	*80 - 119*				
Surr: Toluene-d8	*52.35*	*1.0*	*50*	*0*	*105*	*89 - 112*				

LCS Sample ID: **VLCSW-200401** Units: **UG/L** Analysis Date: **01-Apr-2020 12:33**
Client ID: Run ID: **VOA6_359376** SeqNo: **5541390** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.62	1.0	20	0	98.1	80 - 119				
1,1-Dichloroethene	19.56	1.0	20	0	97.8	71 - 131				
1,2-Dichloroethane	20.01	1.0	20	0	100	73 - 128				
cis-1,2-Dichloroethene	20.8	1.0	20	0	104	78 - 123				
Methylene chloride	20.38	2.0	20	0	102	74 - 124				
Trichloroethene	20.1	1.0	20	0	100	79 - 123				
Vinyl chloride	17.87	1.0	20	0	89.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*51.46*	*1.0*	*50*	*0*	*103*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.61*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*53.36*	*1.0*	*50*	*0*	*107*	*80 - 119*				
Surr: Toluene-d8	*50.82*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

QC BATCH REPORT

Batch ID: R359376 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20031299-02MS** Units: **UG/L** Analysis Date: **01-Apr-2020 16:34**
Client ID: **16WW29-200330** Run ID: **VOA6_359376** SeqNo: **5541399** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.72	1.0	20	0	98.6	80 - 119				
1,1-Dichloroethene	18.79	1.0	20	0	94.0	71 - 131				
1,2-Dichloroethane	18.82	1.0	20	0	94.1	73 - 128				
cis-1,2-Dichloroethene	19.12	1.0	20	0	95.6	78 - 123				
Methylene chloride	17.8	2.0	20	0	89.0	74 - 124				
Trichloroethene	20.95	1.0	20	0	105	79 - 123				
Vinyl chloride	18.73	1.0	20	0	93.7	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.75*	*1.0*	*50*	*0*	*89.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.05*	*1.0*	*50*	*0*	*98.1*	*85 - 114*				
Surr: Dibromofluoromethane	*47.81*	*1.0*	*50*	*0*	*95.6*	*80 - 119*				
Surr: Toluene-d8	*51.14*	*1.0*	*50*	*0*	*102*	*89 - 112*				

MSD Sample ID: **HS20031299-02MSD** Units: **UG/L** Analysis Date: **01-Apr-2020 16:58**
Client ID: **16WW29-200330** Run ID: **VOA6_359376** SeqNo: **5541400** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.25	1.0	20	0	96.3	80 - 119	19.72	2.41	20	
1,1-Dichloroethene	18.12	1.0	20	0	90.6	71 - 131	18.79	3.64	20	
1,2-Dichloroethane	18.78	1.0	20	0	93.9	73 - 128	18.82	0.204	20	
cis-1,2-Dichloroethene	18.63	1.0	20	0	93.2	78 - 123	19.12	2.59	20	
Methylene chloride	17.22	2.0	20	0	86.1	74 - 124	17.8	3.3	20	
Trichloroethene	20.21	1.0	20	0	101	79 - 123	20.95	3.6	20	
Vinyl chloride	17.12	1.0	20	0	85.6	58 - 137	18.73	8.98	20	
Surr: 1,2-Dichloroethane-d4	*44.44*	*1.0*	*50*	*0*	*88.9*	*81 - 118*	*44.75*	*0.692*	*20*	
Surr: 4-Bromofluorobenzene	*48.32*	*1.0*	*50*	*0*	*96.6*	*85 - 114*	*49.05*	*1.5*	*20*	
Surr: Dibromofluoromethane	*47.83*	*1.0*	*50*	*0*	*95.7*	*80 - 119*	*47.81*	*0.0389*	*20*	
Surr: Toluene-d8	*51.97*	*1.0*	*50*	*0*	*104*	*89 - 112*	*51.14*	*1.6*	*20*	

The following samples were analyzed in this batch: HS20031299-01 HS20031299-02 HS20031299-03 HS20031299-04 HS20031299-05 HS20031299-06

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

QC BATCH REPORT

Batch ID: 152386 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-152386** Units: **mg/Kg** Analysis Date: **03-Apr-2020 01:53**
Client ID: Run ID: **ICS-Integrion_359440** SeqNo: **5542746** PrepDate: **02-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1.00	1.00								U
Nitrogen, Nitrate (As N)	1.00	1.00								U
Sulfate	5.00	5.00								U

LCS Sample ID: **LCS-152386** Units: **mg/Kg** Analysis Date: **03-Apr-2020 02:11**
Client ID: Run ID: **ICS-Integrion_359440** SeqNo: **5542747** PrepDate: **02-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	36.47	1.00	40	0	91.2	80 - 120				
Nitrogen, Nitrate (As N)	40.3	1.00	40	0	101	80 - 120				
Sulfate	186.7	5.00	200	0	93.4	80 - 120				

MS Sample ID: **HS20040044-01MS** Units: **mg/Kg** Analysis Date: **03-Apr-2020 03:05**
Client ID: Run ID: **ICS-Integrion_359440** SeqNo: **5542750** PrepDate: **02-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	16.78	1.01	20.24	0	82.9	80 - 120				
Nitrogen, Nitrate (As N)	22.76	1.01	20.24	3.036	97.5	80 - 120				
Sulfate	880	5.06	101.2	1087	-204	80 - 120				SO

MSD Sample ID: **HS20040044-01MSD** Units: **mg/Kg** Analysis Date: **03-Apr-2020 03:23**
Client ID: Run ID: **ICS-Integrion_359440** SeqNo: **5542751** PrepDate: **02-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	17.38	0.996	19.91	0	87.3	80 - 120	16.78	3.48	20	
Nitrogen, Nitrate (As N)	21.56	0.996	19.91	3.036	93.0	80 - 120	22.76	5.43	20	
Sulfate	881.8	4.98	99.56	1087	-206	80 - 120	880	0.211	20	SO

The following samples were analyzed in this batch: HS20031299-05

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

QC BATCH REPORT

Batch ID: 152606 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **MBLK-152606** Units: **mg/Kg** Analysis Date: **09-Apr-2020 17:41**
Client ID: Run ID: **ManTech01_359956** SeqNo: **5554176** PrepDate: **09-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	10.0	10.0								U

LCS Sample ID: **LCS-152606** Units: **mg/Kg** Analysis Date: **09-Apr-2020 17:41**
Client ID: Run ID: **ManTech01_359956** SeqNo: **5554174** PrepDate: **09-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	10400	10.0	10000	0	104	80 - 120				

LCSD Sample ID: **LCSD-152606** Units: **mg/Kg** Analysis Date: **09-Apr-2020 17:41**
Client ID: Run ID: **ManTech01_359956** SeqNo: **5554175** PrepDate: **09-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	10440	10.0	10000	0	104	80 - 120	10400	0.356	20	

DUP Sample ID: **HS20031299-05DUP** Units: **mg/Kg** Analysis Date: **09-Apr-2020 17:41**
Client ID: **16EW05-200330** Run ID: **ManTech01_359956** SeqNo: **5554173** PrepDate: **09-Apr-2020** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	102	102					-34.82	0	20	U

The following samples were analyzed in this batch: HS20031299-05

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

QC BATCH REPORT

Batch ID: R359308 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW1-033120** Units: **mg/L** Analysis Date: **31-Mar-2020 18:14**
Client ID: Run ID: **ManTech01_359308** SeqNo: **5540082** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **WLCS1-033120** Units: **mg/L** Analysis Date: **31-Mar-2020 18:23**
Client ID: Run ID: **ManTech01_359308** SeqNo: **5540083** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1046	5.00	1000	0	105	85 - 115				

LCSD Sample ID: **WLCSD1-033120** Units: **mg/L** Analysis Date: **31-Mar-2020 18:32**
Client ID: Run ID: **ManTech01_359308** SeqNo: **5540084** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1048	5.00	1000	0	105	85 - 115	1046	0.139	20	

DUP Sample ID: **HS20031299-02DUP** Units: **mg/L** Analysis Date: **31-Mar-2020 18:49**
Client ID: **16WW29-200330** Run ID: **ManTech01_359308** SeqNo: **5540087** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	60.49	5.00					65.18	7.46	20	

The following samples were analyzed in this batch: HS20031299-02 HS20031299-03 HS20031299-04

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

QC BATCH REPORT

Batch ID: R359468 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-03.31.20** Units: **mg/L** Analysis Date: **31-Mar-2020 21:10**
Client ID: Run ID: **ICS-Integrion_359468** SeqNo: **5543343** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **31-Mar-2020 22:05**
Client ID: Run ID: **ICS-Integrion_359468** SeqNo: **5543346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.711	0.100	4	0	92.8	80 - 120				
Nitrogen, Nitrate (As N)	4.036	0.100	4	0	101	80 - 120				
Sulfate	19.15	0.500	20	0	95.7	80 - 120				

LCSD Sample ID: **LCSD** Units: **mg/L** Analysis Date: **31-Mar-2020 22:23**
Client ID: Run ID: **ICS-Integrion_359468** SeqNo: **5543347** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.68	0.100	4	0	92.0	80 - 120	3.711	0.842	20	
Nitrogen, Nitrate (As N)	4.004	0.100	4	0	100	80 - 120	4.036	0.789	20	
Sulfate	19.04	0.500	20	0	95.2	80 - 120	19.15	0.58	20	

MS Sample ID: **HS20031299-02MS** Units: **mg/L** Analysis Date: **31-Mar-2020 19:21**
Client ID: **16WW29-200330** Run ID: **ICS-Integrion_359468** SeqNo: **5543337** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100	2	0	0	80 - 120				S U
Nitrogen, Nitrate (As N)	2.231	0.100	2	0	112	80 - 120				
Sulfate	0.500	0.500	10	1457	-14600	80 - 120				SO U

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: HS20031299

QC BATCH REPORT

Batch ID: R359468 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MS Sample ID: **HS20031299-02MS** Units: **mg/L** Analysis Date: **31-Mar-2020 19:58**
Client ID: **16WW29-200330** Run ID: **ICS-Integrion_359468** SeqNo: **5543339** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	9.442	0.500	10	1.164	82.8	80 - 120				
Nitrogen, Nitrate (As N)	11.9	0.500	10	0	119	80 - 120				
Sulfate	1578	2.50	50	1589	-22.9	80 - 120				SEO

MSD Sample ID: **HS20031299-02MSD** Units: **mg/L** Analysis Date: **31-Mar-2020 20:16**
Client ID: **16WW29-200330** Run ID: **ICS-Integrion_359468** SeqNo: **5543340** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	9.505	0.500	10	1.164	83.4	80 - 120	9.442	0.66	20	
Nitrogen, Nitrate (As N)	11.99	0.500	10	0	120	80 - 120	11.9	0.779	20	
Sulfate	1554	2.50	50	1589	-70.2	80 - 120	1578	1.51	20	SEO

MSD Sample ID: **HS20031299-02MSD** Units: **mg/L** Analysis Date: **31-Mar-2020 19:39**
Client ID: **16WW29-200330** Run ID: **ICS-Integrion_359468** SeqNo: **5543338** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100	2	0	0	80 - 120	0	0	20	S U
Nitrogen, Nitrate (As N)	2.332	0.100	2	0	117	80 - 120	2.231	4.43	20	
Sulfate	0.500	0.500	10	1457	-14600	80 - 120	0	0	20	SO U

The following samples were analyzed in this batch: HS20031299-01 HS20031299-02 HS20031299-03 HS20031299-04

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
WorkOrder: **HS20031299**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
Date	
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

ALS Houston, US Date: 14-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-16
Work Order: HS20031299

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20031299-01	16WW30-200330	Login	3/31/2020 12:40:39 PM	LFH	WET240
HS20031299-01	16WW30-200330	Login	3/31/2020 12:40:39 PM	LFH	Sub
HS20031299-01	16WW30-200330	Login	3/31/2020 12:40:39 PM	LFH	VOA063
HS20031299-01	16WW30-200330	Login	3/31/2020 12:40:39 PM	LFH	Sub
HS20031299-02	16WW29-200330	Login	3/31/2020 12:43:30 PM	LFH	WET240
HS20031299-02	16WW29-200330	Login	3/31/2020 12:43:30 PM	LFH	WET240
HS20031299-02	16WW29-200330	Login	3/31/2020 12:43:30 PM	LFH	Sub
HS20031299-02	16WW29-200330	Login	3/31/2020 12:43:30 PM	LFH	VOA063
HS20031299-02	16WW29-200330	Login	3/31/2020 12:43:30 PM	LFH	RSK005
HS20031299-02	16WW29-200330	Login	3/31/2020 12:43:30 PM	LFH	Sub
HS20031299-03	16WW48-200330	Login	3/31/2020 12:51:14 PM	LFH	WET240
HS20031299-03	16WW48-200330	Login	3/31/2020 12:51:14 PM	LFH	WET240
HS20031299-03	16WW48-200330	Login	3/31/2020 12:51:14 PM	LFH	Sub
HS20031299-03	16WW48-200330	Login	3/31/2020 12:51:14 PM	LFH	VOA063
HS20031299-03	16WW48-200330	Login	3/31/2020 12:51:14 PM	LFH	RSK005
HS20031299-03	16WW48-200330	Login	3/31/2020 12:51:14 PM	LFH	Sub
HS20031299-04	16WW48-200330-FD	Login	3/31/2020 12:51:14 PM	LFH	WET240
HS20031299-04	16WW48-200330-FD	Login	3/31/2020 12:51:14 PM	LFH	WET240
HS20031299-04	16WW48-200330-FD	Login	3/31/2020 12:51:14 PM	LFH	Sub
HS20031299-04	16WW48-200330-FD	Login	3/31/2020 12:51:14 PM	LFH	VOA063
HS20031299-04	16WW48-200330-FD	Login	3/31/2020 12:51:14 PM	LFH	RSK005
HS20031299-04	16WW48-200330-FD	Login	3/31/2020 12:51:14 PM	LFH	Sub
HS20031299-05	16EW05-200330	Login	3/31/2020 12:51:14 PM	LFH	WET240
HS20031299-05	16EW05-200330	Login	3/31/2020 12:51:14 PM	LFH	WET240
HS20031299-05	16EW05-200330	Login	3/31/2020 12:51:14 PM	LFH	Sub
HS20031299-05	16EW05-200330	Login	3/31/2020 12:51:14 PM	LFH	VOA063
HS20031299-05	16EW05-200330	Login	3/31/2020 12:51:14 PM	LFH	RSK005
HS20031299-05	16EW05-200330	Login	3/31/2020 12:51:14 PM	LFH	Sub
HS20031299-06	Trip blank-200330	Login	3/31/2020 12:53:08 PM	LFH	VOA063

ALS Houston, US Date: 14-Apr-20

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS20031299
Date/Time Received: **31-Mar-2020 08:40**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 31-Mar-2020 Date
Reviewed by: *RJ Modashia* eSignature 31-Mar-2020 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.7°C/1.7°C UC/C	IR11
Cooler(s)/Kit(s):	42704	
Date/Time sample(s) sent to storage:	03/31/2020 12:55	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: LHAAP16 March 2020 -ALS

TURNAROUND TIME: Normal

RUSH:

Page 1 of

PROJECT/CLIENT INFO

Facility Name	Longhorn AAP
Project Number	501032
	LHAAP-16
Address	1203-B East Grand Avenue
	PMB 202
City	Marshall
State	TX
Postal Code	75670
Country	USA
Phone Number	713.243.7264
Project Manager	Praveen Srivastav

LABORATORY

Lab Name	ALS Laboratories
Lab Contact	RJ Modashia
Email	RJ.Modashia@alsglobal.com
Address	10450 Stancliff Rd., Suite 210
City	Houston
State	TX
Postal Code	77099
Country	USA
Phone Number	281.575.2279 or 281.530.5656

OTHER INFO

Email Invoice To	FedInvoices@aptim.com
Email Report To	Susan.Huang@aptim.com
Mail Reports To	Susan Huang
Address	4005 Port Chicago Highway, Suite 200
City	Concord
State	CA
Postal Code	94520
Country	USA
Shipping Company	

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	Sample Container and Preservatives	3-40 ml VOA/HCL	3-40 ml VOA/HCL	2-40ml Amber/H2SO4	1-250 ml PE/HNO3	1-250ml PE/Ice	1-250ml PE /Ice	1-250ml PE/Ice	1-125ml PE/Ice		
									ANALYSIS	VOCs by SW8260B	MEE by RSK175	TOC by SM5310C	Metals (arsenic, chromium, manganese, nickel, and thallium) by SW6020	Anions (sulfate/nitrate/bromide) by SW9056	Anions (bromide only) by SW9056	Alkalinity by SM2320	Perchlorate by SW6850		
16wlw30-200330	LHAAP 16				W6	3/30/20	0855	7		X		X			X		X		
16wlw29-200330	LHAAP16				W6	3/30/20	0945	11		X	X	X		X		X	X		
16wlw29-200330-MS	LHAAP16				W6	3/30/20	0945	11		X	X	X		X		X	X		
16wlw29-200330-MSD	LHAAP16				W6	3/30/20	0945	11		X	X	X		X		X	X		
16wlw28-200330	LHAAP16				W6	3/30/20	1055	11		X	X	X		X		X	X		
16wlw28-200330-FD	LHAAP16				W6	3/30/20	1055	11		X	X	X		X		X	X		
16EW05-200330	LHAAP16				W6	3/30/20	1215	11		X	X	X		X		X	X		
TRIPBLANK	LHAAP16				W	3/30/20		2		X									

HS20031299

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant LHAAP-16

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Cooler - 427°C	[signature] / BHATT	3/30/20 1430	[signature]	3/31/20 08:40
Temp 1.7				
1211 0500				

SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP 16 – BO 70505 – RJ
RMA:

42704
NP 03/31/2020

FedEx Express

03/31/2020

FedEx
TRK# (0221) 1251 0294 7884

TUE – 31 MAR 10:30A
PRIORITY OVERNIGHT

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

42704
1

CUSTODY SEAL
Date: 3/30/20 Time: 1630
Name: Scott Beesinger
Company: ALS

NP 03/31

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
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www.alsglobal.com

April 08, 2020

Analytical Report for Service Request No: K2002744

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS20031299

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory April 01, 2020
For your reference, these analyses have been assigned our service request number **K2002744.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

ALS Environmental

Client: ALS Environmental - US
Project: HS20031299
Sample Matrix: Ground Water

Service Request: K2002744
Date Received: 04/01/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Five ground water samples were received for analysis at ALS Environmental on 04/01/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 04/08/2020

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

K2002744

SAMPLING STATE: **Dept of Defense** **COC ID:** **13606**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20031299
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20031299-01**	**16WW30-200330**	**Groundwater**	**30 Mar 2020 08:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			08 Apr 2020
2.	**HS20031299-02**	**16WW29-200330**	**Groundwater**	**30 Mar 2020 09:45**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			08 Apr 2020
3.	**HS20031299-03**	**16WW48-200330**	**Groundwater**	**30 Mar 2020 10:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			08 Apr 2020
4.	**HS20031299-04**	**16WW48-200330-FD**	**Groundwater**	**30 Mar 2020 10:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			08 Apr 2020
5.	**HS20031299-05**	**16EW05-200330**	**Groundwater**	**30 Mar 2020 12:15**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			08 Apr 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS20031299-02 MS/MSD

QC Level: DOD IV (DoD Data Package)

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense**

COC ID: **13606**

Relinquished By: _____ Date/Time: 3/31/2020 1800.

Received By: _____ Date/Time: 4/1/20 1008

Cooler ID(s): _____ Temperature(s): _____

PC KL

Cooler Receipt and Preservation Form

Client ALS / Houston Service Request *K20* 02744

Received: 4/1/20 Opened: 4/1/20 By: [illegible] Unloaded: 4/1/20 By: [illegible]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID NA	Tracking Number NA	Filed
0.6	—	—	—	—	39800488WS	L36066	125102960080	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y (N)
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Sample "16EW05-200330" did not pH. Did not add acid due to matrix of sample.

RUSH

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2002744
Project:	HS20031299	**Date Collected:**	03/30/20
Sample Matrix:	Ground Water	**Date Received:**	04/1/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16WW30-200330	K2002744-001	**5.23**	0.50	0.20	0.07	1	04/05/20 04:50	
16WW29-200330	K2002744-002	**16.0**	0.50	0.20	0.07	1	04/05/20 05:18	
16WW48-200330	K2002744-003	**9.82**	0.50	0.20	0.07	1	04/05/20 06:15	
16WW48-200330-FD	K2002744-004	**9.50**	0.50	0.20	0.07	1	04/05/20 07:42	
16WW05-200330	K2002744-005	**300**	200	80	30	400	04/05/20 08:10	
Method Blank	K2002744-MB	ND U	0.50	0.20	0.07	1	04/05/20 07:13	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002744
Project	HS20031299	**Date Collected:**	03/30/20
Sample Matrix:	Ground Water	**Date Received:**	04/01/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	LOQ	LOD	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
16WW30-200330	K2002744-001DUP	0.50	0.20	0.07	5.23	5.27	5.25	<1	10	04/05/20
16WW29-200330	K2002744-002DUP	0.50	0.20	0.07	16.0	16.0	16.0	<1	10	04/05/20
16WW48-200330	K2002744-003DUP	0.50	0.20	0.07	9.82	9.62	9.72	2	10	04/05/20
16WW48-200330-FD	K2002744-004DUP	0.50	0.20	0.07	9.50	9.21	9.36	3	10	04/05/20
16WW05-200330	K2002744-005DUP	200	80	30	300	340	321	11 #	10	04/05/20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002744
Project:	HS20031299	**Date Collected:**	03/30/20
Sample Matrix:	Ground Water	**Date Received:**	04/01/20
		Date Analyzed:	04/5/20
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	16WW29-200330	**Units:**	mg/L
Lab Code:	K2002744-002	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K2002744-002MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	16.0	127	100	111	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002744
Project:	HS20031299	**Date Analyzed:**	04/05/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	675809

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2002744-LCS	23.1	25.0	93	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2002744
Project: HS20031299

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	675809	KQ2004679-01	04/05/20 02:26	25.0	24.1	96	90-110
CCV2	675809	KQ2004679-02	04/05/20 06:43	25.0	24.8	99	90-110
CCV3	675809	KQ2004679-03	04/05/20 11:54	25.0	24.2	97	90-110
CCV4	675809	KQ2004679-04	04/05/20 17:18	25.0	24.3	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2002744
Project: HS20031299

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	675809	KQ2004679-05	04/05/20 02:41	0.50	0.20	0.07	ND	U
CCB2	675809	KQ2004679-06	04/05/20 06:58	0.50	0.20	0.07	ND	U
CCB3	675809	KQ2004679-07	04/05/20 12:09	0.50	0.20	0.07	ND	U
CCB4	675809	KQ2004679-08	04/05/20 17:33	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original ( ) K2002766, 2824, 2730, 2744, 2782, 2854, 2855, 2876, 2883, 2760

Tier: IV IV II IV I IV IV III IV II

Date Analyzed: 4/4/20 TOC: 675809, 675809

Analyst: BCP Run # DOC: 675810

Analysis: TOC/DOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K2002744-5/5d, and 2883-1/1d report a high %RSD. However, these samples are less than 5x the MRL.

Final Approved by: [signature] Date: 4/8/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675808 **Method/Testcode:** 415.1/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002766-001	Carbon, Total Organic	N/A		Water	0.51 mg/L	10 ml	51 mg/L	100	7	50			4/4/20 23:37	N	IV
K2002766-002	Carbon, Total Organic	N/A		Water	15.44 mg/L	10 ml	15.4 mg/L	1	0.07	0.50			4/5/20 00:05	N	IV
K2002766-003	Carbon, Total Organic	N/A		Water	0.94 mg/L	10 ml	94 mg/L	100	7	50			4/5/20 01:02	N	IV
K2002766-004	Carbon, Total Organic	N/A		Water	10.84 mg/L	10 ml	10.8 mg/L	1	0.07	0.50			4/5/20 01:30	N	IV
K2002824-004	Carbon, Total Organic	N/A		Water	0.59 mg/L	10 ml	59 mg/L	100	7	50			4/5/20 01:58	N	IV
K2002824-005	Carbon, Total Organic	N/A		Water	15.49 mg/L	10 ml	15.5 mg/L	1	0.07	0.50			4/5/20 02:56	N	IV
K2002824-006	Carbon, Total Organic	N/A		Water	0.58 mg/L	10 ml	58 mg/L	100	7	50			4/5/20 03:24	N	IV
KQ2004678-01	Carbon, Total Organic	CCV		Water	25.78 mg/L	10 ml	25.8 mg/L	1					4/4/20 22:23	N	IV
KQ2004678-02	Carbon, Total Organic	CCV		Water	24.12 mg/L	10 ml	24.1 mg/L	1					4/5/20 02:26	N	IV
KQ2004678-03	Carbon, Total Organic	CCV		Water	24.81 mg/L	10 ml	24.8 mg/L	1					4/5/20 06:43	N	IV
KQ2004678-04	Carbon, Total Organic	CCB		Water	0.38 mg/L	10 ml	0.38 mg/L J	1	0.07	0.50			4/4/20 22:38	N	IV
KQ2004678-05	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 02:41	N	IV
KQ2004678-06	Carbon, Total Organic	CCB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 06:58	N	IV
KQ2004678-07	Carbon, Total Organic	MB		Water	0.10 mg/L	10 ml	0.10 mg/L J	1	0.07	0.50			4/4/20 22:53	N	IV
KQ2004678-08	Carbon, Total Organic	LCS		Water	23.65 mg/L	10 ml	23.7 mg/L	1	0.07	0.50	95		4/4/20 23:08	N	IV
KQ2004678-09	Carbon, Total Organic	MS	K2002766-002	Water	32.15 mg/L	10 ml	129 mg/L	4	0.3	2.0	113		4/5/20 00:33	N	IV
KQ2004678-10	Carbon, Total Organic	DUP	K2002766-001	Water	0.50 mg/L	10 ml	50 mg/L J	100	7	50		4	4/4/20 23:37	N	IV
KQ2004678-11	Carbon, Total Organic	DUP	K2002766-002	Water	15.32 mg/L	10 ml	15.3 mg/L	1	0.07	0.50		<1	4/5/20 00:05	N	IV
KQ2004678-12	Carbon, Total Organic	DUP	K2002766-003	Water	0.98 mg/L	10 ml	98 mg/L	100	7	50		4	4/5/20 01:02	N	IV
KQ2004678-13	Carbon, Total Organic	DUP	K2002766-004	Water	10.78 mg/L	10 ml	10.8 mg/L	1	0.07	0.50		<1	4/5/20 01:30	N	IV
KQ2004678-14	Carbon, Total Organic	DUP	K2002824-004	Water	0.54 mg/L	10 ml	54 mg/L	100	7	50		8	4/5/20 01:58	N	IV
KQ2004678-15	Carbon, Total Organic	DUP	K2002824-005	Water	15.47 mg/L	10 ml	15.5 mg/L	1	0.07	0.50		<1	4/5/20 02:56	N	IV
KQ2004678-16	Carbon, Total Organic	DUP	K2002824-006	Water	0.51 mg/L	10 ml	51 mg/L	100	7	50		13	4/5/20 03:24	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675809 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002730-001	Carbon, Total Organic	N/A		Water	0.68 mg/L	10 ml	0.68 mg/L	1	0.07	0.50			4/5/20 10:02	N	II
K2002730-002	Carbon, Total Organic	N/A		Water	0.69 mg/L	10 ml	0.69 mg/L	1	0.07	0.50			4/5/20 10:30	N	II
K2002730-003	Carbon, Total Organic	N/A		Water	0.53 mg/L	10 ml	0.53 mg/L	1	0.07	0.50			4/5/20 10:58	N	II
K2002730-004	Carbon, Total Organic	N/A		Water	0.94 mg/L	10 ml	0.94 mg/L	1	0.07	0.50			4/5/20 11:26	N	II
K2002730-005	Carbon, Total Organic	N/A		Water	0.77 mg/L	10 ml	0.77 mg/L	1	0.07	0.50			4/5/20 12:24	N	II
K2002730-006	Carbon, Total Organic	N/A		Water	1.49 mg/L	10 ml	1.49 mg/L	1	0.07	0.50			4/5/20 12:52	N	II
K2002730-007	Carbon, Total Organic	N/A		Water	0.88 mg/L	10 ml	0.88 mg/L	1	0.07	0.50			4/5/20 13:20	N	II
K2002744-001	Carbon, Total Organic	N/A		Ground Water	5.23 mg/L	10 ml	5.23 mg/L	1	0.07	0.50			4/5/20 04:50	N	IV
K2002744-002	Carbon, Total Organic	N/A		Ground Water	15.99 mg/L	10 ml	16.0 mg/L	1	0.07	0.50			4/5/20 05:18	Y	IV
K2002744-003	Carbon, Total Organic	N/A		Ground Water	9.82 mg/L	10 ml	9.82 mg/L	1	0.07	0.50			4/5/20 06:15	N	IV
K2002744-004	Carbon, Total Organic	N/A		Ground Water	9.50 mg/L	10 ml	9.50 mg/L	1	0.07	0.50			4/5/20 07:42	N	IV
K2002744-005	Carbon, Total Organic	N/A		Ground Water	0.76 mg/L	10 ml	300 mg/L	400	30	200			4/5/20 08:10	N	IV
K2002782-001	Carbon, Total Organic	N/A		Reagent Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 04:21	N	I
K2002782-002	Carbon, Total Organic	N/A		Reagent Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 04:35	N	I
K2002854-001	Carbon, Total Organic	N/A		Water	2.92 mg/L	10 ml	2.92 mg/L	1	0.07	0.50			4/5/20 09:34	N	IV
K2002855-001	Carbon, Total Organic	N/A		Ground Water	2.01 mg/L	10 ml	800 mg/L	400	30	200			4/5/20 14:16	N	IV
K2002858-001	Carbon, Total Organic	N/A		Water	2.11 mg/L	10 ml	2.11 mg/L	1	0.07	0.50			4/5/20 13:48	N	II
K2002876-001	Carbon, Total Organic	N/A		Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 15:40	N	II
K2002883-001	Carbon, Total Organic	N/A		Water	0.28 mg/L	10 ml	0.28 mg/L J	1	0.07	0.50			4/5/20 16:08	N	IV
KQ2004679-01	Carbon, Total Organic	CCV		Reagent Water	24.12 mg/L	10 ml	24.1 mg/L	1					4/5/20 02:26	N	I
KQ2004679-02	Carbon, Total Organic	CCV		Reagent Water	24.81 mg/L	10 ml	24.8 mg/L	1					4/5/20 06:43	N	I
KQ2004679-03	Carbon, Total Organic	CCV		Reagent Water	24.17 mg/L	10 ml	24.2 mg/L	1					4/5/20 11:54	N	I
KQ2004679-04	Carbon, Total Organic	CCV		Reagent Water	24.31 mg/L	10 ml	24.3 mg/L	1					4/5/20 17:18	N	I
KQ2004679-05	Carbon, Total Organic	CCB		Reagent Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 02:41	N	I
KQ2004679-06	Carbon, Total Organic	CCB		Reagent Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 06:58	N	I
KQ2004679-07	Carbon, Total Organic	CCB		Reagent Water	-0.09 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 12:09	N	I
KQ2004679-08	Carbon, Total Organic	CCB		Reagent Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 17:33	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675809 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2004679-09	Carbon, Total Organic	MB		Reagent Water	-0.05 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 07:13	N	I
KQ2004679-10	Carbon, Total Organic	LCS		Reagent Water	23.13 mg/L	10 ml	23.1 mg/L	1	0.07	0.50	93		4/5/20 07:27	N	I
KQ2004679-11	Carbon, Total Organic	MS	K2002744-002	Ground Water	31.79 mg/L	10 ml	127 mg/L	4	0.3	2.0	111		4/5/20 05:46	N	IV
KQ2004679-12	Carbon, Total Organic	DUP	K2002730-001	Water	0.64 mg/L	10 ml	0.64 mg/L	1	0.07	0.50		7	4/5/20 10:02	N	II
KQ2004679-13	Carbon, Total Organic	DUP	K2002730-002	Water	0.68 mg/L	10 ml	0.68 mg/L	1	0.07	0.50		<1	4/5/20 10:30	N	II
KQ2004679-14	Carbon, Total Organic	DUP	K2002730-003	Water	0.55 mg/L	10 ml	0.55 mg/L	1	0.07	0.50		4	4/5/20 10:58	N	II
KQ2004679-15	Carbon, Total Organic	DUP	K2002730-004	Water	0.94 mg/L	10 ml	0.94 mg/L	1	0.07	0.50		<1	4/5/20 11:26	N	II
KQ2004679-16	Carbon, Total Organic	DUP	K2002730-005	Water	0.72 mg/L	10 ml	0.72 mg/L	1	0.07	0.50		7	4/5/20 12:24	N	II
KQ2004679-17	Carbon, Total Organic	DUP	K2002730-006	Water	1.53 mg/L	10 ml	1.53 mg/L	1	0.07	0.50		3	4/5/20 12:52	N	II
KQ2004679-18	Carbon, Total Organic	DUP	K2002730-007	Water	0.85 mg/L	10 ml	0.85 mg/L	1	0.07	0.50		3	4/5/20 13:20	N	II
KQ2004679-19	Carbon, Total Organic	DUP	K2002744-002	Ground Water	15.96 mg/L	10 ml	16.0 mg/L	1	0.07	0.50		<1	4/5/20 05:18	N	IV
KQ2004679-20	Carbon, Total Organic	DUP	K2002744-001	Ground Water	5.27 mg/L	10 ml	5.27 mg/L	1	0.07	0.50		<1	4/5/20 04:50	N	IV
KQ2004679-21	Carbon, Total Organic	DUP	K2002744-003	Ground Water	9.62 mg/L	10 ml	9.62 mg/L	1	0.07	0.50		2	4/5/20 06:15	N	IV
KQ2004679-22	Carbon, Total Organic	DUP	K2002744-004	Ground Water	9.21 mg/L	10 ml	9.21 mg/L	1	0.07	0.50		3	4/5/20 07:42	N	IV
KQ2004679-23	Carbon, Total Organic	DUP	K2002744-005	Ground Water	0.85 mg/L	10 ml	340 mg/L	400	30	200		11*	4/5/20 08:10	N	IV
KQ2004679-26	Carbon, Total Organic	DUP	K2002854-001	Water	2.96 mg/L	10 ml	2.96 mg/L	1	0.07	0.50		1	4/5/20 09:34	N	IV
KQ2004679-27	Carbon, Total Organic	DUP	K2002855-001	Ground Water	2.14 mg/L	10 ml	850 mg/L	400	30	200		6	4/5/20 14:16	N	IV
KQ2004679-28	Carbon, Total Organic	DUP	K2002858-001	Water	2.11 mg/L	10 ml	2.11 mg/L	1	0.07	0.50		<1	4/5/20 13:48	N	II
KQ2004679-29	Carbon, Total Organic	DUP	K2002876-001	Water	-0.08 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	4/5/20 15:40	N	II
KQ2004679-30	Carbon, Total Organic	DUP	K2002883-001	Water	0.22 mg/L	10 ml	0.22 mg/L J	1	0.07	0.50		25*	4/5/20 16:08	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675810 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002760-001	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.26 mg/L	10 ml	1.26 mg/L	1	0.07	0.50			4/5/20 16:36	N	II
K2002760-002	Carbon, Dissolved Organic (DOC)	N/A		Water	1.30 mg/L	10 ml	1.30 mg/L	1	0.07	0.50			4/5/20 18:17	N	II
KQ2004680-01	Carbon, Dissolved Organic (DOC)	CCV		Effluent	24.17 mg/L	10 ml	24.2 mg/L	1					4/5/20 11:54	N	II
KQ2004680-02	Carbon, Dissolved Organic (DOC)	CCV		Effluent	24.31 mg/L	10 ml	24.3 mg/L	1					4/5/20 17:18	N	II
KQ2004680-03	Carbon, Dissolved Organic (DOC)	CCV		Effluent	24.12 mg/L	10 ml	24.1 mg/L	1					4/5/20 18:45	N	II
KQ2004680-04	Carbon, Dissolved Organic (DOC)	CCB		Effluent	-0.09 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 12:09	N	II
KQ2004680-05	Carbon, Dissolved Organic (DOC)	CCB		Effluent	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 17:33	N	II
KQ2004680-06	Carbon, Dissolved Organic (DOC)	CCB		Effluent	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 19:00	N	II
KQ2004680-07	Carbon, Dissolved Organic (DOC)	MB		Effluent	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 17:48	N	II
KQ2004680-08	Carbon, Dissolved Organic (DOC)	LCS		Effluent	23.12 mg/L	10 ml	23.1 mg/L	1	0.07	0.50	92		4/5/20 18:03	N	II
KQ2004680-09	Carbon, Dissolved Organic (DOC)	MS	K2002760-001	Effluent	29.25 mg/L	10 ml	29.3 mg/L	1	0.07	0.50	112		4/5/20 17:04	N	II
KQ2004680-10	Carbon, Dissolved Organic (DOC)	DUP	K2002760-001	Effluent	1.29 mg/L	10 ml	1.29 mg/L	1	0.07	0.50		2	4/5/20 16:36	N	II
KQ2004680-11	Carbon, Dissolved Organic (DOC)	DUP	K2002760-002	Water	1.29 mg/L	10 ml	1.29 mg/L	1	0.07	0.50		1	4/5/20 18:17	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

0.486			OBSERVATIONS	9	ABOVE
0.204	0.204		STD Deviation	0.15797	0.2044
0.073	0.073	0.073	AVERAGE	0.10796	0.0726
0.135	0.135	0.135	UCL	0.26593	0.1346
0.056	0.056		LCL	-0.05002	0.0558
0.019	0.019				0.0185
0.000					0
0.000			OBSERVATIONS	5	0
0.000			STD Deviation	0.03997	0
			AVERAGE	0.09718	0
			UCL	0.13715	0
			LCL	0.05721	0
					0
					0
			OBSERVATIONS	2	0
			STD Deviation	0.03002	0
			AVERAGE	0.10360	0
			UCL	0.13362	0
			LCL	0.07358	0
					0
					0
			OBSERVATIONS	0	0
			STD Deviation	#DIV/0!	0
			AVERAGE	#DIV/0!	0
					0
					0
					0
					0
					0
					0

4/4/20

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.884	0.1036	25.7801	25.7801	25.8	4/4/2020
3	ccb	1	0.486	0.1036	0.3821	0.3821	<0.5	4/4/2020
4	mb	1	0.204	0.1036	0.1008	0.1008	<0.5	4/4/2020
5	lcs	1	23.755	0.1036	23.6517	23.6517	23.7	4/4/2020
6	K2002766-001	100	0.618	0.1036	0.5148	51.48	51.48	4/4/2020
7	K2002766-001	100	0.599	0.1036	0.4954	49.54	49.5	4/4/2020
8	K2002766-002	1	15.545	0.1036	15.4418	15.4418	15	4/5/2020
9	K2002766-002	1	15.423	0.1036	15.3194	15.3194	15.32	4/5/2020
10	KQ2004678-09	4	32.257	0.1036	32.1530	128.612	128.61	4/5/2020
11	K2002766-003	100	1.044	0.1036	0.9404	94.04	94.0	4/5/2020
12	K2002766-003	100	1.079	0.1036	0.9756	97.56	97.56	4/5/2020
13	K2002766-004	1	10.939	0.1036	10.8356	10.8356	10.84	4/5/2020
14	K2002766-004	1	10.885	0.1036	10.7811	10.7811	10.78	4/5/2020
15	K2002824-004	100	0.692	0.1036	0.5884	58.84	58.8	4/5/2020
16	K2002824-004	100	0.646	0.1036	0.5421	54.21	54.2	4/5/2020
17	ccv	1	24.225	0.1036	24.1217	24.1217	24.12	4/5/2020
18	ccb	1	0.073	0.1036	-0.0310	-0.031	<0.5	4/5/2020
19	K2002824-005	1	15.591	0.1036	15.4873	15.4873	15.5	4/5/2020
20	K2002824-005	1	15.572	0.1036	15.4684	15.4684	15.47	4/5/2020
21	K2002824-006	100	0.684	0.1036	0.5805	58.05	58.05	4/5/2020
22	K2002824-006	100	0.612	0.1036	0.5084	50.84	50.8	4/5/2020
23	ccv	1	24.911	0.1036	24.8069	24.8069	24.8	4/5/2020
24	ccb	1	0.135	0.1036	0.0310	0.031	<0.5	4/5/2020
~~25~~		~~1~~		~~0.1036~~	~~0.0000~~	~~0~~	~~<0.5~~	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

	date	time
Analyzed By: BD	Date Analyzed 4/7/20	
Reviewed By: JC	Date Reviewed 4/8/20	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.225	0.1036	24.1217	24.1217	24.1	4/5/2020
3	ccb	1	0.073	0.1036	-0.0310	-0.031	<0.5	4/5/2020
4	K2002782-001	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
5	K2002782-002	1	0.074	0.1036	-0.0299	-0.0299	<0.5	4/5/2020
6	K2002744-001	1	5.337	0.1036	5.2333	5.2333	5.23	4/5/2020
7	K2002744-001	1	5.376	0.1036	5.2723	5.2723	5.3	4/5/2020
8	K2002744-002	1	16.090	0.1036	15.9861	15.9861	16	4/5/2020
9	K2002744-002	1	16.060	0.1036	15.9559	15.9559	15.96	4/5/2020
10	KQ2004679-11	4	31.898	0.1036	31.7943	127.1772	127.18	4/5/2020
11	K2002744-003	1	9.927	0.1036	9.8231	9.8231	9.8	4/5/2020
12	K2002744-003	1	9.722	0.1036	9.6186	9.6186	9.62	4/5/2020
13	ccv	1	24.911	0.1036	24.8069	24.8069	24.81	4/5/2020
14	ccb	1	0.135	0.1036	0.0310	0.031	<0.5	4/5/2020
15	mb	1	0.056	0.1036	-0.0478	-0.0478	<0.5	4/5/2020
16	lcs	1	23.236	0.1036	23.1325	23.1325	23.1	4/5/2020
17	K2002744-004	1	9.607	0.1036	9.5035	9.5035	9.50	4/5/2020
18	K2002744-004	1	9.316	0.1036	9.2125	9.2125	9.2	4/5/2020
19	K2002744-005	400	0.865	0.1036	0.7609	304.36	304.4	4/5/2020
20	K2002744-005	400	0.950	0.1036	0.8459	338.36	338.36	4/5/2020
21	K2002854-001	1	3.027	0.1036	2.9236	2.9236	2.92	4/5/2020
22	K2002854-001	1	3.064	0.1036	2.9601	2.9601	3.0	4/5/2020
23	K2002730-001	1	0.787	0.1036	0.6838	0.6838	0.7	4/5/2020
24	K2002730-001	1	0.740	0.1036	0.6367	0.6367	0.64	4/5/2020
25	K2002730-002	1	0.792	0.1036	0.6880	0.688	0.69	4/5/2020

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

	date	time
Analyzed By: BW	Date Analyzed 9/7/20	
Reviewed By: JS	Date Reviewed 9/8/20	

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K2002730-002	1	0.788	0.1036	0.6840	0.684	0.68	4/5/2020
27	K2002730-003	1	0.631	0.1036	0.5274	0.5274	0.53	4/5/2020
28	K2002730-003	1	0.650	0.1036	0.5463	0.5463	0.5	4/5/2020
29	K2002730-004	1	1.041	0.1036	0.9375	0.9375	0.9	4/5/2020
30	K2002730-004	1	1.046	0.1036	0.9423	0.9423	0.9	4/5/2020
31	ccv	1	24.276	0.1036	24.1725	24.1725	24.2	4/5/2020
32	ccb	1	0.019	0.1036	-0.0851	-0.0851	<0.5	4/5/2020
33	K2002730-005	1	0.869	0.1036	0.7653	0.7653	0.8	4/5/2020
34	K2002730-005	1	0.821	0.1036	0.7170	0.717	0.7	4/5/2020
35	K2002730-006	1	1.593	0.1036	1.4892	1.4892	1.5	4/5/2020
36	K2002730-006	1	1.633	0.1036	1.5298	1.5298	1.5	4/5/2020
37	K2002730-007	1	0.984	0.1036	0.8807	0.8807	0.9	4/5/2020
38	K2002730-007	1	0.954	0.1036	0.8505	0.8505	0.9	4/5/2020
39	K2002858-001	1	2.216	0.1036	2.1127	2.1127	2.1	4/5/2020
40	K2002858-001	1	2.216	0.1036	2.1123	2.1123	2.1	4/5/2020
41	K2002855-001	400	2.109	0.1036	2.0053	802.12	802.1	4/5/2020
42	K2002855-001	400	2.240	0.1036	2.1362	854.48	854.5	4/5/2020
43	K2002876-001	1	0.004	0.1036	-0.0998	-0.0998	<0.5	4/5/2020
44	K2002876-001	1	0.019	0.1036	-0.0848	-0.0848	<0.5	4/5/2020
45	K2002883-001	1	0.387	0.1036	0.2834	0.2834	<0.5	4/5/2020
46	K2002883-001	1	0.324	0.1036	0.2204	0.2204	<0.5	4/5/2020
47	ccv	1	24.411	0.1036	24.3074	24.3074	24.3	4/5/2020
48	ccb	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BW	Date Analyzed	4/7/20
Reviewed By:		Date Reviewed	4/8/20

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.276	0.1036	24.1725	24.1725	24.2	4/5/2020
3	ccb	1	0.019	0.1036	-0.0851	-0.0851	<0.5	4/5/2020
4	K2002760-001	1	1.365	0.1036	1.2610	1.261	1.3	4/5/2020
5	K2002760-001	1	1.392	0.1036	1.2886	1.2886	1.3	4/5/2020
6	KQ2004680-09	1	29.358	0.1036	29.2544	29.2544	29.25	4/5/2020
7	ccv	1	24.411	0.1036	24.3074	24.3074	24.3	4/5/2020
8	ccb	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
9	mb	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
10	lcs	1	23.223	0.1036	23.1192	23.1192	23.12	4/5/2020
11	K2002760-002	1	1.407	0.1036	1.3032	1.3032	1.3	4/5/2020
12	K2002760-002	1	1.389	0.1036	1.2852	1.2852	1.29	4/5/2020
13	ccv	1	24.220	0.1036	24.1165	24.1165	24.12	4/5/2020
14	ccb	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
15		1		0.0000	0.0000	0	<0.5	
16		1		0.0000	0.0000	0	<0.5	
17		1		0.0000	0.0000	0	<0.5	
18		1		0.0000	0.0000	0	<0.5	
19		1		0.0000	0.0000	0	<0.5	
20		1		0.0000	0.0000	0	<0.5	
21		1		0.0000	0.0000	0	<0.5	
22		1		0.0000	0.0000	0	<0.5	
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By: BP		Date Analyzed 4/7/20	
Reviewed By: JC		Date Reviewed 4/8/20	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

TOC: 675808, 675809,
DOC: 675810

Schedule: 04042020

Version: 2
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/04/04 20:29 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2002766-001.03 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2002766-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2002766-002.03 ms 4x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
7	Sample	K2002766-003.03 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2002766-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2002824-004.03 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2002824-005.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2002824-006.03 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2002782-001.01	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
14	Sample	K2002782-002.01	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
15	Sample	K2002744-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2002744-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2002744-002.01 ms 4x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
18	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
19	Sample	K2002744-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K2002744-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K2002744-005.01 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
24	Sample	K2002854-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2002730-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2002730-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2002730-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2002730-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2002730-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K2002730-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K2002730-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K2002858-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2002855-001.01 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
35	Sample	K2002876-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K2002883-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K2002760-001.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K2002760-001.03 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 04042020

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K2002760-002.04 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 04042020
Saturday, April 04, 2020 08:29 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/04/07 09:10 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	04042020	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/04/04 20:29

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.60	17.72	4.12	49.79	05:25
2	TC Clean	15.12	19.33	4.20	49.95	04:03
3	TC Clean	3.74	7.76	4.01	50.06	03:57
4	TC Clean	2.77	6.74	3.97	50.02	03:56

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/04/04 20:52

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.27	5.16	3.89	49.75	05:23
2	TC Clean	6.26	10.30	4.04	50.04	04:02
3	TC Clean	2.00	6.00	4.00	49.92	03:48
4	TC Clean	2.09	6.00	3.91	49.93	03:51

Sample Type: Clean From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/04/04 21:14

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.19	5.23	4.05	49.80	05:24
2	TC Clean	5.69	9.69	4.01	50.02	04:00
3	TC Clean	2.00	6.21	4.20	49.92	03:44
4	TC Clean	2.02	6.00	3.97	49.93	03:45

Sample Type: Blank (Creating v1370) From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/04/04 21:35

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.84	4.90	4.06	49.59	05:11
2	TC Clean	5.35	9.59	4.24	49.94	03:58
3	TC Clean	2.20	6.32	4.12	50.02	03:48
4	TC Clean	2.02	6.22	4.20	49.92	03:54
5	Reagent Blank	8.29	12.45	4.16	49.89	05:03
6	Acid Blank	1.52	5.63	4.11	49.53	05:27

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.3677 ppm	0.0000 ppm	0.0000%	2020/04/04 22:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3677	3.6767	10.06	14.29	4.23	50.00	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.8837 ppm (PASS)	0.0000 ppm	0%	2020/04/04 22:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.8837	258.8374	181.88	185.92	4.04	50.03	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.4857 ppm (PASS)	0.0000 ppm	0%	2020/04/04 22:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.4857	4.8571	11.08	15.12	4.03	50.02	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.2044 ppm	0.0000 ppm	0.0000%	2020/04/04 22:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2044	2.0440	8.96	12.91	3.95	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	23.7553 ppm (PASS)	0.0000 ppm	0%	2020/04/04 23:08

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

	Type									
C	TOC	25.0 ppm	1	23.7553	237.5525	167.57	171.50	3.93	50.02	10:36

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.5427 ppm	0.0000 ppm	0.0000%	2020/04/04 23:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5427	5.4269	11.24	15.23	3.99	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K2002766-001.03 100x	0.6087 ppm	0.0137 ppm	2.2500%	2020/04/04 23:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6184	6.1838	11.75	15.78	4.03	50.03	10:26
2	TOC	0.5990	5.9905	11.62	15.49	3.87	50.02	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K2002766-002.03	15.4842 ppm	0.0865 ppm	0.5600%	2020/04/05 00:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.5454	155.4543	112.13	116.00	3.86	50.03	10:26
2	TOC	15.4230	154.2305	111.31	115.22	3.91	50.03	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K2002766-002.03 ms 4x	32.2566 ppm	0.0000 ppm	0.0000%	2020/04/05 00:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.2566	322.5658	224.51	228.49	3.97	50.05	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC)	CAS_salt_010711	CAS_salt_010711

(v1370) (v4) (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	RB	0.3031 ppm	0.0000 ppm	0.0000%	2020/04/05 00:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3031	3.0314	9.63	13.58	3.95	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K2002766-003.03 100x	1.0616 ppm	0.0249 ppm	2.3500%	2020/04/05 01:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0440	10.4396	14.61	18.58	3.97	50.07	10:26
2	TOC	1.0792	10.7920	14.85	18.60	3.76	50.06	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K2002766-004.03	10.9120 ppm	0.0385 ppm	0.3500%	2020/04/05 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.9392	109.3916	81.15	84.97	3.82	50.03	10:29
2	TOC	10.8847	108.8474	80.79	84.41	3.63	50.04	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	K2002824-004.03 100x	0.6689 ppm	0.0327 ppm	4.8900%	2020/04/05 01:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6920	6.9198	12.24	15.94	3.70	50.03	10:29
2	TOC	0.6457	6.4574	11.93	15.69	3.76	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25	0 / infinity	24.2253	0.0000	0%	2020/04/05 02:26

					ppm [25 ppm]	(NA / NA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2253	242.2529	170.73	174.61	3.88	50.01	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0726 ppm (PASS)	0.0000 ppm	0%	2020/04/05 02:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0726	0.7263	8.31	12.27	3.96	50.00	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K2002824-005.03	15.5815 ppm	0.0134 ppm	0.0900%	2020/04/05 02:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.5909	155.9093	112.44	116.33	3.89	49.96	10:31
2	TOC	15.5720	155.7205	112.31	116.14	3.83	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K2002824-006.03 100x	0.6480 ppm	0.0510 ppm	7.8700%	2020/04/05 03:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6841	6.8410	12.19	15.98	3.79	49.95	10:25
2	TOC	0.6120	6.1198	11.70	15.59	3.88	49.97	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	RB	0.0847 ppm	0.0013 ppm	1.4900%	2020/04/05 03:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0856	0.8559	8.16	12.04	3.88	49.94	10:28
2	TOC	0.0838	0.8380	8.15	12.08	3.93	49.97	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2002782-001.01	0.0000 ppm	0.0000 ppm	0.0000%	2020/04/05 04:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.54	11.45	3.91	49.98	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2002782-002.01	0.0737 ppm	0.0000 ppm	0.0000%	2020/04/05 04:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0737	0.7369	8.08	11.94	3.86	49.97	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K2002744-001.01	5.3564 ppm	0.0275 ppm	0.5100%	2020/04/05 04:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.3369	53.3691	43.48	47.35	3.87	50.00	10:25
2	TOC	5.3759	53.7587	43.74	47.56	3.82	49.97	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K2002744-002.01	16.0746 ppm	0.0213 ppm	0.1300%	2020/04/05 05:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.0897	160.8967	115.79	119.74	3.95	49.99	10:25
2	TOC	16.0595	160.5948	115.59	119.70	4.11	49.98	10:29

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K2002744-002.01 ms 4x	31.8979 ppm	0.0000 ppm	0.0000%	2020/04/05 05:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.8979	318.9791	222.10	226.10	4.00	50.01	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	RB	0.1837 ppm	0.0000 ppm	0.0000%	2020/04/05 06:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1837	1.8373	8.82	12.75	3.92	50.04	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K2002744-003.01	9.8244 ppm	0.1446 ppm	1.4700%	2020/04/05 06:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.9267	99.2667	74.34	78.39	4.05	50.00	10:26
2	TOC	9.7222	97.2221	72.97	77.00	4.03	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9105 ppm (PASS)	0.0000 ppm	0%	2020/04/05 06:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9105	249.1050	175.34	179.18	3.84	50.04	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.1346 ppm (PASS)	0.0000 ppm	0%	2020/04/05 06:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.1346	1.3464	8.72	12.68	3.95	50.07	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0558 ppm	0.0000 ppm	0.0000%	2020/04/05 07:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0558	0.5585	7.96	11.92	3.95	50.06	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	23.2361 ppm (PASS)	0.0000 ppm	0%	2020/04/05 07:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.2361	232.3614	164.08	168.09	4.01	50.08	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K2002744-004.01	9.4616 ppm	0.2058 ppm	2.1700%	2020/04/05 07:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	9.6071	96.0711	72.20	76.18	3.99	50.04	10:25
2	TOC	9.3161	93.1611	70.24	74.19	3.95	50.07	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K2002744-005.01 400x	0.9070 ppm	0.0601 ppm	6.6300%	2020/04/05 08:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8645	8.6448	13.40	17.38	3.98	50.06	10:30
2	TOC	0.9495	9.4953	13.97	17.82	3.84	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	RB	0.0957 ppm	0.0583 ppm	60.9900%	2020/04/05 08:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1709	1.7094	8.74	12.61	3.88	50.07	10:30
2	TOC	0.1073	1.0730	8.31	12.16	3.85	50.06	10:27
3	TOC	0.0700	0.6997	8.06	11.85	3.79	50.07	10:26
4	TOC	0.0344	0.3444	7.82	11.68	3.86	50.06	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K2002854-001.01	3.0455 ppm	0.0259 ppm	0.8500%	2020/04/05 09:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0272	30.2716	27.95	31.66	3.71	50.05	10:29
2	TOC	3.0637	30.6374	28.19	32.15	3.96	50.05	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2002730-001.01	0.7639 ppm	0.0333 ppm	4.3600%	2020/04/05 10:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7874	7.8745	12.88	16.93	4.05	50.05	10:31
2	TOC	0.7403	7.4031	12.57	16.52	3.95	50.06	10:31

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K2002730-002.01	0.7896 ppm	0.0028 ppm	0.3600%	2020/04/05 10:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7916	7.9161	12.91	16.88	3.97	50.09	10:27
2	TOC	0.7876	7.8760	12.88	16.87	3.99	50.08	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K2002730-003.01	0.6405 ppm	0.0134 ppm	2.0900%	2020/04/05 10:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6310	6.3102	11.83	15.66	3.83	50.07	10:29
2	TOC	0.6499	6.4990	11.96	15.80	3.84	50.05	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K2002730-004.01	1.0435 ppm	0.0034 ppm	0.3200%	2020/04/05 11:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0411	10.4113	14.59	18.47	3.88	50.04	10:26
2	TOC	1.0459	10.4589	14.62	18.46	3.84	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2761 ppm (PASS)	0.0000 ppm	0%	2020/04/05 11:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2761	242.7615	171.07	174.85	3.78	50.02	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0185 ppm (PASS)	0.0000 ppm	0%	2020/04/05 12:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0185	0.1850	7.94	11.86	3.92	50.00	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K2002730-005.01	0.8448 ppm	0.0342 ppm	4.0500%	2020/04/05 12:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8689	8.6894	13.43	17.34	3.91	49.99	10:29
2	TOC	0.8206	8.2061	13.11	17.08	3.97	49.97	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K2002730-006.01	1.6131 ppm	0.0287 ppm	1.7800%	2020/04/05 12:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5928	15.9281	18.30	22.08	3.78	49.96	10:28
2	TOC	1.6334	16.3340	18.57	22.45	3.88	49.94	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K2002730-007.01	0.9692 ppm	0.0213 ppm	2.2000%	2020/04/05 13:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9843	9.8433	14.21	17.97	3.76	49.94	10:26
2	TOC	0.9541	9.5414	14.00	17.91	3.90	49.91	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2002858-001.01	2.2161 ppm	0.0003 ppm	0.0100%	2020/04/05 13:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2163	22.1630	22.49	26.32	3.82	49.90	10:27
2	TOC	2.2159	22.1586	22.49	26.19	3.70	49.90	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2002855-001.01 400x	2.1744 ppm	0.0925 ppm	4.2600%	2020/04/05 14:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1089	21.0894	21.77	25.54	3.77	49.88	10:33
2	TOC	2.2398	22.3980	22.65	26.38	3.73	49.86	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	RB	0.0556 ppm	0.0730 ppm	131.1800%	2020/04/05 14:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1562	1.5622	8.64	12.25	3.61	49.84	10:26
2	TOC	0.0628	0.6284	8.01	11.94	3.93	49.84	10:26
3	TOC	0.0035	0.0351	7.61	11.39	3.77	49.84	10:26
4	TOC	0.0000	0.0000	7.45	11.29	3.84	49.85	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K2002876-001.02	0.0113 ppm	0.0106 ppm	93.8800%	2020/04/05 15:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0038	0.0380	7.61	11.65	4.03	49.82	10:29
2	TOC	0.0188	0.1882	7.72	11.66	3.94	49.82	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K2002883-001.01	0.3555 ppm	0.0446 ppm	12.5400%	2020/04/05 16:08

Rep	Base			Adjusted		Baseline	Pressure	Run

#	Analysis Type	ppm	µg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	0.3870	3.8700	10.19	13.98	3.79	49.79	10:26
2	TOC	0.3240	3.2395	9.77	13.73	3.96	49.80	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	K2002760-001.03 doc	1.3784 ppm	0.0196 ppm	1.4200%	2020/04/05 16:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3646	13.6455	16.76	20.62	3.85	49.80	10:27
2	TOC	1.3922	13.9221	16.95	20.81	3.86	49.78	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K2002760-001.03 ms doc	29.3580 ppm	0.0000 ppm	0.0000%	2020/04/05 17:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.3580	293.5798	205.02	208.83	3.81	49.77	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4110 ppm (PASS)	0.0000 ppm	0%	2020/04/05 17:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4110	244.1102	171.98	175.94	3.96	49.76	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm	0.0000 ppm	0%	2020/04/05 17:33

							(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.17	11.10	3.93	49.75	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/04/05 17:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.56	10.48	3.92	49.76	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	23.2228 ppm (PASS)	0.0000 ppm	0%	2020/04/05 18:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.2228	232.2276	163.99	167.94	3.95	49.77	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K2002760-002.04 doc	1.3978 ppm	0.0127 ppm	0.9100%	2020/04/05 18:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4068	14.0678	17.05	21.20	4.15	49.77	10:29
2	TOC	1.3888	13.8879	16.93	20.82	3.90	49.79	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC)	CAS_salt_010711	CAS_salt_010711

(v1370) (v4) (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2201 ppm (PASS)	0.0000 ppm	0%	2020/04/05 18:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2201	242.2009	170.70	174.61	3.91	49.78	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/04/05 19:00

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.06	10.84	3.78	49.80	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1369	0.8713	0.5640	0.0000	0.0000	0.0000	2020/04/01 15:25	Fusion1 (Fusion1)
v1370	2.7630	1.5170	0.0000	0.0000	0.0000	2020/04/04 22:09	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v32
Ver Creation: 2020/03/11 15:55
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC

Calibration curve formula: TOC: y = 6.725x + 7.818
r^2 value: TOC: r^2 = 0.99921

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	5.8640	0.0000		2020/03/11 14:28
0.500 ppm	9.5210	0.5000		2020/03/11 14:42
1.0 ppm	12.5930	1.0000		2020/03/11 14:56
5.0 ppm	40.5270	5.0000		2020/03/11 15:10
10 ppm	79.5310	10.0000		2020/03/11 15:25
25 ppm	181.4610	25.0000		2020/03/11 15:39
50 ppm	340.5610	50.0000		2020/03/11 15:53

Methods

Name: CAS_salt_010711 (TOC)

Version: v4
Ver Creation: 2019/02/21 17:57
Comment:

Operator: Fusion1 (Fusion1)

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0

LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/04/05 19:15

ALS Environmental

StarLIMS Run: 675808, 675809, 675810

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/11/2020

ICAL ID: 19-GEN-8-7-E->J

ICS ID: 19-GEN-8-4-G

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-11-J

21 % H3PO4: 19-GEN-08-10-G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BCP	Date Analyzed: 4/4/20
Reviewed By:	Date Reviewed: 4/8/20

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 2009235; 2009423

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2366 (260406)

General Set Information: There were fourteen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field samples 2009235003/04 were re-analyzed and reported from 1:10 dilutions. Samples 2009235005 and 2009423001/02 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:10. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 702142) was less than 1/2 the CRDL. The recovery for the LCS (702139) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on samples 2009235006/07 (Client ID: 16WW29-200330). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MSD (2009235007) failed QC acceptance criteria for percent recovery. The relative percent difference (RPD) passed acceptance criteria. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 702140) is reported from the analysis of the Laboratory Control Sample (LCS – 702139) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafiles 09APRD09/11/12.

Thomas Bosch — Analyst
April 10, 2020 — Date

ANALYTICAL REPORT

Report Date: April 10, 2020

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-2009235**
Project ID: HS20031299
Purchase Order: HS20031299
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
16WW30-200330	2009235001	03/30/20	04/01/20	
16WW29-200330	2009235002	03/30/20	04/01/20	
16WW48-200330	2009235003	03/30/20	04/01/20	
16WW48-200330-FD	2009235004	03/30/20	04/01/20	
16EW05-200330	2009235005	03/30/20	04/01/20	

Client QC ID *	Lab ID	Collect Date	Receive Date	Sampling Site
16WW29-200330MS	2009235006	03/30/20	04/01/20	
16WW29-200330MSD	2009235007	03/30/20	04/01/20	

***Client QC is reported as part of the Quality Control results report, if requested.**

ANALYTICAL REPORT

Workorder: 34-2009235
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16WW30-200330** | Sampling Site: NA | Collected: 03/30/2020
Lab ID: 2009235001 | Media: 125 mL Nalgene | Received: 04/01/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 09:38 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW29-200330** | Sampling Site: NA | Collected: 03/30/2020
Lab ID: 2009235002 | Media: 125 mL Nalgene | Received: 04/01/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 09:52 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW48-200330** | Sampling Site: NA | Collected: 03/30/2020
Lab ID: 2009235003 | Media: 125 mL Nalgene | Received: 04/01/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 13:08 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**120**	10	20	40	10	

Sample ID: **16WW48-200330-FD** | Sampling Site: NA | Collected: 03/30/2020
Lab ID: 2009235004 | Media: 125 mL Nalgene | Received: 04/01/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 13:22 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**110**	10	20	40	10	

ANALYTICAL REPORT

Workorder: 34-2009235
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16EW05-200330**	Sampling Site: NA	Collected: 03/30/2020
Lab ID: 2009235005	Media: 125 mL Nalgene	Received: 04/01/2020
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2366 (HBN: 260406)	**%Solids:** NA
	Analyzed: 04/09/2020 13:36	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	10	20	40	10	U

Comments

Quality Control: EPA 6850, DoD QSM - (HBN: 260406)

. Field samples 2009235003/04 were re-analyzed and reported from 1:10 dilutions. Samples 2009235005 and 2009423001/02 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:10. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 04/10/2020 14:03	/S/ Stephen Brose 04/10/2020 22:28

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-2009235
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
The following was provided by the client: Sample ID, Collection Date, Sampling Location, Media Type, Sampling Parameter.
Collection Date, Media Type, and Sampling Parameter can potentially affect the validity of the results.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L20-57	http://www.pjlabs.com
	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L20-59	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 2009235

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2366 (HBN: 260406)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 702142
Analyzed: 04/09/2020 09:24
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 702139
Analyzed: 04/09/2020 08:56
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.43	3.00	114	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	2009235002	**MS:**	2009235006	**MSD:**	2009235007
Analyzed:	04/09/2020 09:52	**Analyzed:**	04/09/2020 10:48	**Analyzed:**	04/09/2020 11:02
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result		% Rec	RPD	QC Limits	
Perchlorate	ND	2.47	3	82.2	78.8	123.8	2.12	#	70.6	15.2	0.0	20.0

Comments

. Field samples 2009235003/04 were re-analyzed and reported from 1:10 dilutions. Samples 2009235005 and 2009423001/02 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:10. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
04/10/2020 14:03	04/10/2020 22:28

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable





10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 13605**

2009235

SUBCONTRACT TO:

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20031299
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20031299-01**	**16WW30-200330**	**Groundwater**	**30 Mar 2020 08:55**
	SUB_Perch-6850			08 Apr 2020
2.	**HS20031299-02**	**16WW29-200330**	**Groundwater**	**30 Mar 2020 09:45**
	SUB_Perch-6850			08 Apr 2020
3.	**HS20031299-03**	**16WW48-200330**	**Groundwater**	**30 Mar 2020 10:55**
	SUB_Perch-6850			08 Apr 2020
4.	**HS20031299-04**	**16WW48-200330-FD**	**Groundwater**	**30 Mar 2020 10:55**
	SUB_Perch-6850			08 Apr 2020
5.	**HS20031299-05**	**16EW05-200330**	**Groundwater**	**30 Mar 2020 12:15**
	SUB_Perch-6850			08 Apr 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS20031299-02 MS/MSD

QC Level: DOD IV (DoD Data Package)

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13605**

Relinquished By: _____ Date/Time: 3/31/2020 1800

Received By: _____ Date/Time: 4.1.2020 0907

Cooler ID(s): _____ Temperature(s): _____

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS20031299	***Split:***	**Workorder ID:** 2009235	**Level:** ENV_LVL4
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly
Comments:			**Preservatives**

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis: EPA 8850, DoD QSM	COOL
1	03/30/2020 08:55	16WW30-200330	2009235001		Water	A	1	A	
2	03/30/2020 09:45	16WW29-200330	2009235002		Water	A	1	A	
3	03/30/2020 10:55	16WW48-200330	2009235003		Water	A	1	A	
4	03/30/2020 10:55	16WW48-200330-FD	2009235004	FLDDUP	Water	A	1	A	
5	03/30/2020 12:15	16EW05-200330	2009235005		Water	A	1	A	
6	03/30/2020 09:45	16WW29-200330MS	2009235006	MS	Water	A	1	A	
7	03/30/2020 09:45	16WW29-200330MSD	2009235007	MSD	Water	A	1	A	

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	04/01/2020 09:07	ALS Sample Receiving	Sample Login
Julie Warath 4.1.20 1105		13B	storage
R.33.1 4.07.20/11:05		T Boad	CLP analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS HOUSTON

Project/Task/Site: HS20031299

Date/Time of Receipt: 4.1.2020 0907

Number of Coolers Received: 1

2009235

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	GOOD	2 °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: [signature] (Signature) GAYLEEN COATES (Printed Name) 4.1.2020 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.doc

Revised 01/01/2018



Part # 156460-434 Rev2 Exp 12/20

ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 31MAR20
ACTWGT: 14.65 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS20031299 - RJ

551C3/9C25/104C

FedEx Express

J181118B0501UV

WED - 01 APR 3:00P
STANDARD OVERNIGHT

TRK# 0201 1251 0296 0090

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2366
Rule: EPA 6850, DoD QSM Water

Created: 4/9/2020 07:49
Analyst: T. Bosch

Instrument:
Status: WP

HBN: 260406

Workorder: 2009235 [ENV_LVL4]
Workorder: 2009423 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	702138	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	
2	702139	LCS for HBN 260406 [ELMS/2366]				LCS	3		E6850Q413Q	5311		4/14/2020	
3	702140	RLVS for HBN 260406 [ELMS/2366				RLVS	3		E685041C3Q	5311		4/14/2020	
4	702141	ICS for HBN 260406 [ELMS/2366]				ICS	3		E6850..D3Q	5311		4/14/2020	
5	702142	LMB for HBN 260406 [ELMS/2366]				LMB	3		E6850Q413Q	5311		4/14/2020	
6	2009235001	16WW30-200330				SAMPLE	3	2009235001-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
7	2009235002	16WW29-200330				SAMPLE	3	2009235002-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
8	2009235003	16WW48-200330				SAMPLE	3	2009235003-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
9	2009235004	16WW48-200330-FD				FLDDUP	3	2009235004-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
10	2009235005	16EW05-200330				SAMPLE	3	2009235005-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
11	2009235006	16WW29-200330MS				MS	3	2009235006-A	E6850Q413Q	5480		4/14/2020	
12	2009235007	16WW29-200330MSD				MSD	3	2009235007-A	E6850Q413Q	5480		4/14/2020	
13	2009423001	16EW08-200331				SAMPLE	3	2009423001-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
14	2009423002	16WW23-200331				SAMPLE	3	2009423002-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
15	2009423003	16WW24-200331				SAMPLE	3	2009423003-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
16	702143	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	
17	2009423004	16WW24-200331-FD				FLDDUP	3	2009423004-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
18	2009423005	16SW-03-200331				FLDDUP	3	2009423005-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
19	2009423006	16SW-02-200331				FLDDUP	3	2009423006-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
20	2009423007	16SW-01-200331				FLDDUP	3	2009423007-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
21	702144	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	
22	702250	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	
23	702251	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 2009235 (001-07); 2009423 (001-07)
ELMS Batch/HBN ID: 2366 (260406)
Prep Date: 04/07/2020 Analysis Date: 04/09,10/2020 Analyst: Tom Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2020\APR\09APR20D.s & 10APR20D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Tom Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution (ISTD) Horizon# 49946. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 10 Injection Volume: 40µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 52814 was used for LCS 702139; Target = 3.0µg/L. ASTM type II water was used for LMB 702142.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on samples 2009235006/07 (Client ID: 16WW29-200330). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field samples 2009235003/04 were re-analyzed and reported from 1:10 dilutions. Samples 2009235005 and 2009423001/02 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:10. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The MSD (2009235007) failed QC acceptance criteria for percent recovery. The relative percent difference (RPD) passed acceptance criteria. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2020\APR\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2020\DOD\260406-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 702140) is reported from the analysis of the Laboratory Control Sample (LCS – 702139) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafiles 09APRD09/11/12.

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELNS: 2366 HBN: 260406 **Sample Set IDs if Applicable:** 2009235/2009423	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SA
Standards traceability checked and meets criteria	TB	SA
Standard curve coefficients evaluated and meet criteria	TB	SA
ICVs analyzed and meet acceptance criteria	TB	SA
CCVs analyzed and meet acceptance criteria	TB	SA
Retention Time Windows checked	TB	SA
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SA
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SA
RLVS analyzed	TB	SA
Preparation and analysis hold times met	TB	SA
Preparation deviations and re-preparations noted when performed	TB	SA
Analysis deviations and re-analyses noted when performed	TB	SA
Sample dilution factors noted on reports	TB	SA
Electronic records in HBN transcription accuracy and completeness	TB	SA
Preparation and analysis calculations checked	TB	SA
NCRs are completed as necessary NC/CAR#_____	TB	SA
Report forms are complete and accurate	TB	SA
Manual integrations checked	TB	SA

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK — **Description - Perchlorate ISTD Wrk 1,000ug/L**

Standard:	**49946**	**Created By:**	Thomas Bosch	**Amount:**	25 mL
MFG:	ALS/SLC	**Create Date:**	09/23/2019 03:09PM	**Expires:**	09/19/2020
MFG Lot:	TNB: 09/20/2019	**Verified By:**	Thomas Bosch	**Usable:**	Yes
Pipette ID:	Not Provided	**Verify Date:**		**Lab Lot:**	CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		**Description - 6850 Stock AccStd 1,000ug/mL**
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT	**Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 49947 **Created By:** Thomas Bosch **Amount:** 10 mL
MFG: ALS/SLC **Create Date:** 09/23/2019 03:09PM **Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019 **Usable:** Yes
Pipette ID: Not Provided **Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	**Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT		Description - 6850 QC Intrmdt Std-QC 10ug/mL
Standard: 47515	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

125 Market Street
New Haven, CT 06513
USA

AccuStandard®

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Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.

The final solution was checked against an independent standard to verify its concentration.

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.

All solutions are filtered through a 0.2 µm filter prior to being bottled.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary

Meigan O'Leary, Inorganic QC Manager

Page 1 of 1

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ISO 9001 • ISO GUIDE 34 • ISO 17025 ULTRA

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

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ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013 **Lot Issue Date:** 29-Feb 2016
Lot Number: CP-0860 **Expiration Date:** 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (18O4, 90%+) 100 UG/ML IN WATER
Lot Number:	SDIH-016
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: * *For isotopically labeled compounds, MW listed is for the fully enriched product.*	130.44
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

$NaCl^{18}O_4$

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 52814	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 04/08/2020 10:04AM	**Expires:** 04/07/2021
MFG Lot: TNB: 04/08/2020		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L
2	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
52813	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	04/07/2021

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT		Description - 6850 QC Intrmdt Std-QC 10ug/mL
Standard: 52813	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 04/08/2020 10:04AM	**Expires:** 04/07/2021
MFG Lot: TNB: 04/08/2020		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
51761	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	09/30/2021

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O			Description - ASTM Type II Water
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L	
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025	
MFG Lot: Not Provided		**Usable:** Yes	
Part ID: Not Provided		**Lab Lot:** LAB 109	

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 51761
MFG: Agilent
MFG Lot: CR-3553
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 01/20/2020 01:01PM

Amount: 100 mL
Expires: 09/30/2021
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\09APR20D\09APR20S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	702138 CCV@25	Vial 71	1	Control	1	1.25461e6	7.317	25.21039
*	702139 LCS@3.	Vial 72	1	Control	2	1.82292e5	7.232	3.43425
*	702141 ICS@3.0	Vial 73	1	Control	3	1.14532e5	7.458	3.04031
*	702142 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2009235001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	2009235002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2009235003	Vial 77	1	Sample	7	5.74497e6	7.004	86.97786 D:1'05
*	2009235004	Vial 78	1	Sample	8	5.66332e6	6.969	90.84685
*	2009235005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	2009235006 MS	Vial 80	1	Sample	10	1.08189e5	7.022	2.46738
*	2009235007 MSD	Vial 81	1	Sample	11	9.77884e4	7.004	2.11905
*	2009423001	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	2009423002	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	2009423003	Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	702143 CCV@25	Vial 71	1	Control	15	1.12191e6	6.906	25.54068
*	2009423004	Vial 85	1	Sample	16	0.00000	0.000	0.00000
*	2009423005	Vial 86	1	Sample	17	0.00000	0.000	0.00000
*	2009423006	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*	2009423007	Vial 88	1	Sample	19	0.00000	0.000	0.00000
*	2009235003 10X	Vial 89	1	Sample	20	5.75574e5	6.777	121.25721
*	2009235004 10X	Vial 90	1	Sample	21	5.37023e5	6.769	110.28917
*	2009235005 10X	Vial 91	1	Sample	22	0.00000	0.000	0.00000
*	2009423001 10X	Vial 92	1	Sample	23	0.00000	0.000	0.00000
*	2009423002 10X	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	702144 CCV@25	Vial 71	1	Control	25	1.26488e6	6.713	26.06253

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	702138 CCV@25	Vial 71	1	Control	1	1.69898e5	7.343	5.00000
*	702139 LCS@3.	Vial 72	1	Control	2	1.95585e5	7.252	5.00000
*	702141 ICS@3.0	Vial 73	1	Control	3	1.38634e5	7.487	5.00000
*	702142 LMB	Vial 74	1	Control	4	2.01475e5	7.476	5.00000
*	2009235001	Vial 75	1	Sample	5	1.68635e5	7.457	5.00000
*	2009235002	Vial 76	1	Sample	6	1.29194e5	7.158	5.00000
*	2009235003	Vial 77	1	Sample	7	1.78998e5	7.031	5.00000
*	2009235004	Vial 78	1	Sample	8	1.66773e5	6.998	5.00000
*	2009235005	Vial 79	1	Sample	9	5617.33447 * NR	8.011	5.00000
*	2009235006 MS	Vial 80	1	Sample	10	1.60793e5	7.099	5.00000
*	2009235007 MSD	Vial 81	1	Sample	11	1.68588e5	7.008	5.00000
*	2009423001	Vial 82	1	Sample	12	1.46786e4 * NR	7.640	5.00000
*	2009423002	Vial 83	1	Sample	13	3.75010e5 * NR	6.893	5.00000
*	2009423003	Vial 84	1	Sample	14	1.91278e5	6.868	5.00000
*	702143 CCV@25	Vial 71	1	Control	15	1.49759e5	6.929	5.00000
*	2009423004	Vial 85	1	Sample	16	1.50790e5	6.755	5.00000
*	2009423005	Vial 86	1	Sample	17	1.73885e5	6.955	5.00000
*	2009423006	Vial 87	1	Sample	18	1.80346e5	6.967	5.00000
*	2009423007	Vial 88	1	Sample	19	1.63117e5	6.918	5.00000
*	2009235003 10X	Vial 89	1	Sample	20	1.70987e5	6.796	50.00000
*	2009235004 10X	Vial 90	1	Sample	21	1.76151e5	6.789	50.00000
*	2009235005 10X	Vial 91	1	Sample	22	2.19200e5	7.200	50.00000
*	2009423001 10X	Vial 92	1	Sample	23	2.67379e5 * NR	7.160	50.00000
*	2009423002 10X	Vial 93	1	Sample	24	1.91503e5	6.869	50.00000
*	702144 CCV@25	Vial 71	1	Control	25	1.65107e5	6.739	5.00000

* NR - NOT REPORTED. ISTD RECOVERIE FAIL 50-150% OF CCV ISTD

Batch Report: C:\HPCHEM\1\DATA\09APR20D\09APR20S.B

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	702138 CCV@25	Vial 71	1	Control	1	4.12302e5	7.333	26.99158
*	702139 LCS@3.	Vial 72	1	Control	2	6.27943e4	7.237	3.78958
*	702141 ICS@3.0	Vial 73	1	Control	3	4.25515e4	7.474	3.61835
*	702142 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2009235001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	2009235002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2009235003	Vial 77	1	Sample	7	1.74802e6	7.019	87.87916
*	2009235004	Vial 78	1	Sample	8	1.72503e6	6.984	91.90684
*	2009235005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	2009235006 MS	Vial 80	1	Sample	10	4.14318e4	7.033	3.01909
*	2009235007 MSD	Vial 81	1	Sample	11	4.29828e4	6.994	2.98597
*	2009423001	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	2009423002	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	2009423003	Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	702143 CCV@25	Vial 71	1	Control	15	3.56121e5	6.917	26.49761
*	2009423004	Vial 85	1	Sample	16	0.00000	0.000	0.00000
*	2009423005	Vial 86	1	Sample	17	0.00000	0.000	0.00000
*	2009423006	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*	2009423007	Vial 88	1	Sample	19	0.00000	0.000	0.00000
*	2009235003 10X	Vial 89	1	Sample	20	1.88018e5	6.790	128.68297
*	2009235004 10X	Vial 90	1	Sample	21	1.77385e5	6.777	118.23187
*	2009235005 10X	Vial 91	1	Sample	22	0.00000	0.000	0.00000
*	2009423001 10X	Vial 92	1	Sample	23	0.00000	0.000	0.00000
*	2009423002 10X	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	702144 CCV@25	Vial 71	1	Control	25	4.03640e5	6.725	27.17285

*** End of Report ***

Batch Report: C:\HPCHEM\1\DATA\10APR20D\10APR20S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	702250	CCV@25	Vial 71	1	Control	1	1.26293e6	6.573	25.86383
*	2009423001	10X	Vial 72	1	Sample	2	0.00000	0.000	0.00000
*	702251	CCV@25	Vial 71	1	Control	3	1.27356e6	6.544	26.27000

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	702250	CCV@25	Vial 71	1	Control	1	1.66255e5	6.597	5.00000
*	2009423001	10X	Vial 72	1	Sample	2	2.21088e5	7.112	50.00000
*	702251	CCV@25	Vial 71	1	Control	3	1.64787e5	6.563	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	702250	CCV@25	Vial 71	1	Control	1	3.99575e5	6.591	26.75518
*	2009423001	10X	Vial 72	1	Sample	2	0.00000	0.000	0.00000
*	702251	CCV@25	Vial 71	1	Control	3	4.04372e5	6.558	27.26558

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2020\APR\09APR20D.S

Sequence Table:

Method and Injection Info Part:

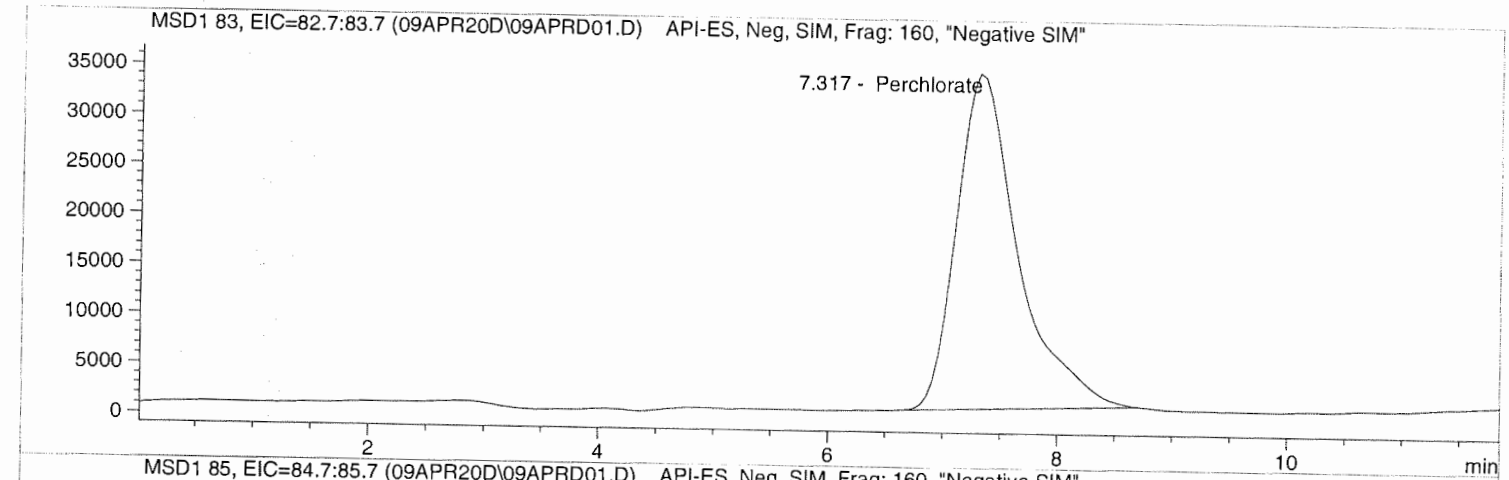
Line	Location	SampleName		Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	702138	CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	702139	LCS@3.	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	702141	ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	702142	LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	2009235001		CLO4-AQN	1	Sample		
6	Vial 76	2009235002		CLO4-AQN	1	Sample		
7	Vial 77	2009235003		CLO4-AQN	1	Sample		
8	Vial 78	2009235004		CLO4-AQN	1	Sample		
9	Vial 79	2009235005		CLO4-AQN	1	Sample		
10	Vial 80	2009235006	MS	CLO4-AQN	1	Sample		
11	Vial 81	2009235007	MSD	CLO4-AQN	1	Sample		
12	Vial 82	2009423001		CLO4-AQN	1	Sample		
13	Vial 83	2009423002		CLO4-AQN	1	Sample		
14	Vial 84	2009423003		CLO4-AQN	1	Sample		
15	Vial 71	702143	CCV@25	CLO4-AQN	1	Ctrl Samp		
16	Vial 85	2009423004		CLO4-AQN	1	Sample		
17	Vial 86	2009423005		CLO4-AQN	1	Sample		
18	Vial 87	2009423006		CLO4-AQN	1	Sample		
19	Vial 88	2009423007		CLO4-AQN	1	Sample		
20	Vial 89	2009235003	10X	CLO4-AQN	1	Sample		
21	Vial 90	2009235004	10X	CLO4-AQN	1	Sample		
22	Vial 91	2009235005	10X	CLO4-AQN	1	Sample		
23	Vial 92	2009423001	10X	CLO4-AQN	1	Sample		
24	Vial 93	2009423002	10X	CLO4-AQN	1	Sample		
25	Vial 71	702144	CCV@25	CLO4-AQN	1	Ctrl Samp		

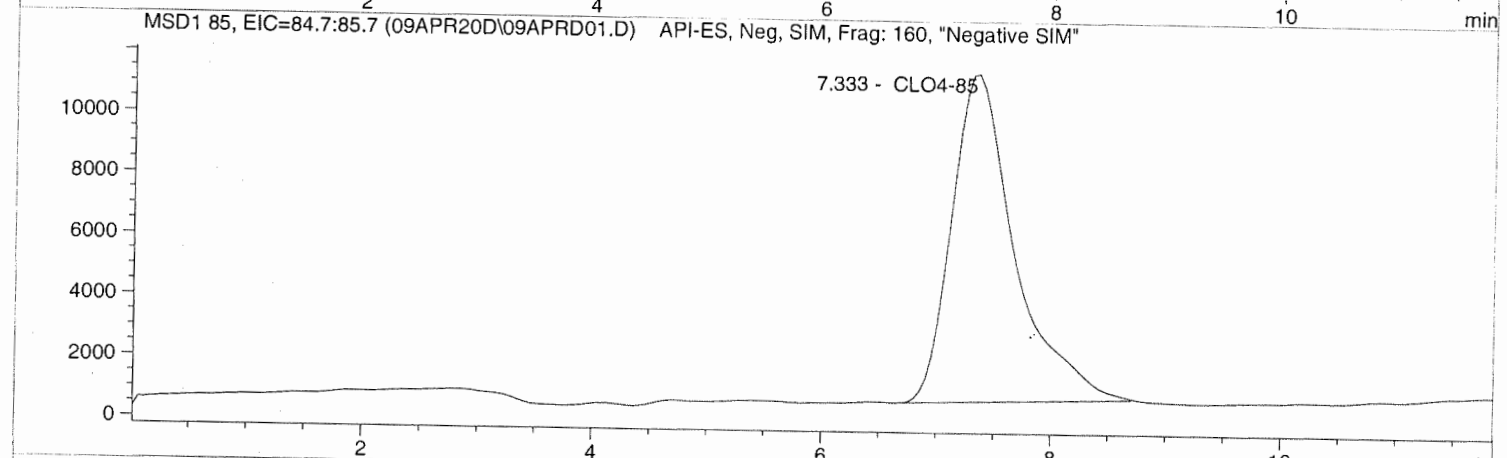
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD01.D Sample Name: 702138 CCV@25

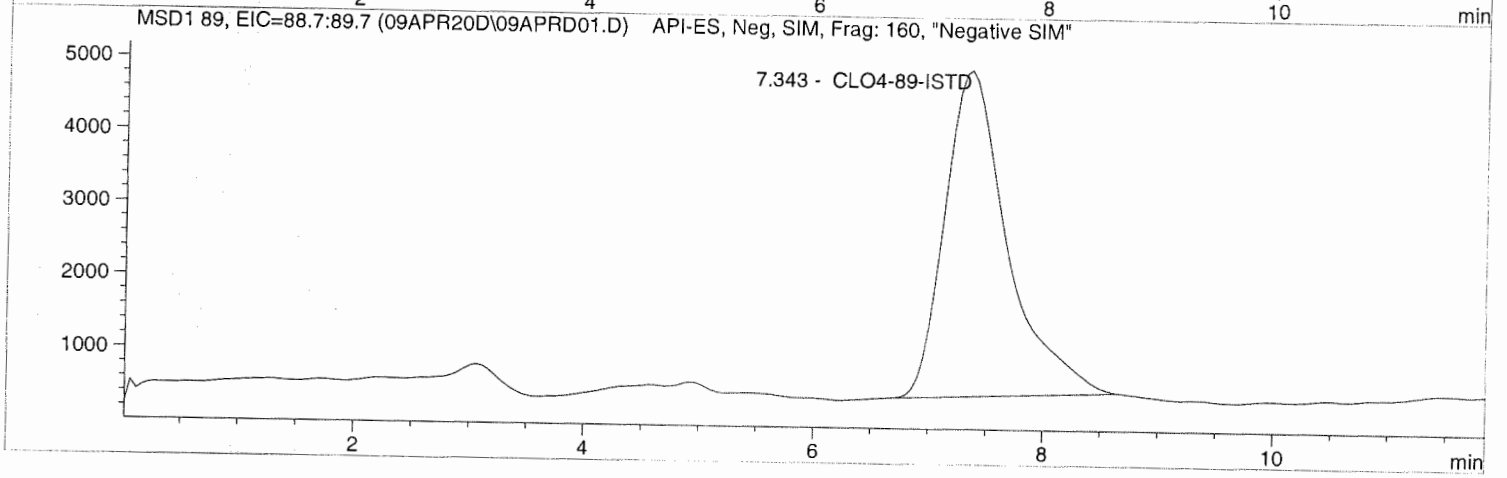
Injection Date:	4/09/2020 08:38:44	Seq Line:	1
Sample Name:	702138 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD01.D Sample Name: 702138 CCV@25

Injection Date:	4/09/2020 08:38:44	Seq Line:	1
Sample Name:	702138 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.317	PBA	1254613.4	25.2104	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.333	PBA	412302.4	26.9916	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.343	PBA	169897.6	5.0000	CLO4-89-ISTD

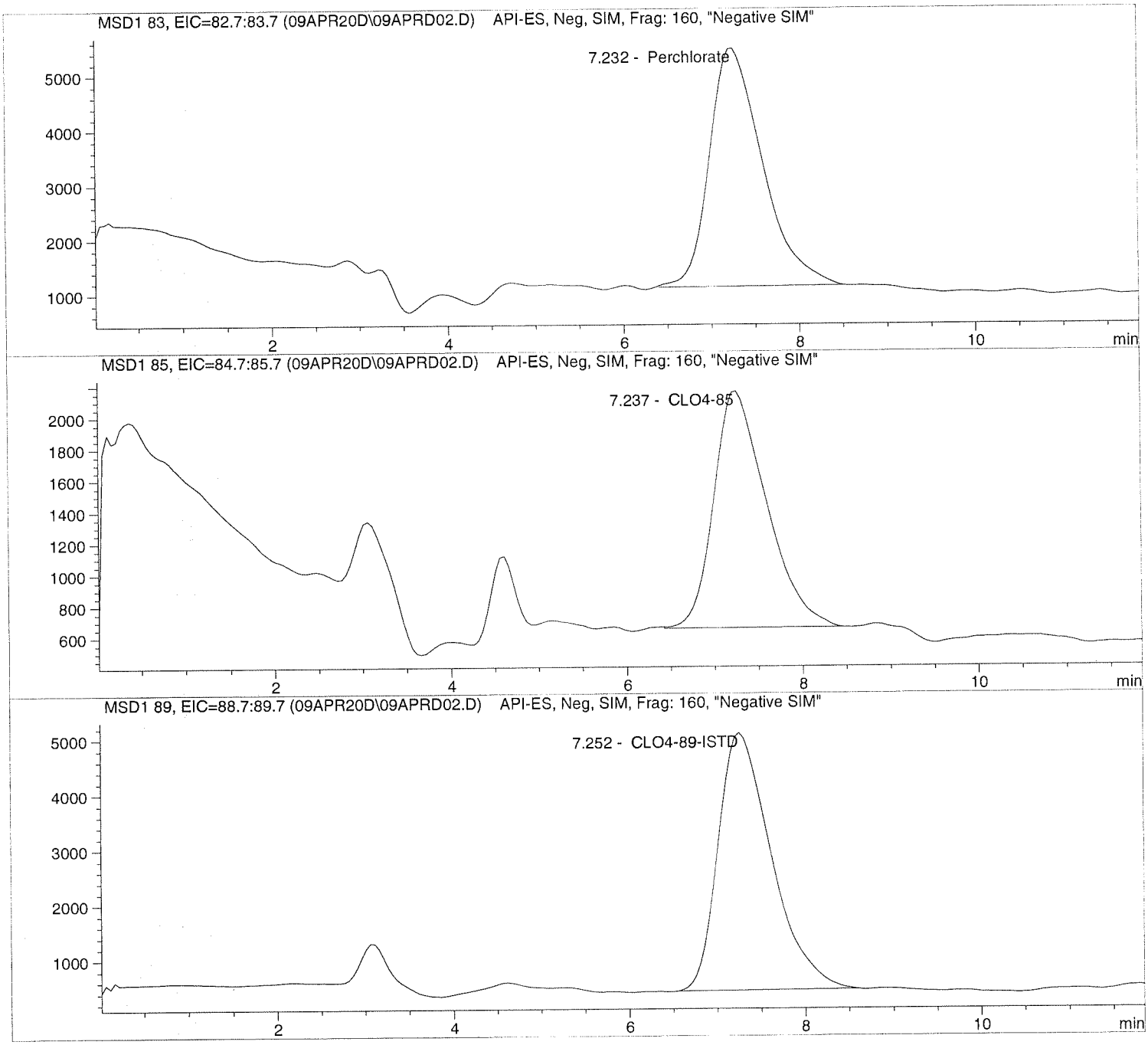
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD02.D Sample Name: 702139 LCS@3.

Injection Date:	4/09/2020 08:56:11	Seq Line:	2
Sample Name:	702139 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD02.D Sample Name: 702139 LCS@3.

Injection Date:	4/09/2020 08:56:11	Seq Line:	2
Sample Name:	702139 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.232	BBA	182292.2	3.4342	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.237	BBA	62794.3	3.7896	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.252	BBA	195585.3	5.0000	CLO4-89-ISTD

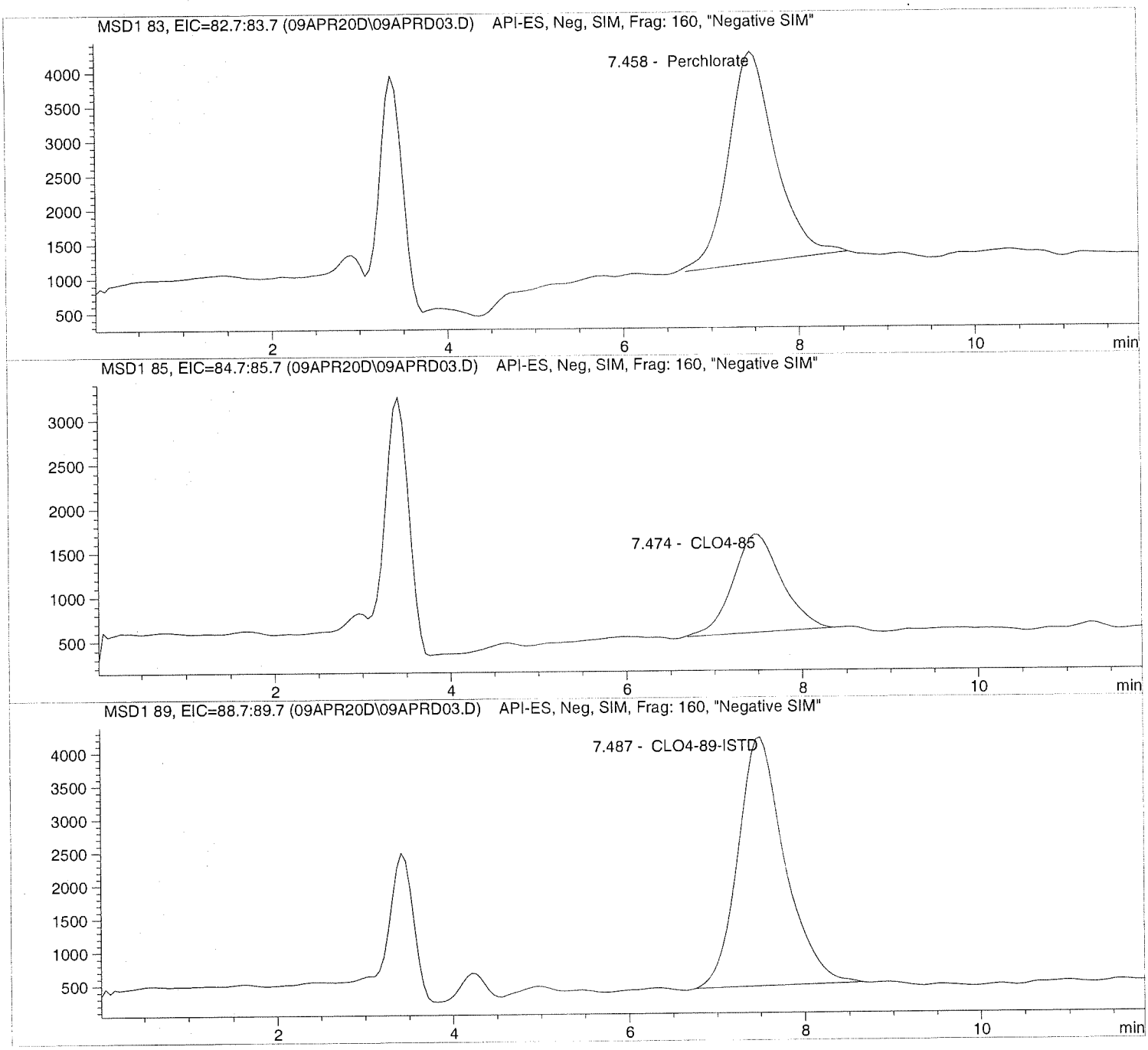
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD03.D Sample Name: 702141 ICS@3.0

Injection Date:	4/09/2020 09:10:09	Seq Line:	3
Sample Name:	702141 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD03.D Sample Name: 702141 ICS@3.0

Injection Date:	4/09/2020 09:10:09	Seq Line:	3
Sample Name:	702141 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.458	PBA	114532.4	3.0403	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.474	PBA	42551.5	3.6183	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.487	PBA	138633.5	5.0000	CLO4-89-ISTD

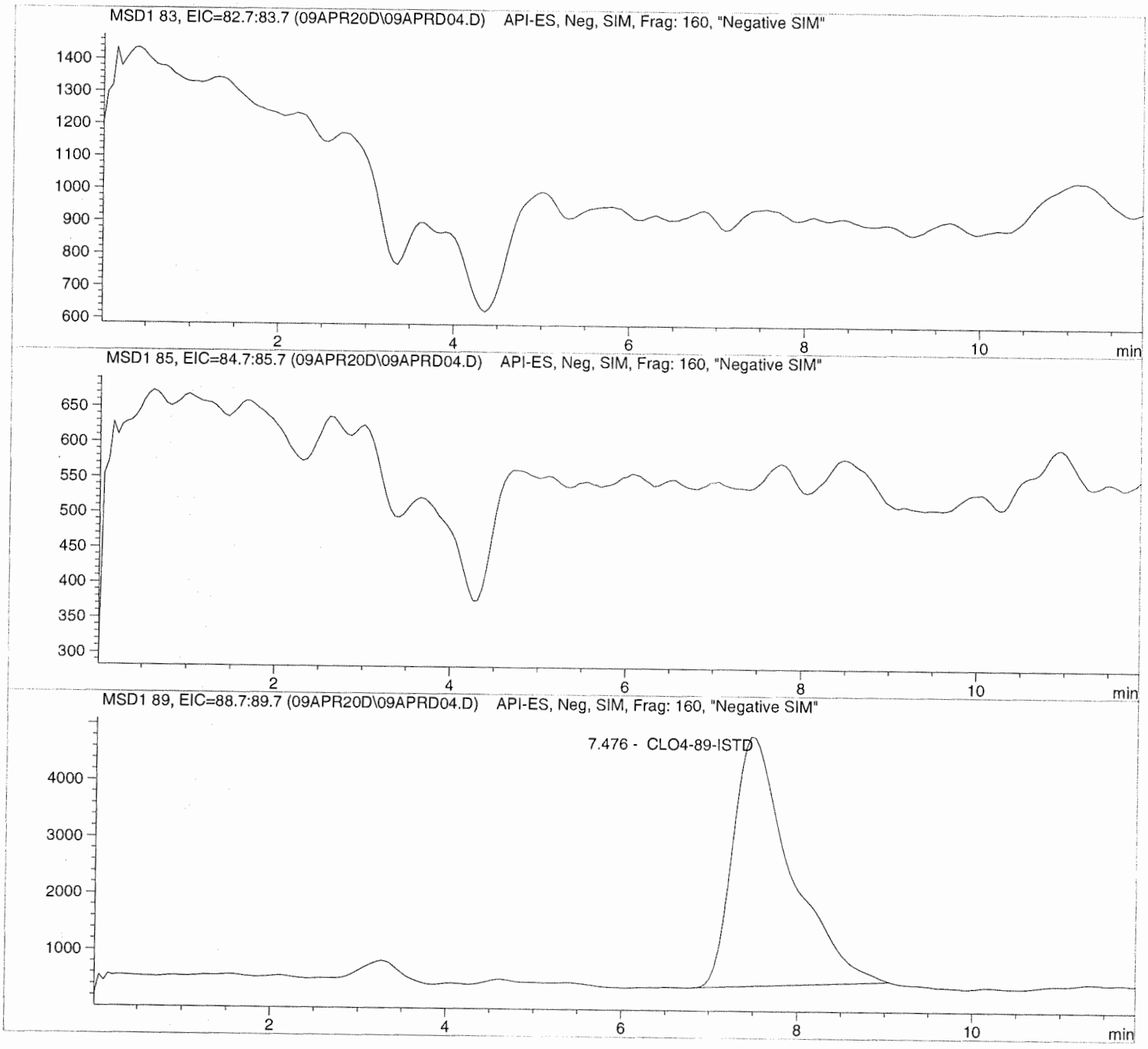
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD04.D Sample Name: 702142 LMB

Injection Date:	4/09/2020 09:24:11	Seq Line:	4
Sample Name:	702142 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD04.D Sample Name: 702142 LMB

Injection Date:	4/09/2020 09:24:11	Seq Line:	4
Sample Name:	702142 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.476	PBA	201475.1	5.0000	CLO4-89-ISTD

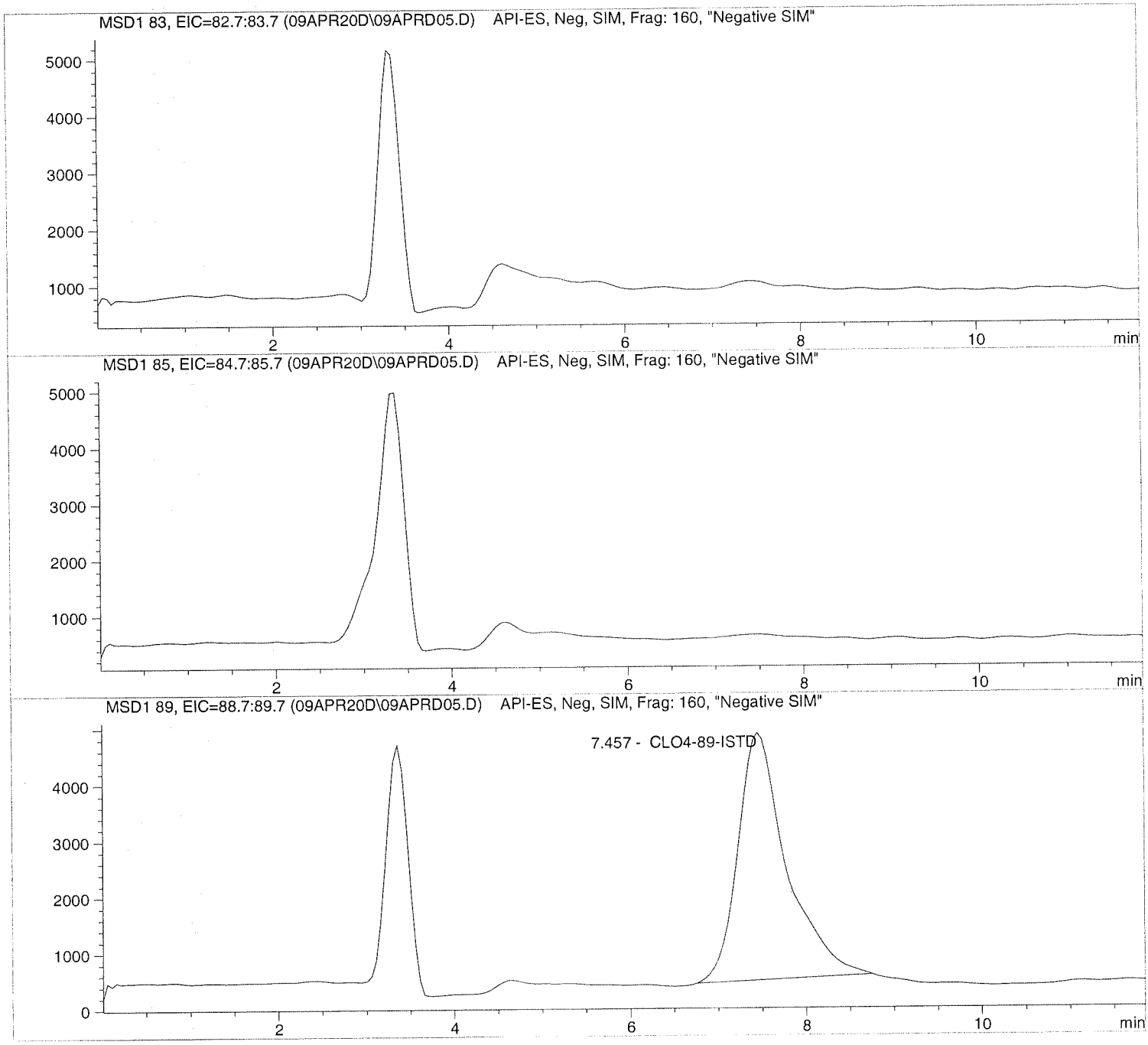
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD05.D Sample Name: 2009235001

Injection Date:	4/09/2020 09:38:09	Seq Line:	5
Sample Name:	2009235001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD05.D Sample Name: 2009235001

Injection Date:	4/09/2020 09:38:09	Seq Line:	5
Sample Name:	2009235001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.457	PBA	168634.7	5.0000	CLO4-89-ISTD

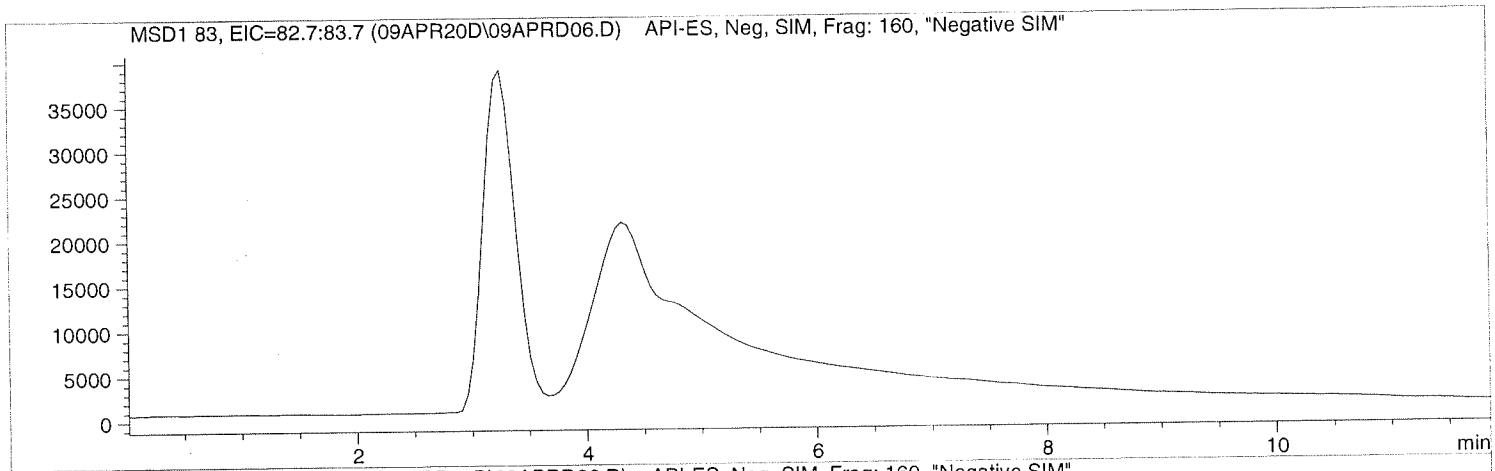
*** End of Report ***

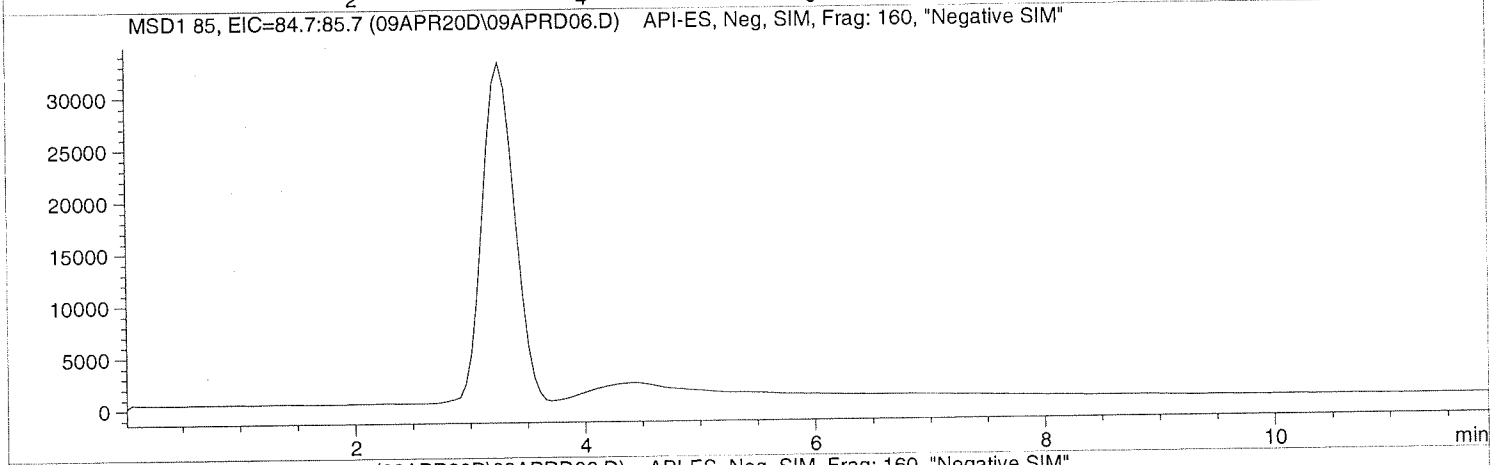
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD06.D Sample Name: 2009235002

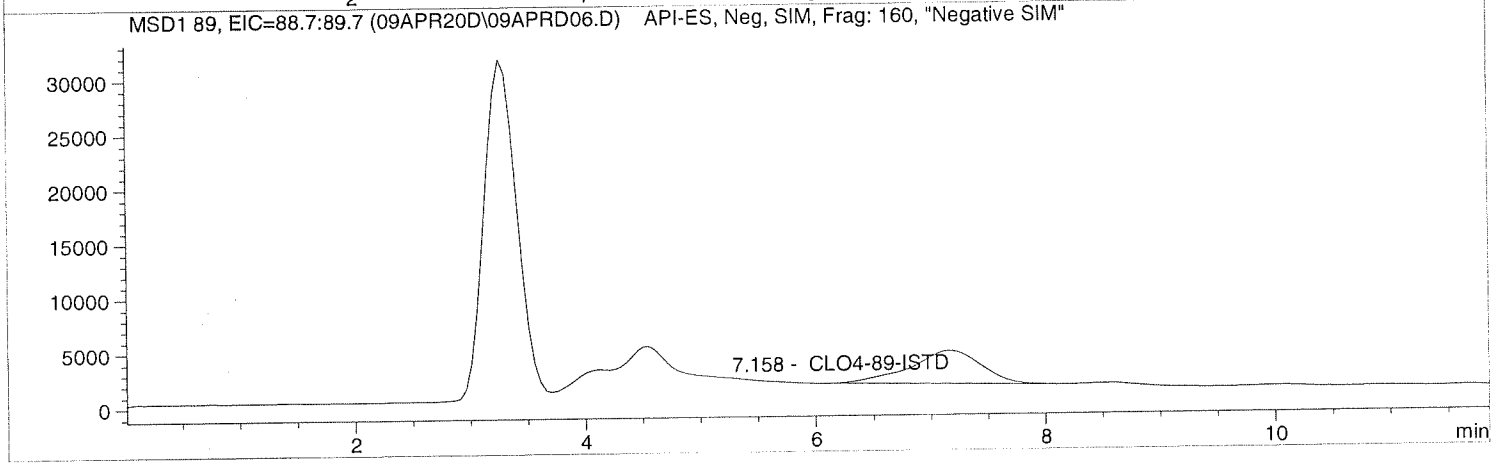
Injection Date:	4/09/2020 09:52:08	Seq Line:	6
Sample Name:	2009235002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD06.D Sample Name: 2009235002

Injection Date:	4/09/2020 09:52:08	Seq Line:	6
Sample Name:	2009235002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.158	PBA	129194.4	5.0000	CLO4-89-ISTD

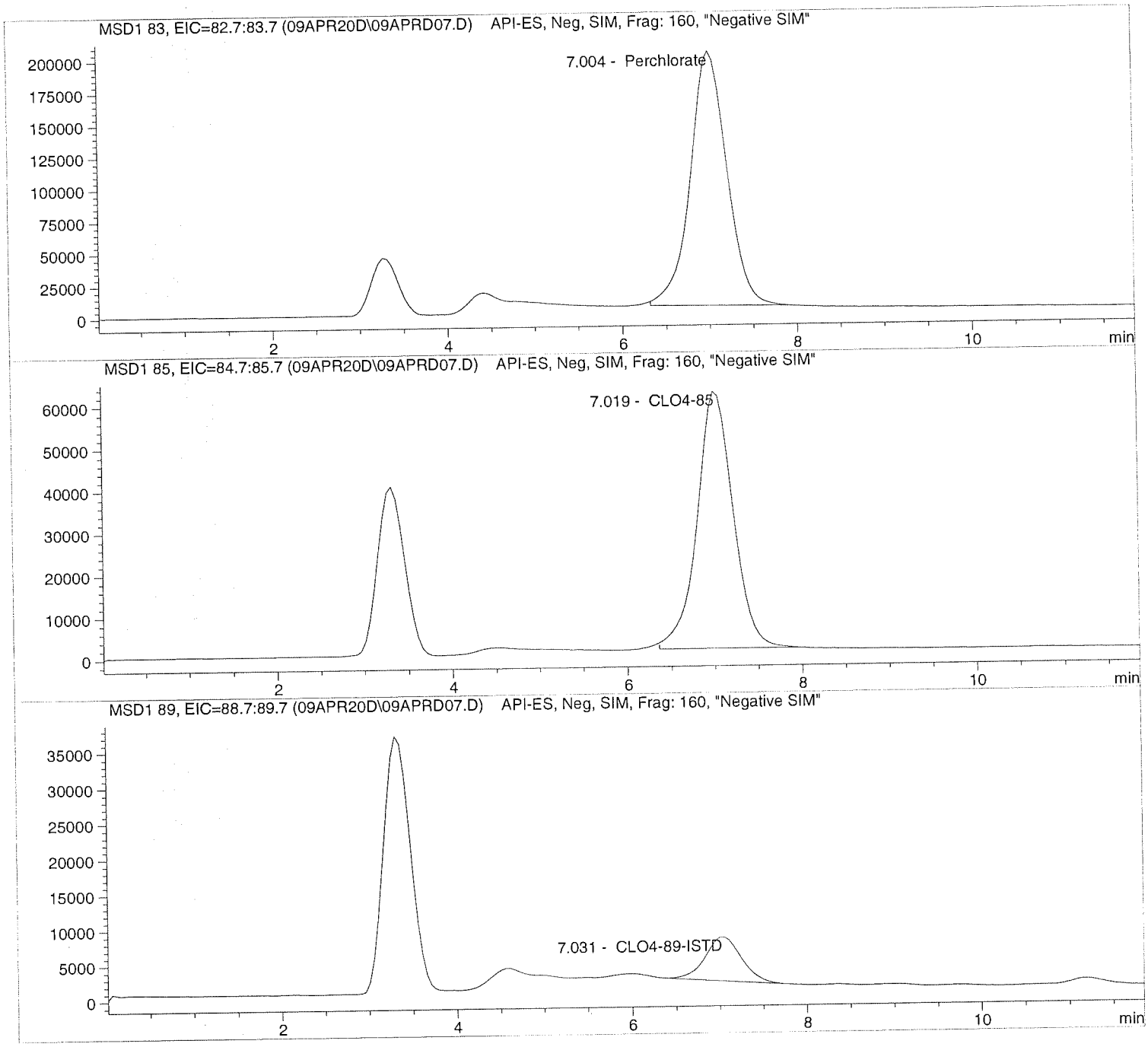
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD07.D Sample Name: 2009235003

Injection Date:	4/09/2020 10:06:45	Seq Line:	7
Sample Name:	2009235003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD07.D Sample Name: 2009235003

Injection Date:	4/09/2020 10:06:45	Seq Line:	7
Sample Name:	2009235003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.004	BBA	5744974.5	86.9779	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.019	BBA	1748019.1	87.8792	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.031	VBA	178998.2	5.0000	CLO4-89-ISTD

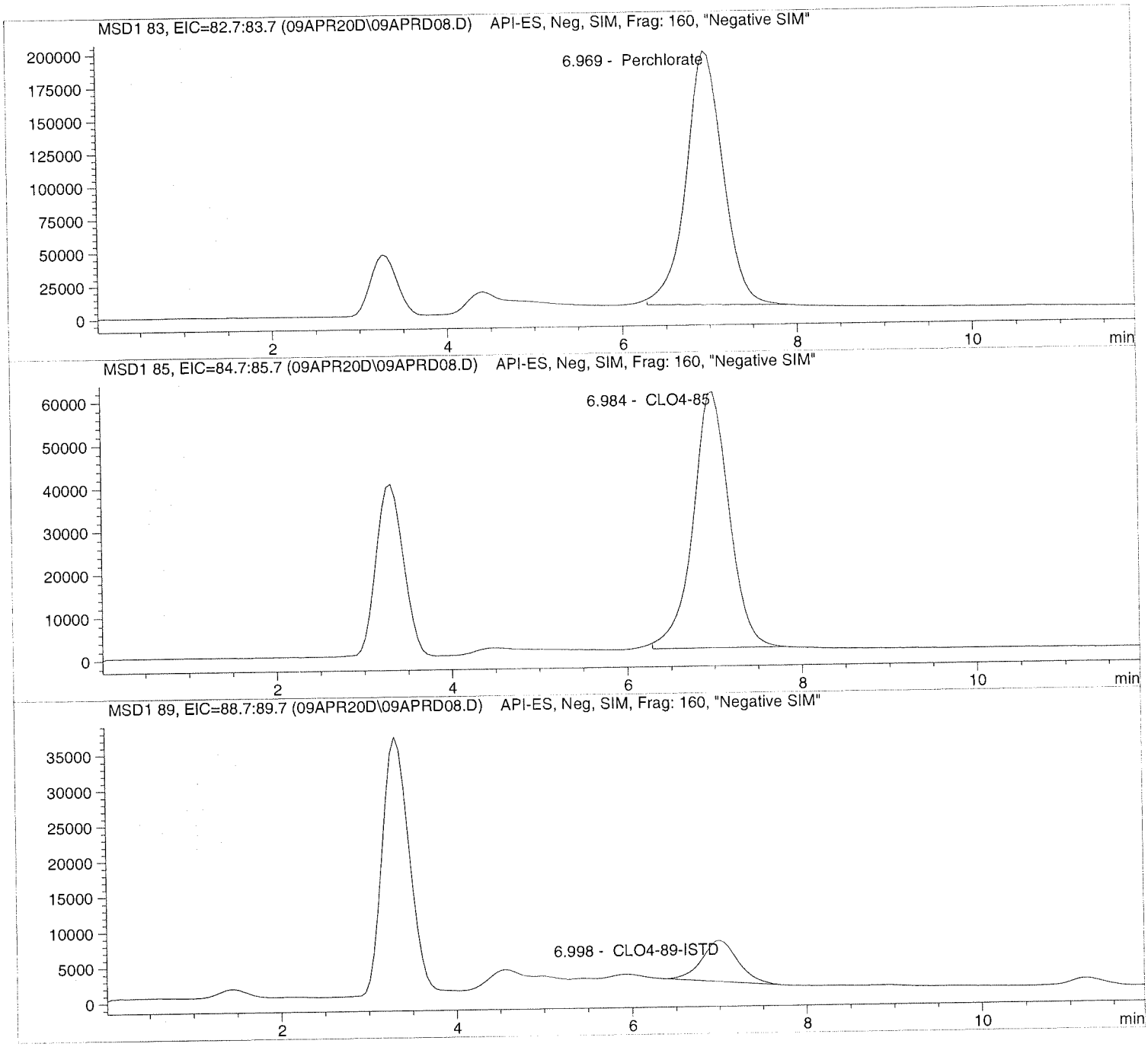
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD08.D Sample Name: 2009235004

Injection Date:	4/09/2020 10:20:44	Seq Line:	8
Sample Name:	2009235004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD08.D Sample Name: 2009235004

Injection Date:	4/09/2020 10:20:44	Seq Line:	8
Sample Name:	2009235004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.969	BBA	5663323.5	90.8468	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.984	BBA	1725030.6	91.9068	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.998	VBA	166772.7	5.0000	CLO4-89-ISTD

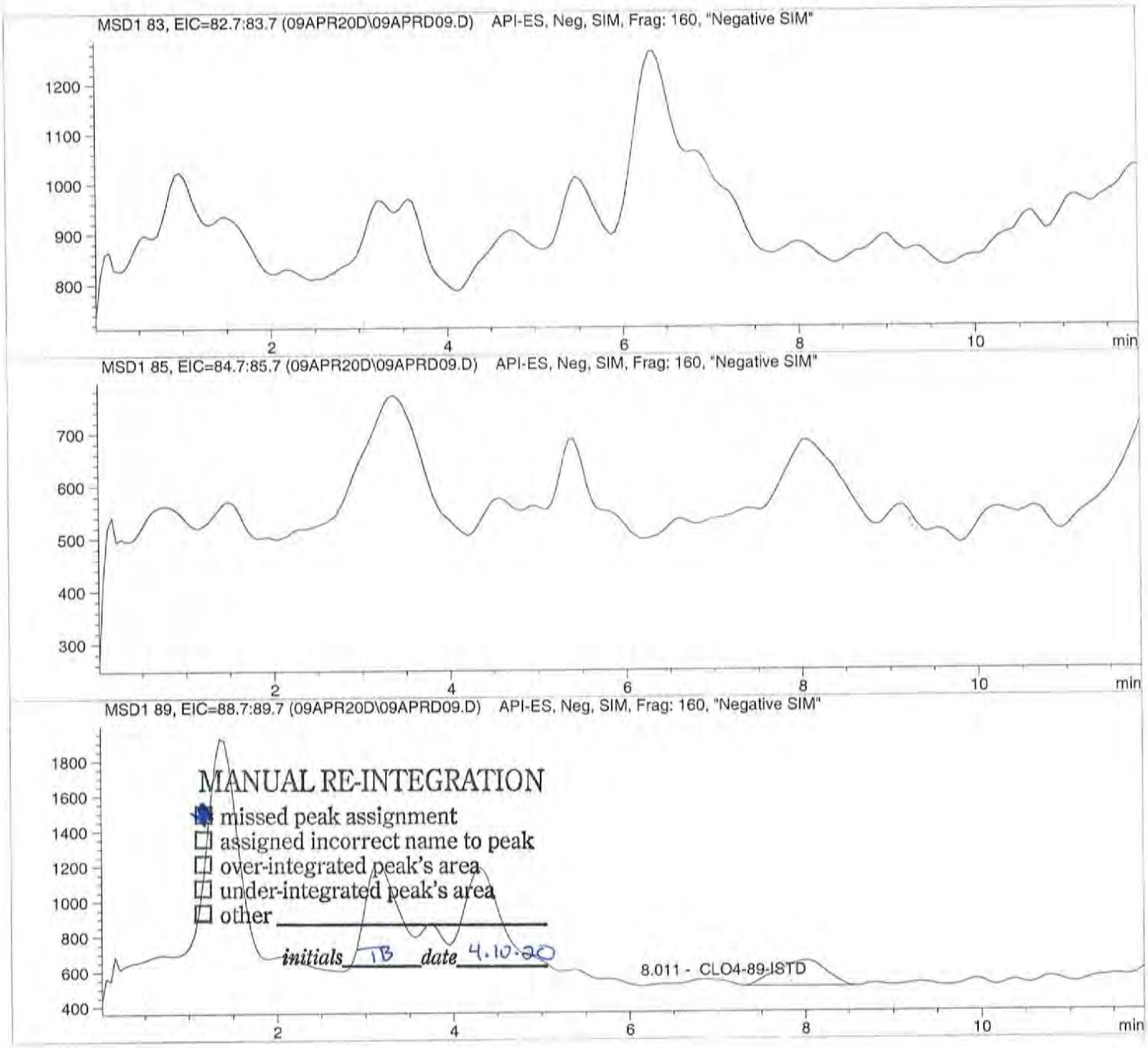
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD09.D Sample Name: 2009235005

Injection Date:	4/09/2020 10:34:44	Seq Line:	9
Sample Name:	2009235005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD09.D Sample Name: 2009235005

Injection Date:	4/09/2020 10:34:44	Seq Line:	9
Sample Name:	2009235005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.011	MM	5617.3	5.0000	CLO4-89-ISTD

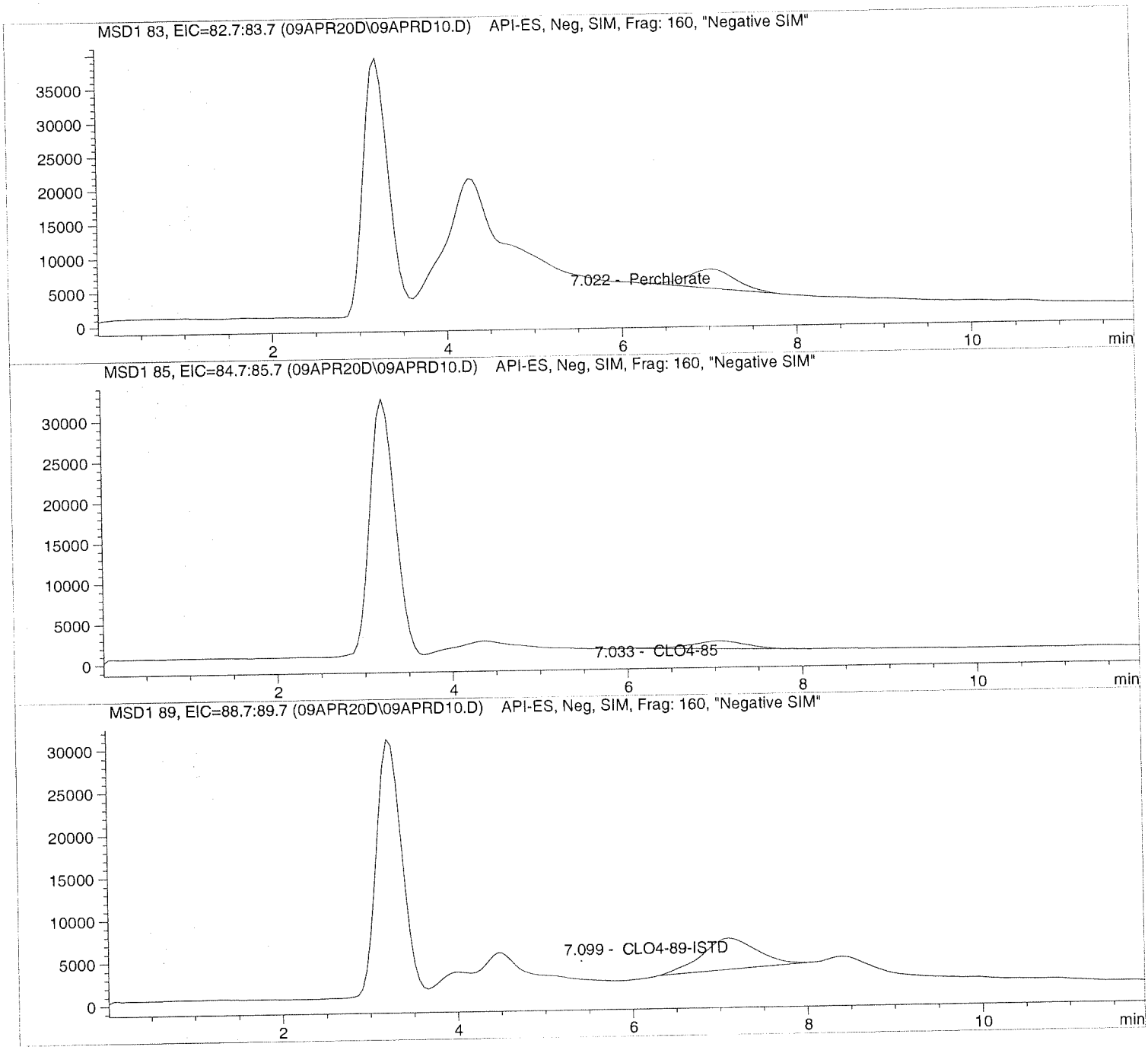
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD10.D Sample Name: 2009235006 MS

Injection Date:	4/09/2020 10:48:41	Seq Line:	10
Sample Name:	2009235006 MS	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD10.D Sample Name: 2009235006 MS

Injection Date:	4/09/2020 10:48:41	Seq Line:	10
Sample Name:	2009235006 MS	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.022	BBA	108189.3	2.4674	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.033	BBA	41431.8	3.0191	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.099	PB	160792.7	5.0000	CLO4-89-ISTD

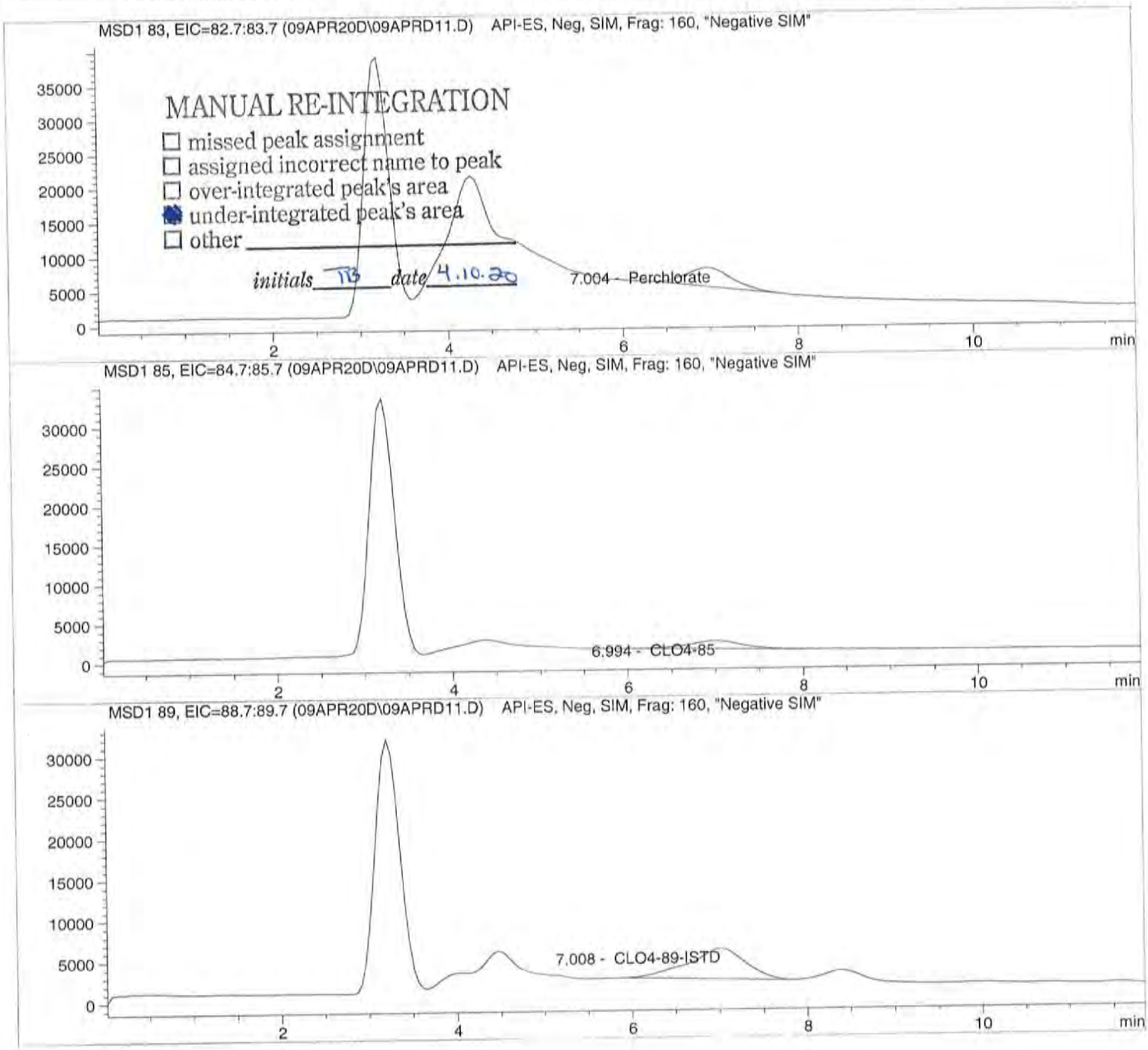
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD11.D Sample Name: 2009235007 MSD

Injection Date:	4/09/2020 11:02:39	Seq Line:	11
Sample Name:	2009235007 MSD	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD11.D Sample Name: 2009235007 MSD

Injection Date:	4/09/2020 11:02:39	Seq Line:	11
Sample Name:	2009235007 MSD	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.004	MM	97788.4	2.1190	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.994	PBA	42982.8	2.9860	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.008	PB	168588.4	5.0000	CLO4-89-ISTD

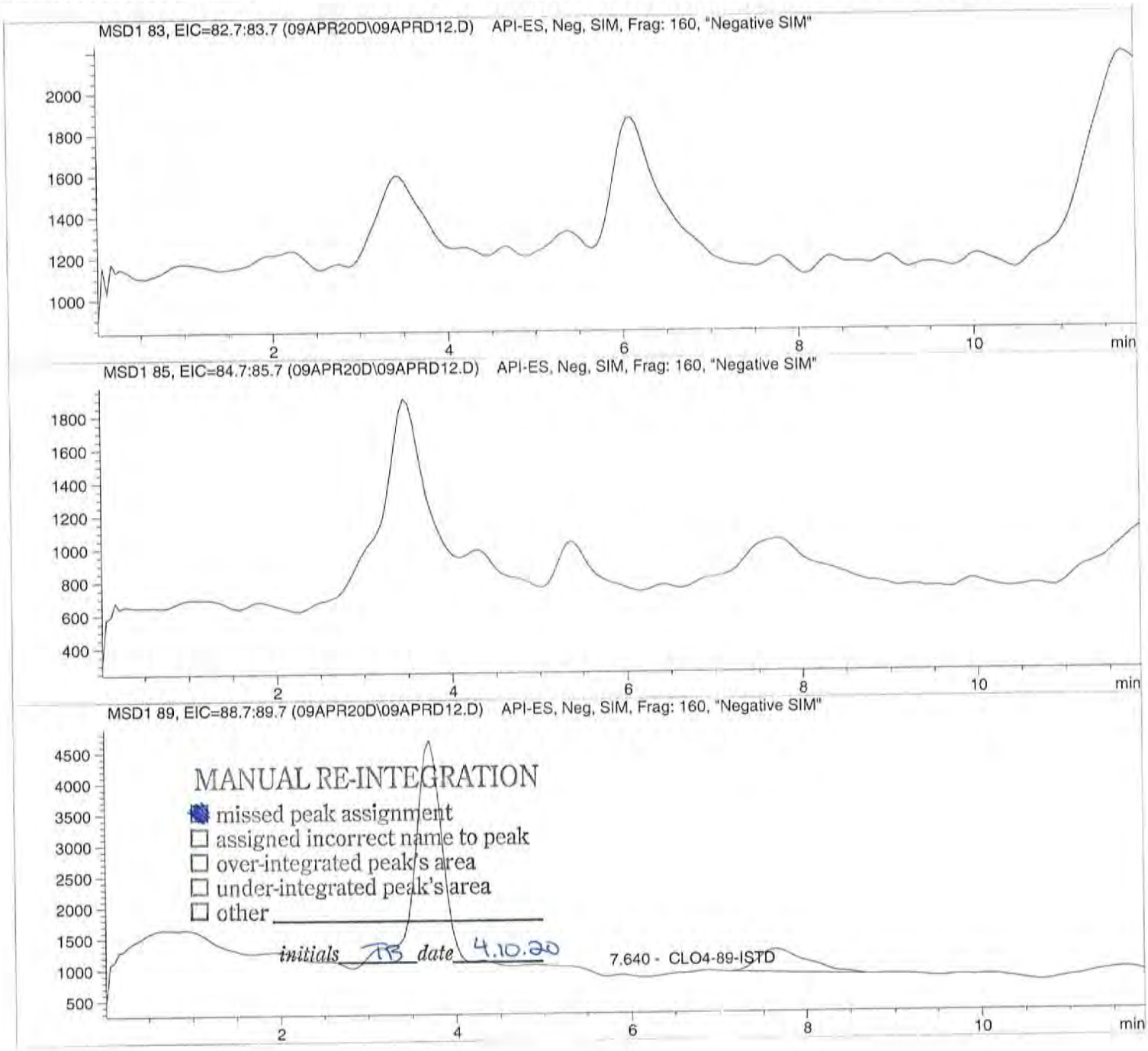
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD12.D Sample Name: 2009423001

Injection Date:	4/09/2020 11:16:34	Seq Line:	12
Sample Name:	2009423001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD12.D Sample Name: 2009423001

Injection Date:	4/09/2020 11:16:34	Seq Line:	12
Sample Name:	2009423001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.640	MM	14678.6	5.0000	CLO4-89-ISTD

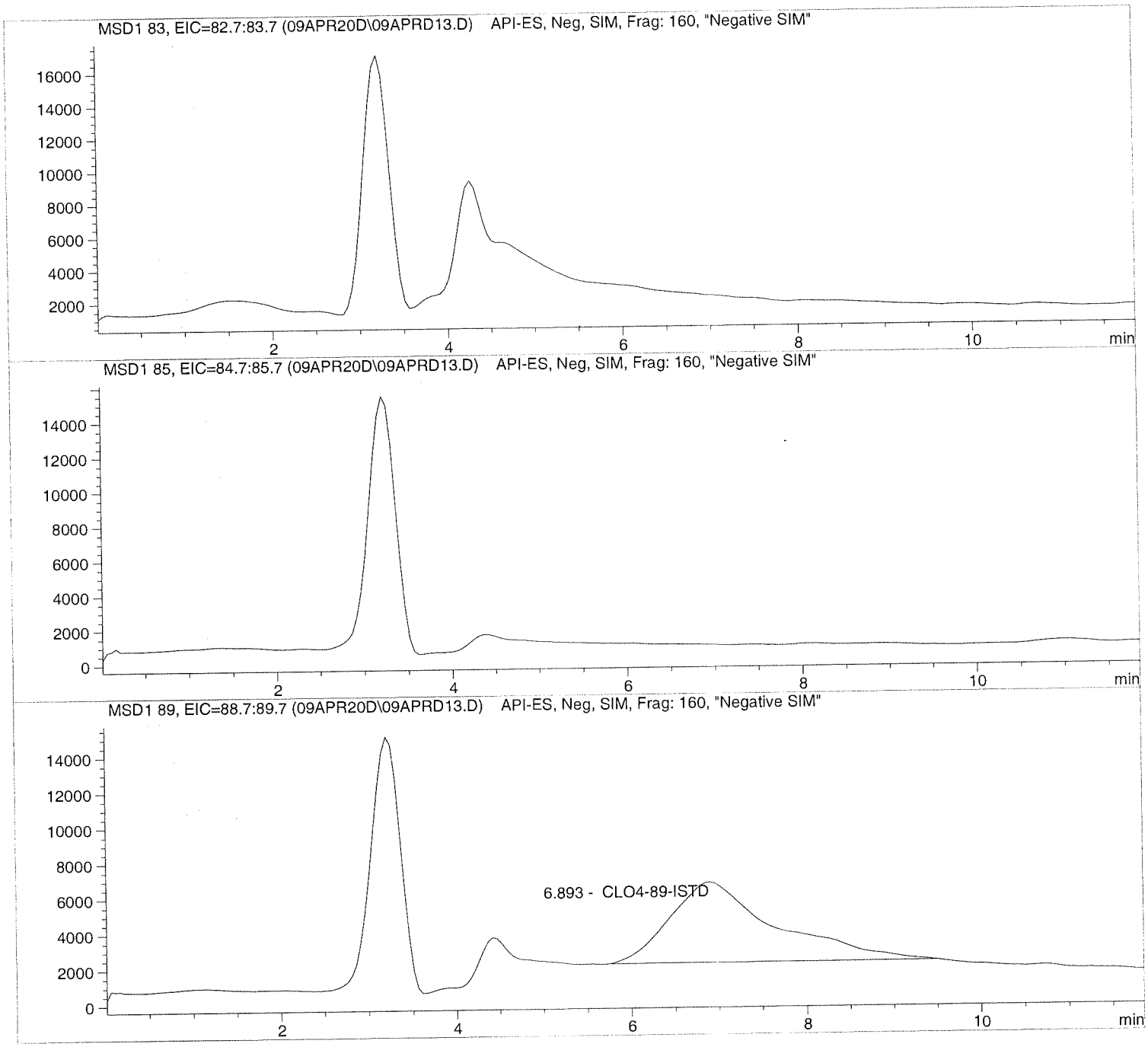
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD13.D Sample Name: 2009423002

Injection Date:	4/09/2020 11:30:32	Seq Line:	13
Sample Name:	2009423002	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD13.D Sample Name: 2009423002

Injection Date:	4/09/2020 11:30:32	Seq Line:	13
Sample Name:	2009423002	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.893	PBA	375009.7	5.0000	CLO4-89-ISTD

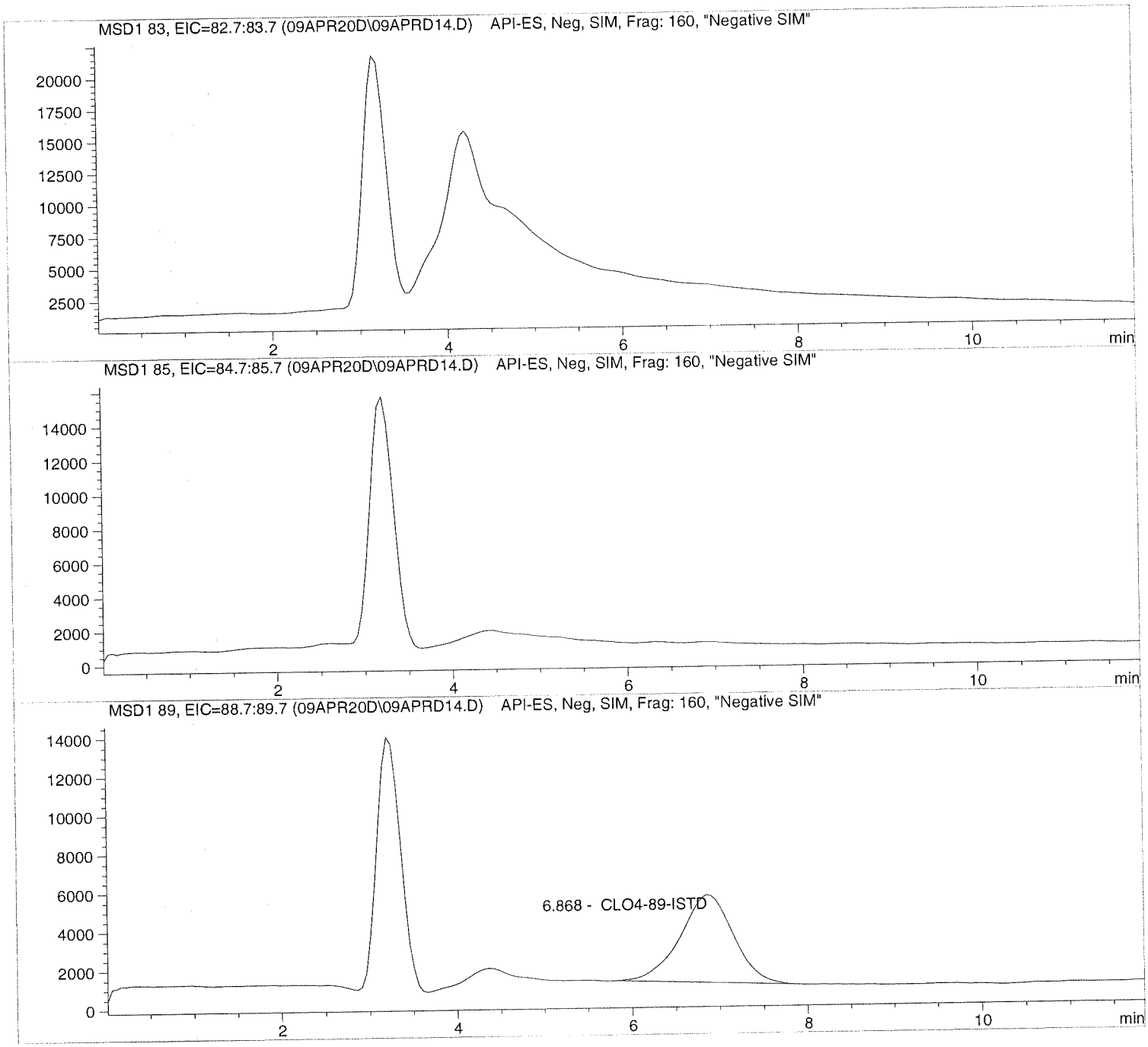
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD14.D Sample Name: 2009423003

Injection Date:	4/09/2020 11:44:28	Seq Line:	14
Sample Name:	2009423003	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD14.D Sample Name: 2009423003

Injection Date:	4/09/2020 11:44:28	Seq Line:	14
Sample Name:	2009423003	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.868	BBA	191278.4	5.0000	CLO4-89-ISTD

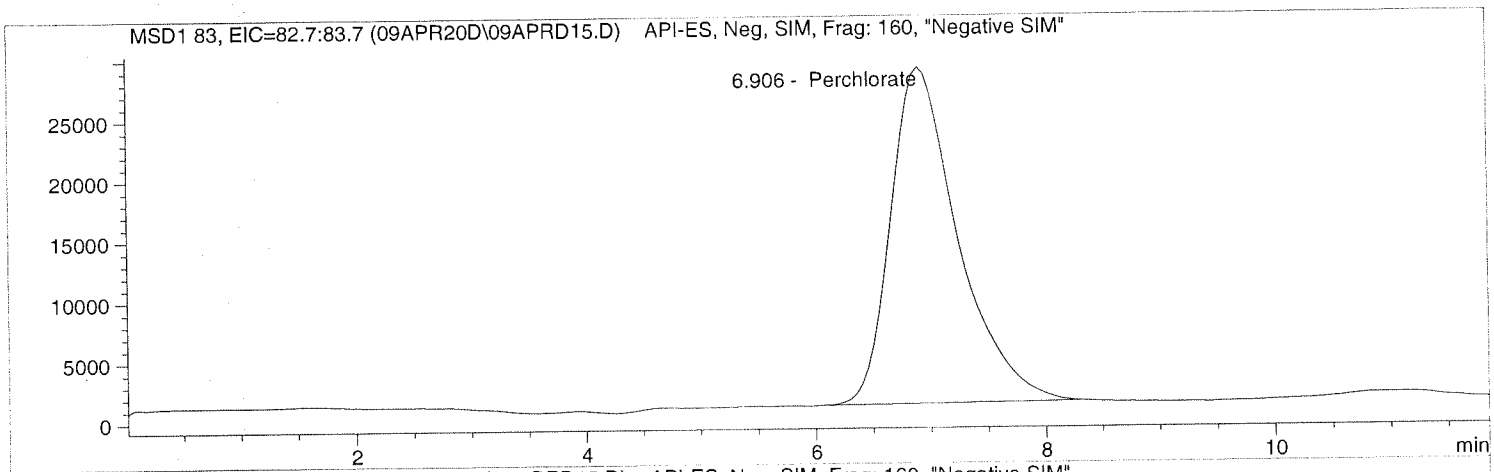
*** End of Report ***

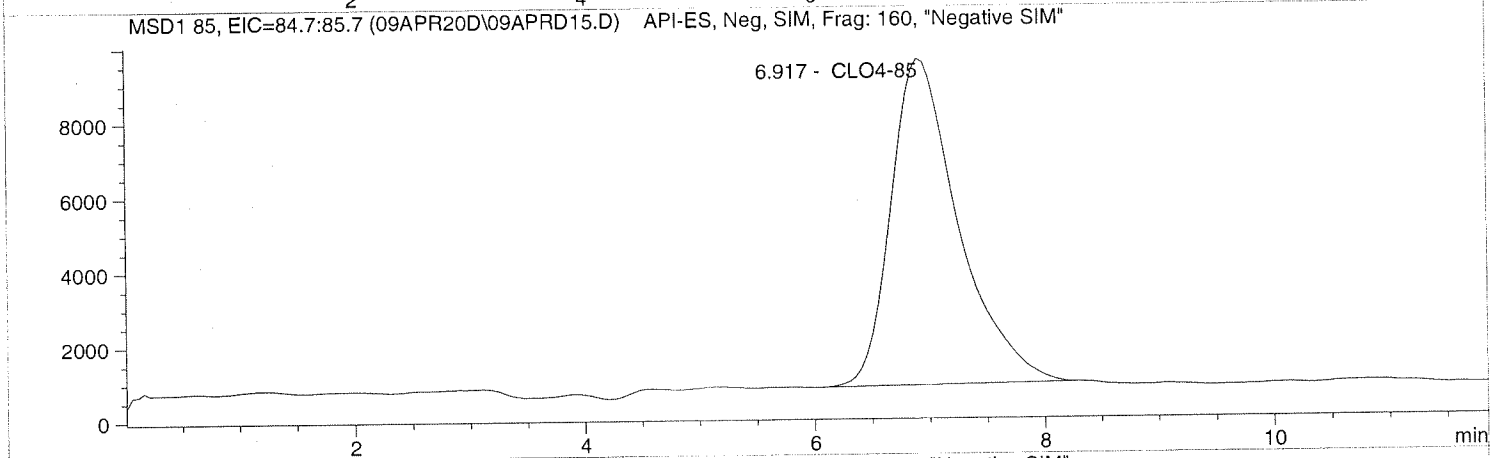
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD15.D Sample Name: 702143 CCV@25

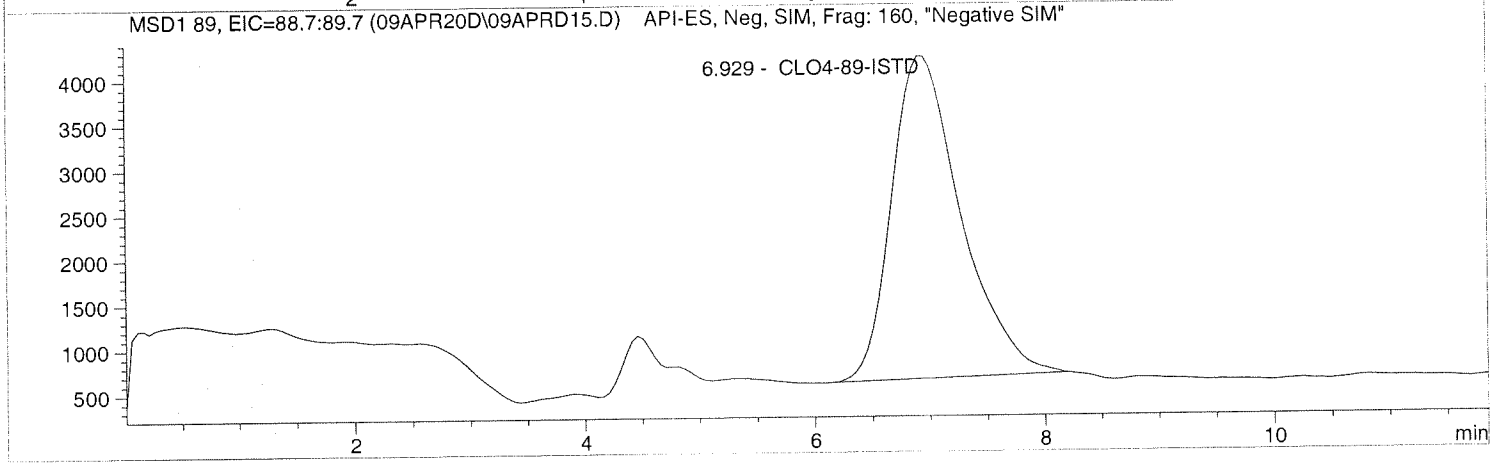
Injection Date:	4/09/2020 11:58:26	Seq Line:	15
Sample Name:	702143 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD15.D Sample Name: 702143 CCV@25

Injection Date:	4/09/2020 11:58:26	Seq Line:	15
Sample Name:	702143 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.906	PBA	1121911.0	25.5407	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.917	PBA	356121.1	26.4976	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.929	PBA	149758.6	5.0000	CLO4-89-ISTD

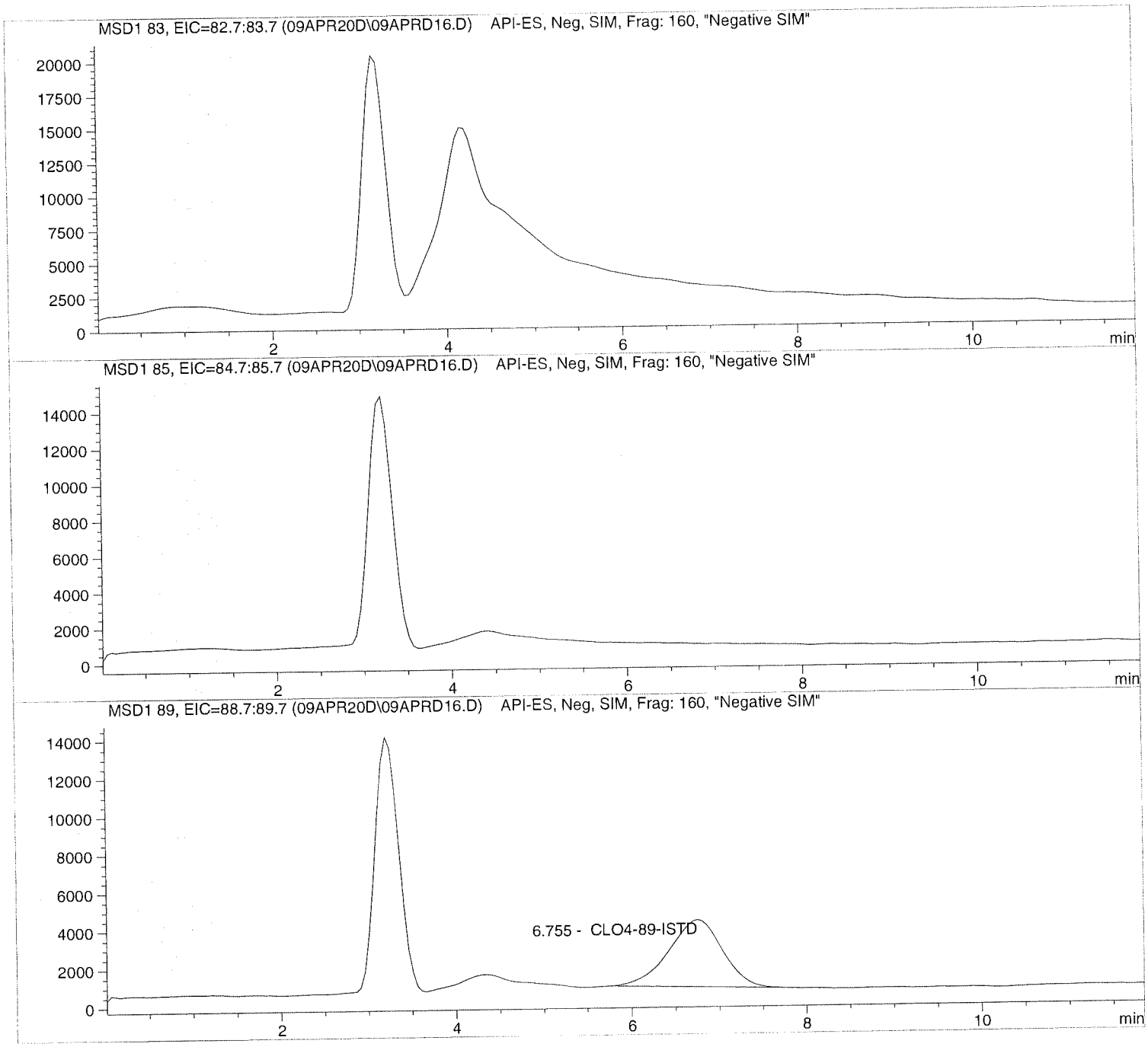
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD16.D Sample Name: 2009423004

Injection Date:	4/09/2020 12:12:25	Seq Line:	16
Sample Name:	2009423004	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD16.D Sample Name: 2009423004

Injection Date:	4/09/2020 12:12:25	Seq Line:	16
Sample Name:	2009423004	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.755	PBA	150790.4	5.0000	CLO4-89-ISTD

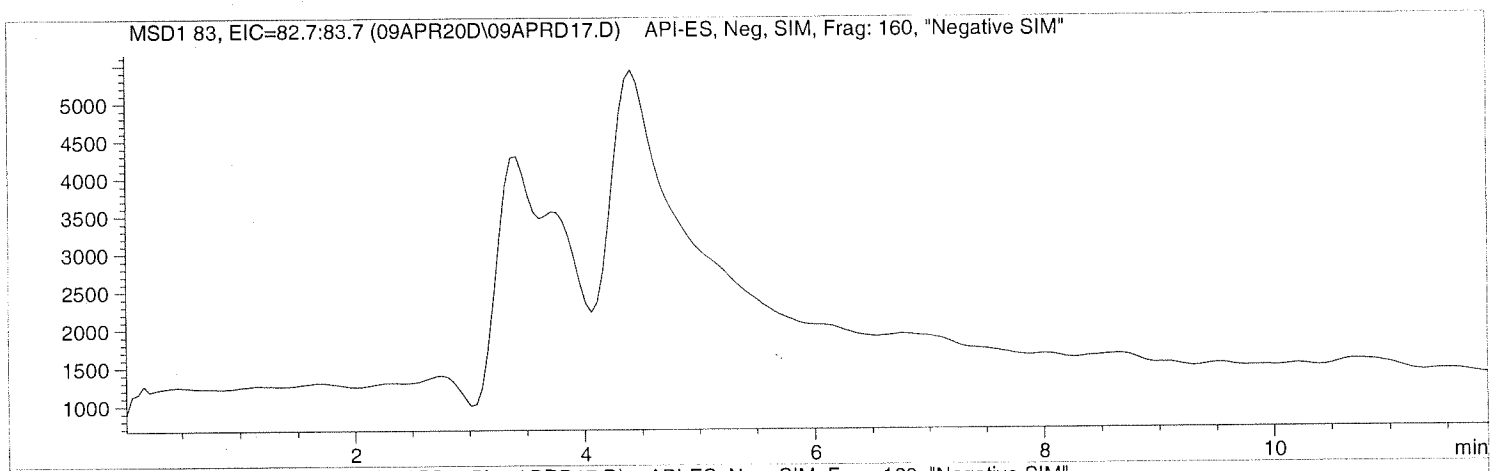
*** End of Report ***

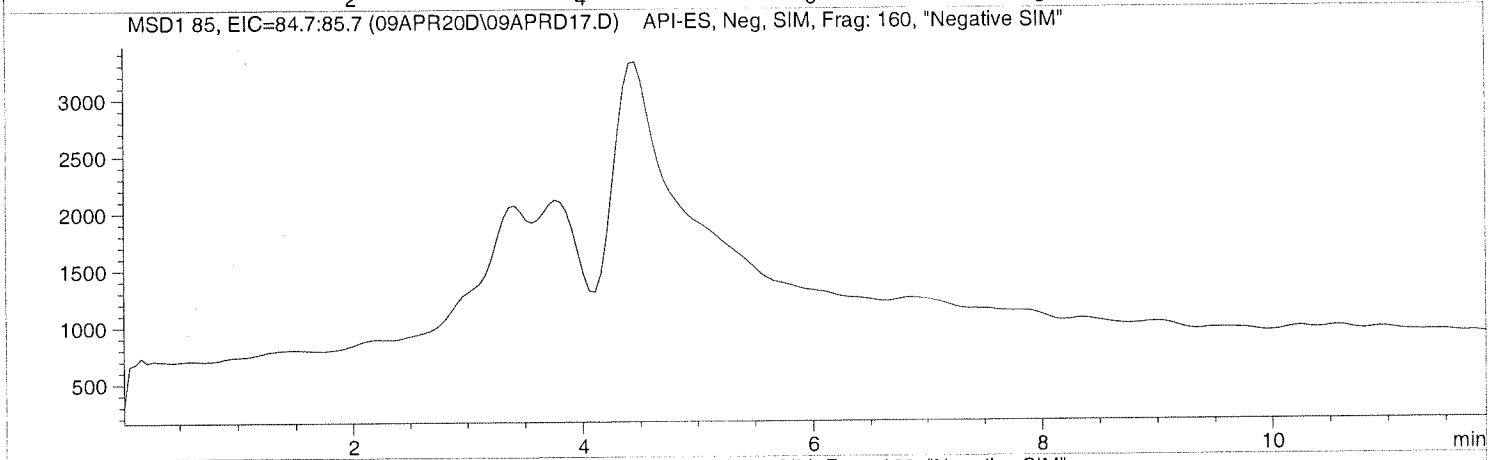
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD17.D Sample Name: 2009423005

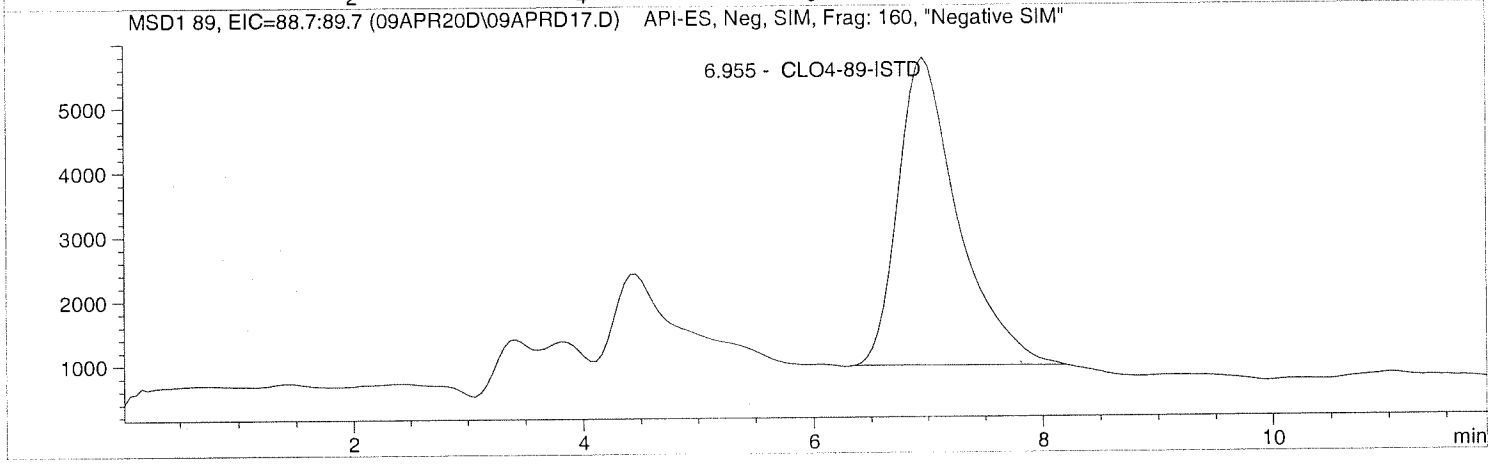
Injection Date:	4/09/2020 12:26:21	Seq Line:	17
Sample Name:	2009423005	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD17.D Sample Name: 2009423005

Injection Date:	4/09/2020 12:26:21	Seq Line:	17
Sample Name:	2009423005	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.955	PBA	173885.3	5.0000	CLO4-89-ISTD

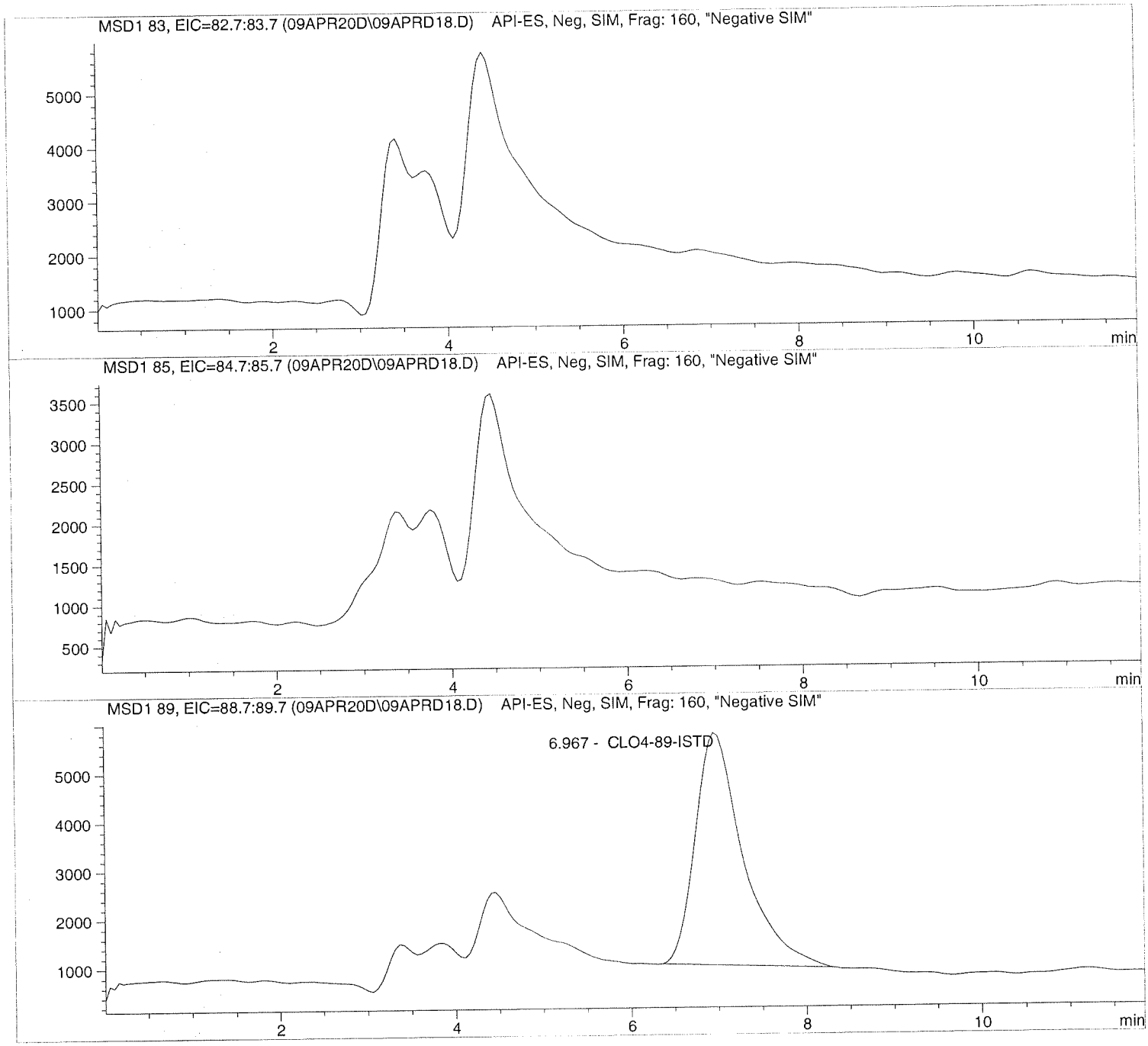
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD18.D Sample Name: 2009423006

Injection Date:	4/09/2020 12:40:17	Seq Line:	18
Sample Name:	2009423006	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD18.D Sample Name: 2009423006

Injection Date:	4/09/2020 12:40:17	Seq Line:	18
Sample Name:	2009423006	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.967	PBA	180345.8	5.0000	CLO4-89-ISTD

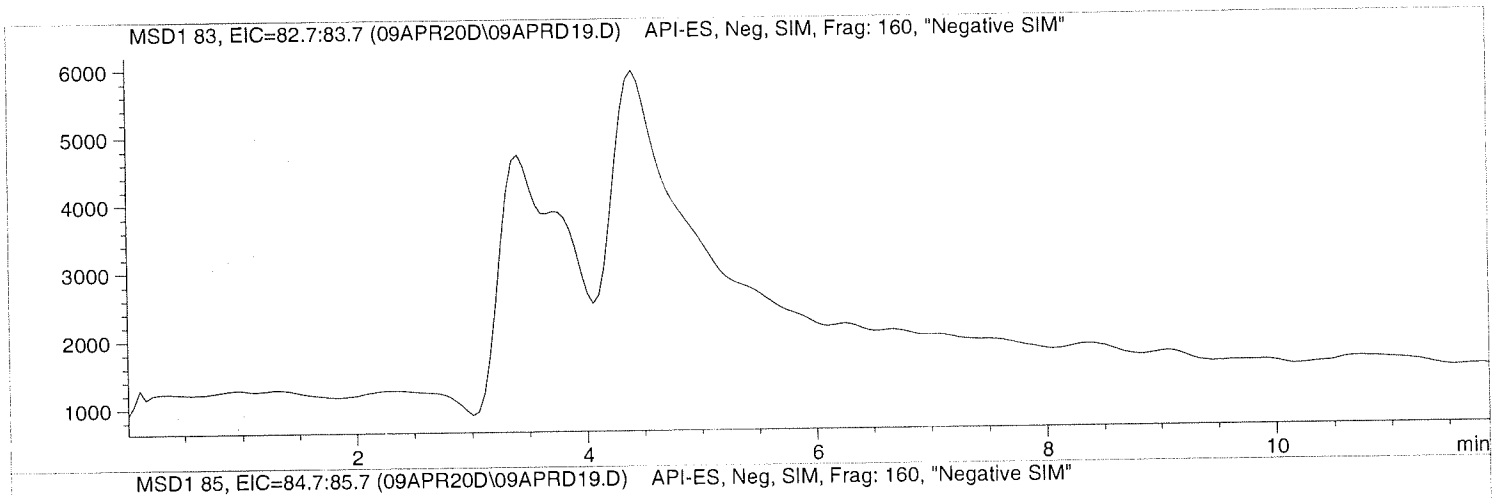
*** End of Report ***

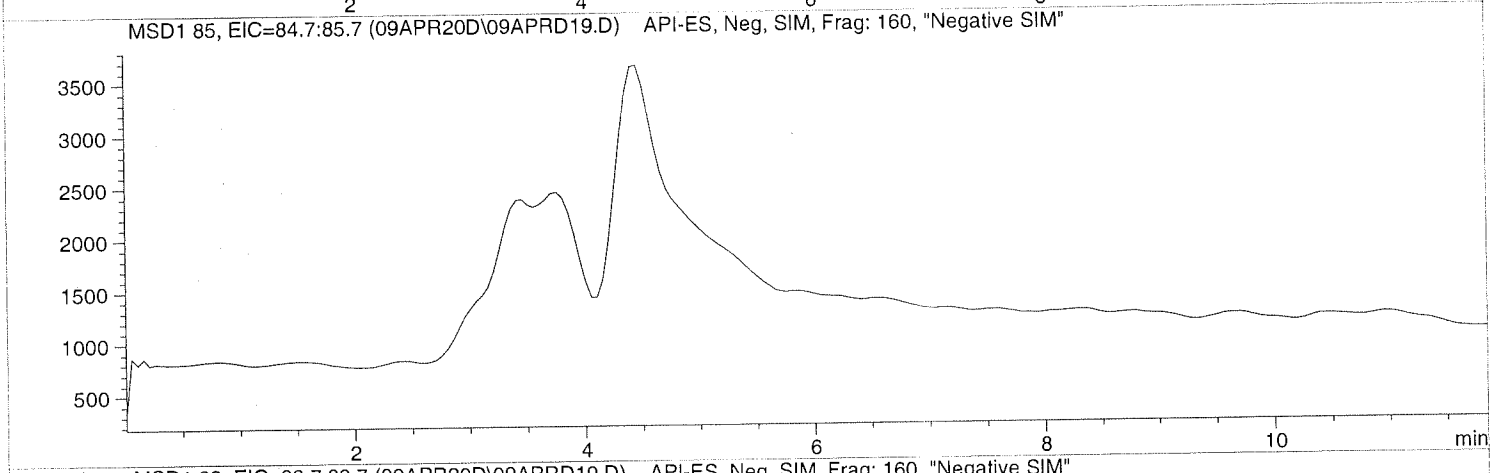
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD19.D Sample Name: 2009423007

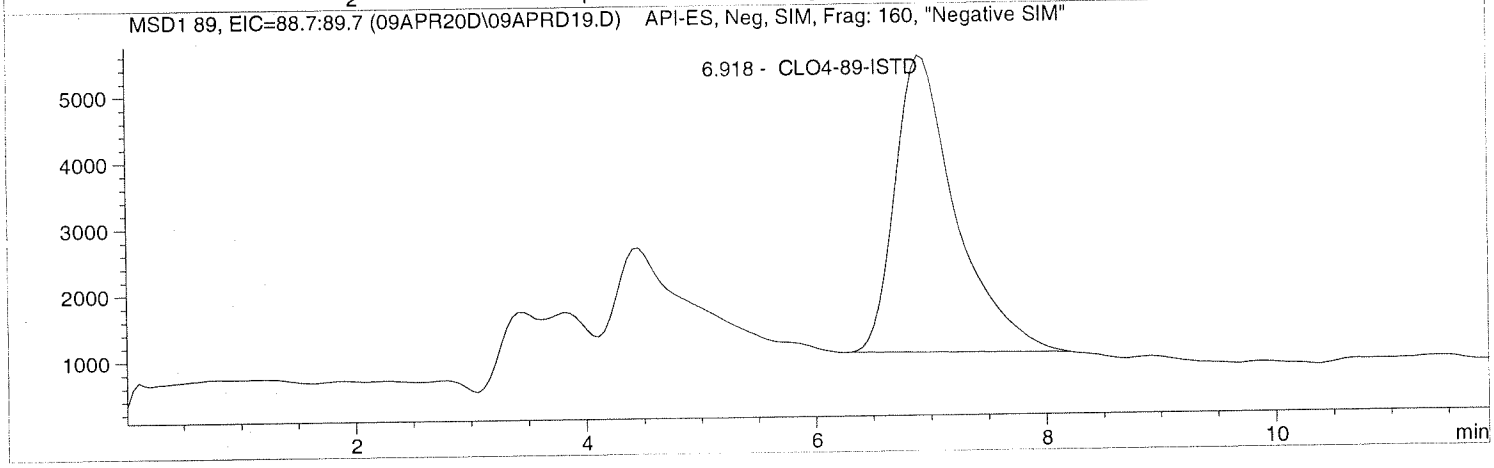
Injection Date:	4/09/2020 12:54:14	Seq Line:	19
Sample Name:	2009423007	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD19.D Sample Name: 2009423007

Injection Date:	4/09/2020 12:54:14	Seq Line:	19
Sample Name:	2009423007	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.918	PBA	163117.0	5.0000	CLO4-89-ISTD

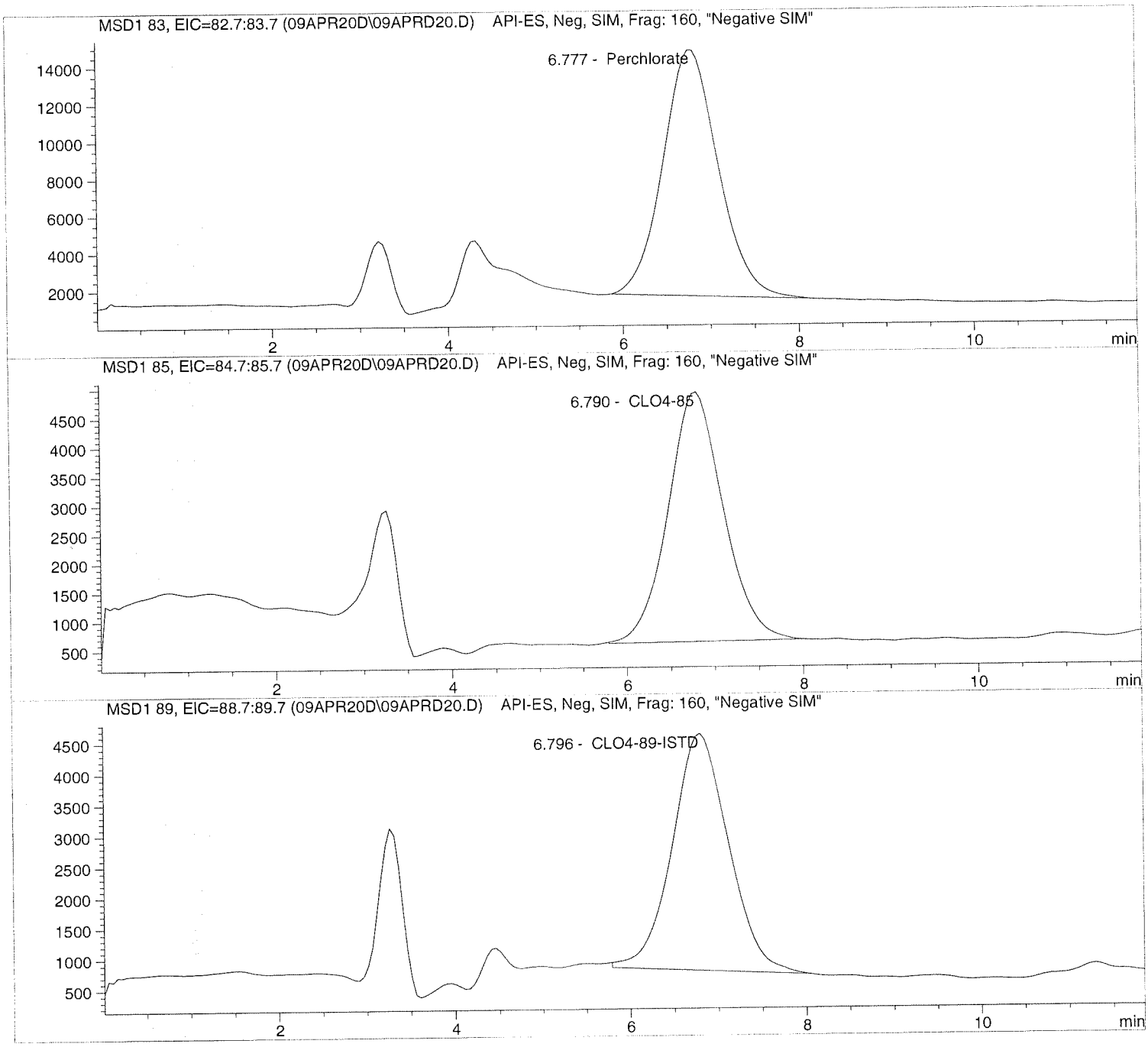
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD20.D Sample Name: 2009235003 10X

Injection Date:	4/09/2020 13:08:14	Seq Line:	20
Sample Name:	2009235003 10X	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD20.D Sample Name: 2009235003 10X

Injection Date:	4/09/2020 13:08:14	Seq Line:	20
Sample Name:	2009235003 10X	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.777	PBA	575573.8	121.2572	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.790	BBA	188018.0	128.6830	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.796	BBA	170987.4	50.0000	CLO4-89-ISTD

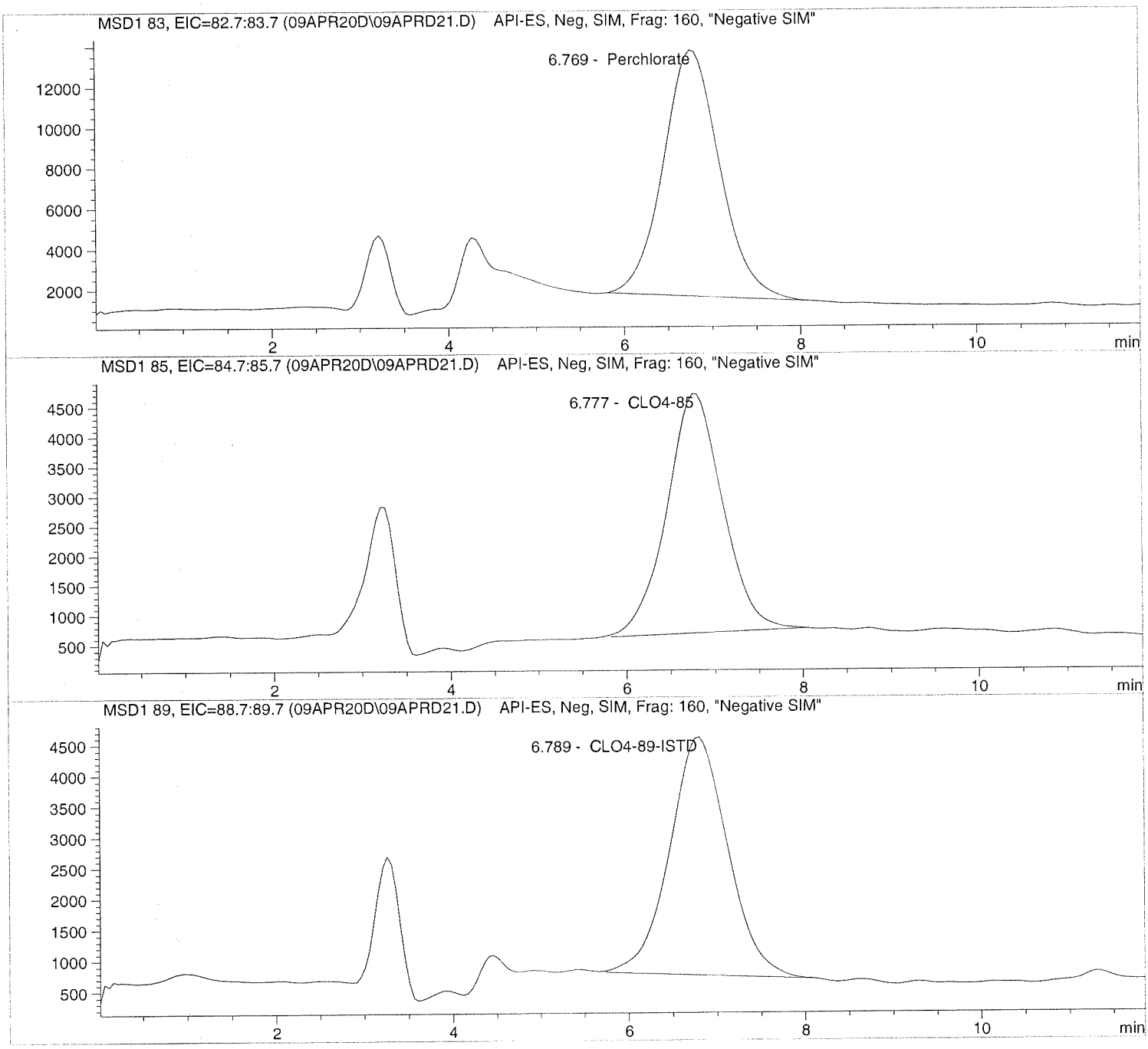
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD21.D Sample Name: 2009235004 10X

Injection Date:	4/09/2020 13:22:24	Seq Line:	21
Sample Name:	2009235004 10X	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD21.D Sample Name: 2009235004 10X

Injection Date:	4/09/2020 13:22:24	Seq Line:	21
Sample Name:	2009235004 10X	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.769	PBA	537023.4	110.2892	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.777	PBA	177384.6	118.2319	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.789	BBA	176150.6	50.0000	CLO4-89-ISTD

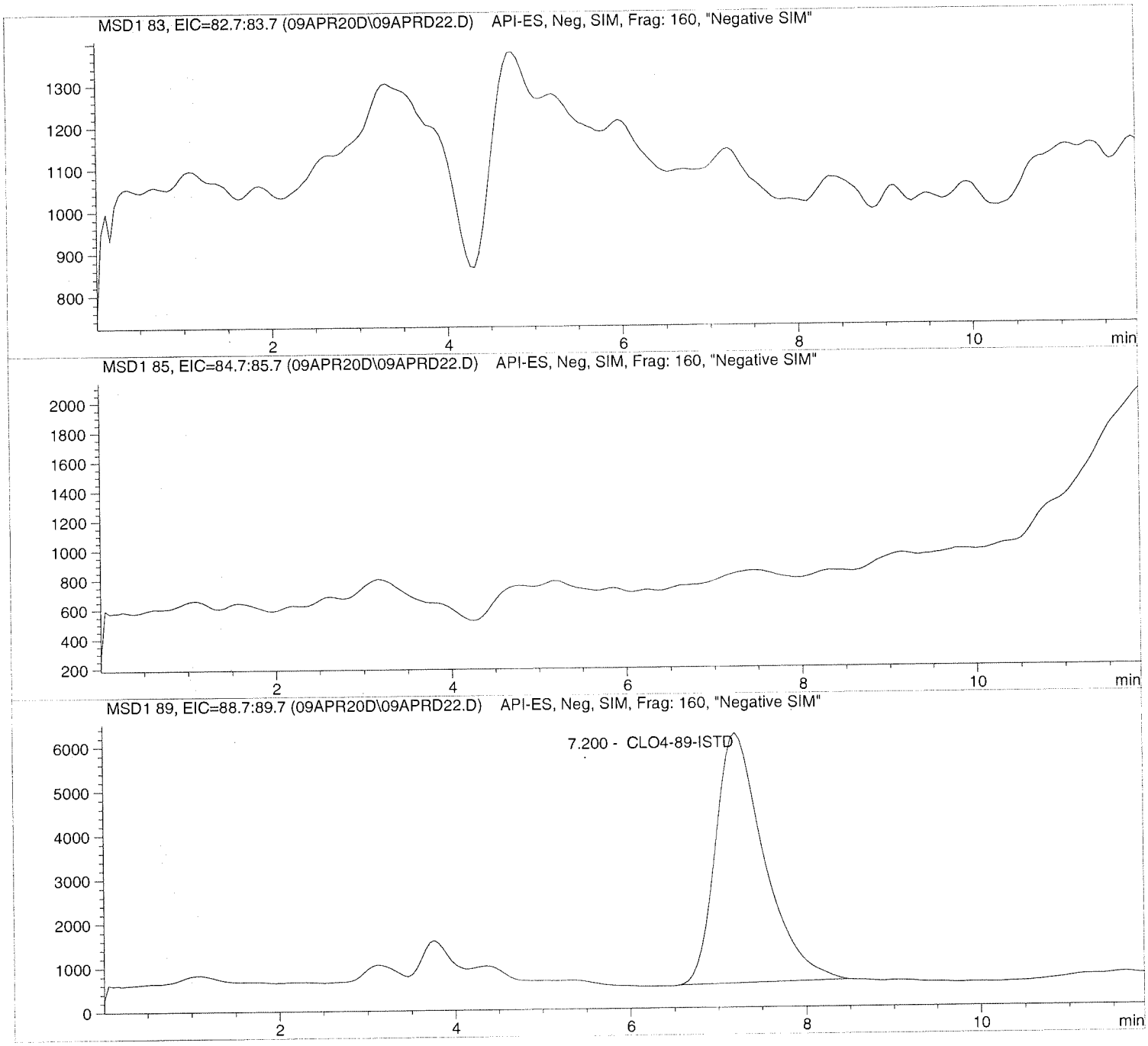
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD22.D Sample Name: 2009235005 10X

Injection Date:	4/09/2020 13:36:26	Seq Line:	22
Sample Name:	2009235005 10X	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD22.D Sample Name: 2009235005 10X

Injection Date:	4/09/2020 13:36:26	Seq Line:	22
Sample Name:	2009235005 10X	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.200	PBA	219200.0	50.0000	CLO4-89-ISTD

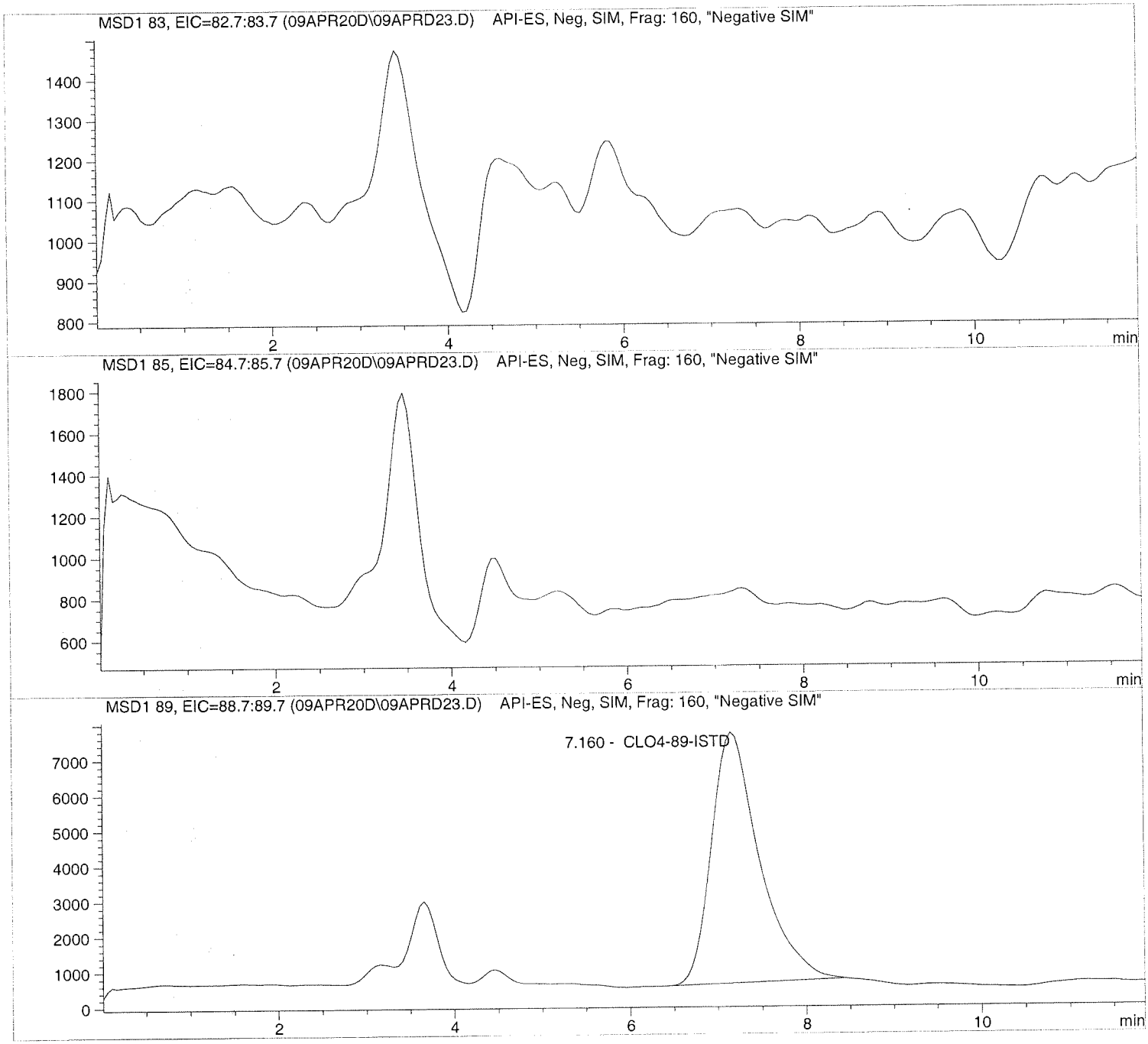
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD23.D Sample Name: 2009423001 10X

Injection Date:	4/09/2020 13:50:22	Seq Line:	23
Sample Name:	2009423001 10X	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD23.D Sample Name: 2009423001 10X

Injection Date:	4/09/2020 13:50:22	Seq Line:	23
Sample Name:	2009423001 10X	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.160	PBA	267378.6	50.0000	CLO4-89-ISTD

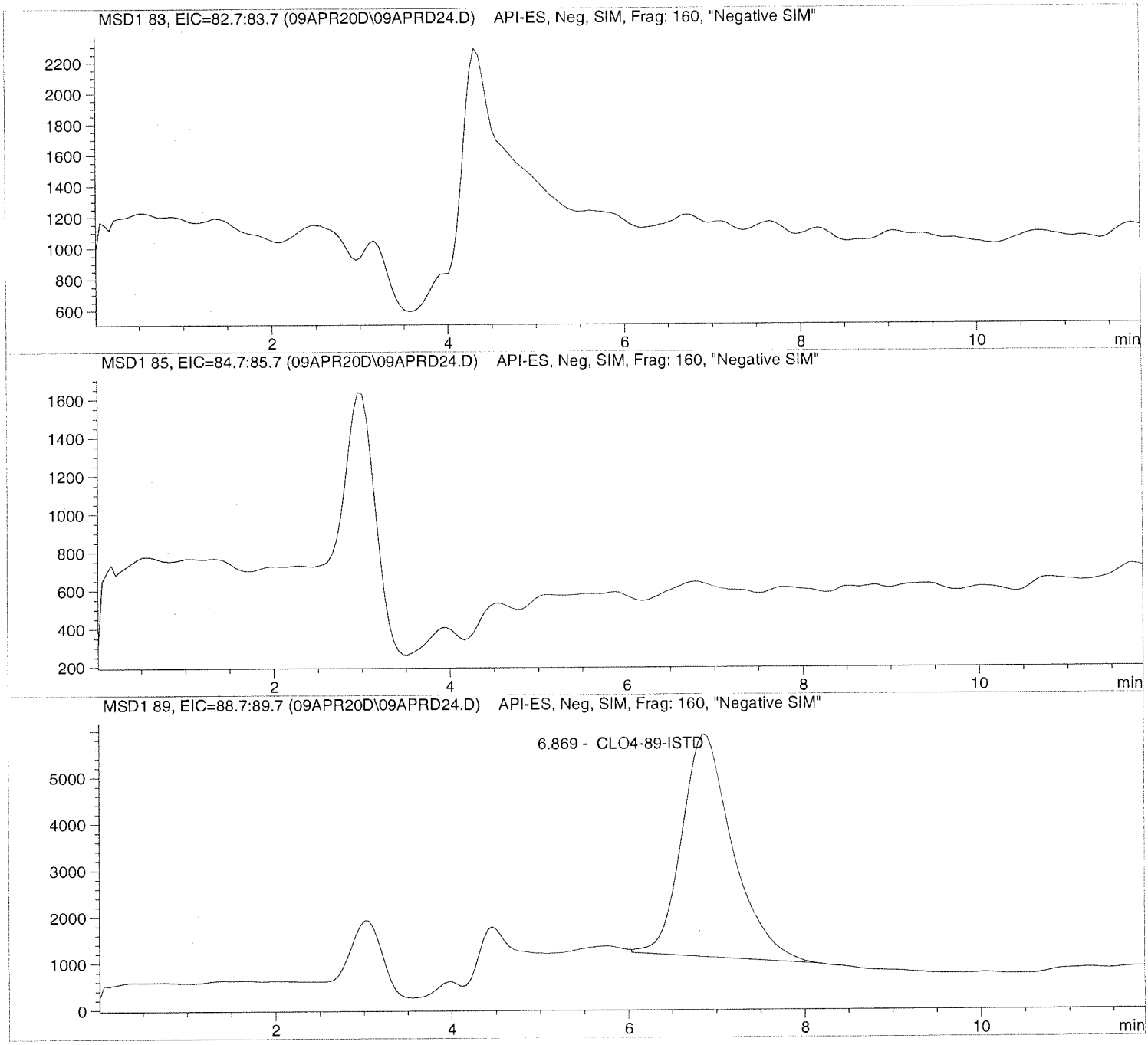
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD24.D Sample Name: 2009423002 10X

Injection Date:	4/09/2020 14:04:21	Seq Line:	24
Sample Name:	2009423002 10X	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD24.D Sample Name: 2009423002 10X

Injection Date:	4/09/2020 14:04:21	Seq Line:	24
Sample Name:	2009423002 10X	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.869	BBA	191502.8	50.0000	CLO4-89-ISTD

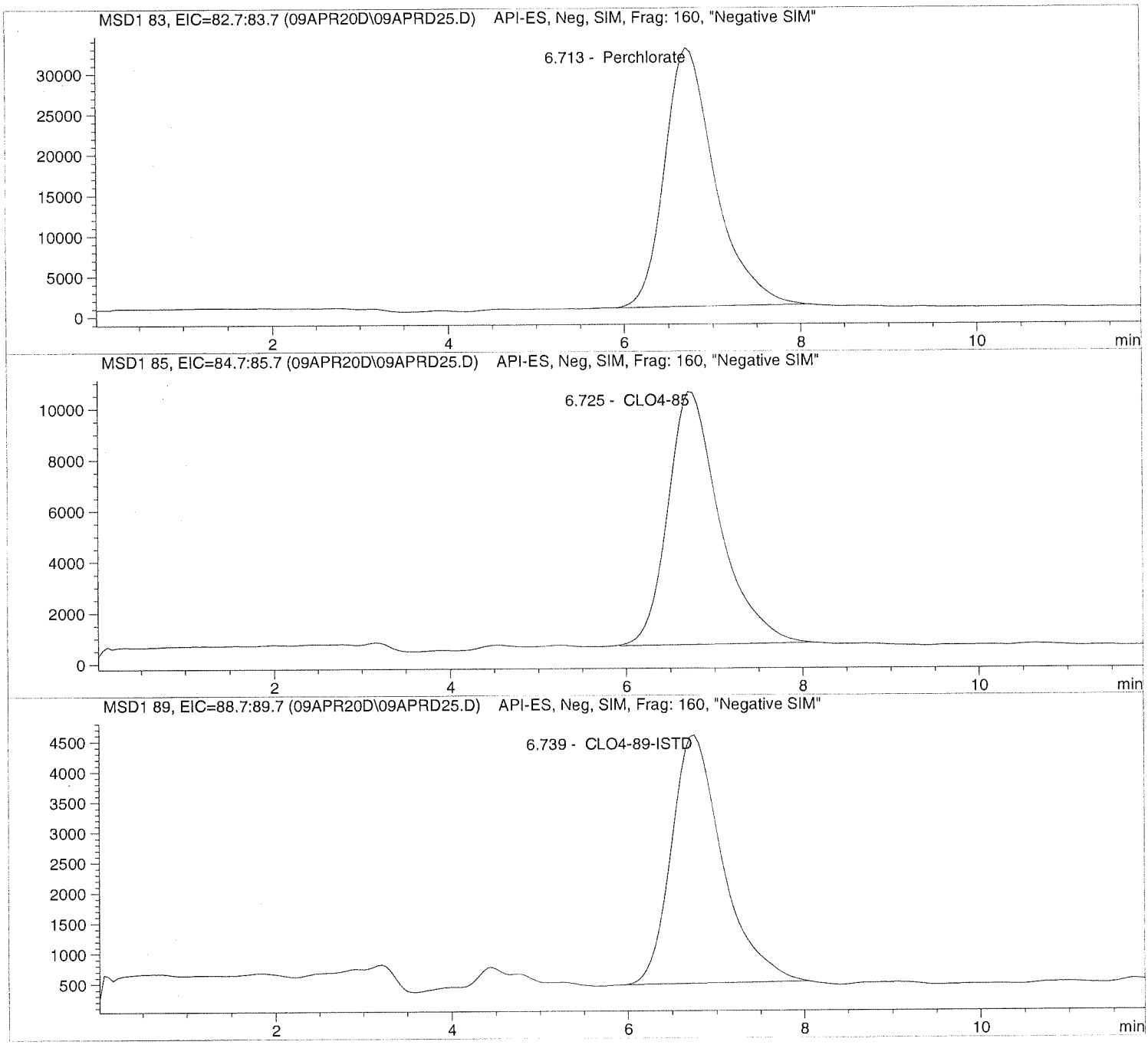
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD25.D Sample Name: 702144 CCV@25

Injection Date:	4/09/2020 14:22:37	Seq Line:	25
Sample Name:	702144 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD25.D Sample Name: 702144 CCV@25

Injection Date:	4/09/2020 14:22:37	Seq Line:	25
Sample Name:	702144 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.713	PBA	1264876.2	26.0625	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.725	PBA	403639.5	27.1729	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.739	PBA	165106.5	5.0000	CLO4-89-ISTD

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2020\APR\10APR20D.S

Sequence Table:

Method and Injection Info Part:

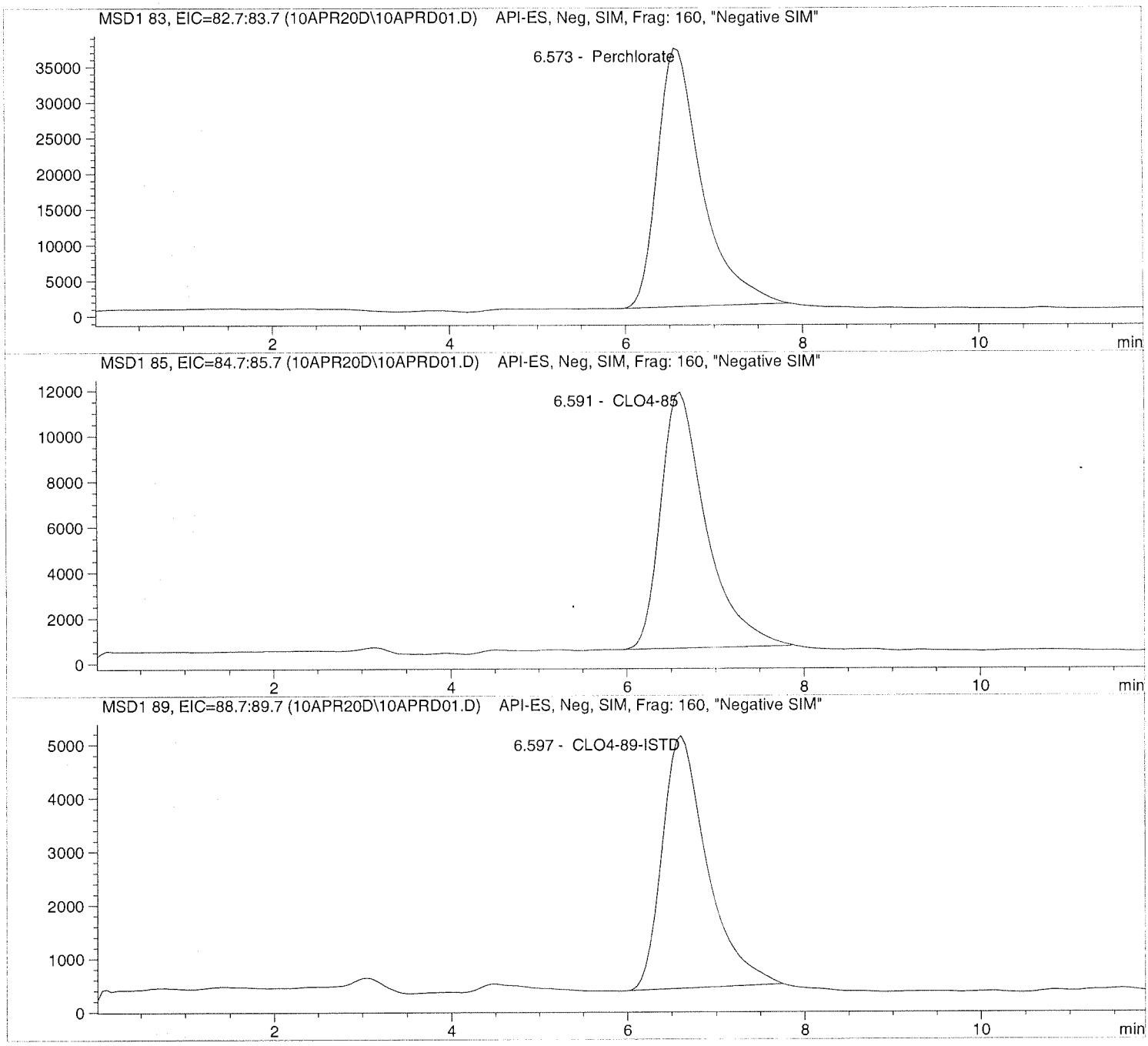
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	702250 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	2009423001 10X	CLO4-AQN	1	Sample		
3	Vial 71	702251 CCV@25	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD01.D Sample Name: 702250 CCV@25

Injection Date:	4/10/2020 13:15:10	Seq Line:	1
Sample Name:	702250 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD01.D Sample Name: 702250 CCV@25

Injection Date:	4/10/2020 13:15:10	Seq Line:	1
Sample Name:	702250 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.573	PBA	1262927.5	25.8638	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.591	PBA	399574.9	26.7552	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.597	PBA	166254.5	5.0000	CLO4-89-ISTD

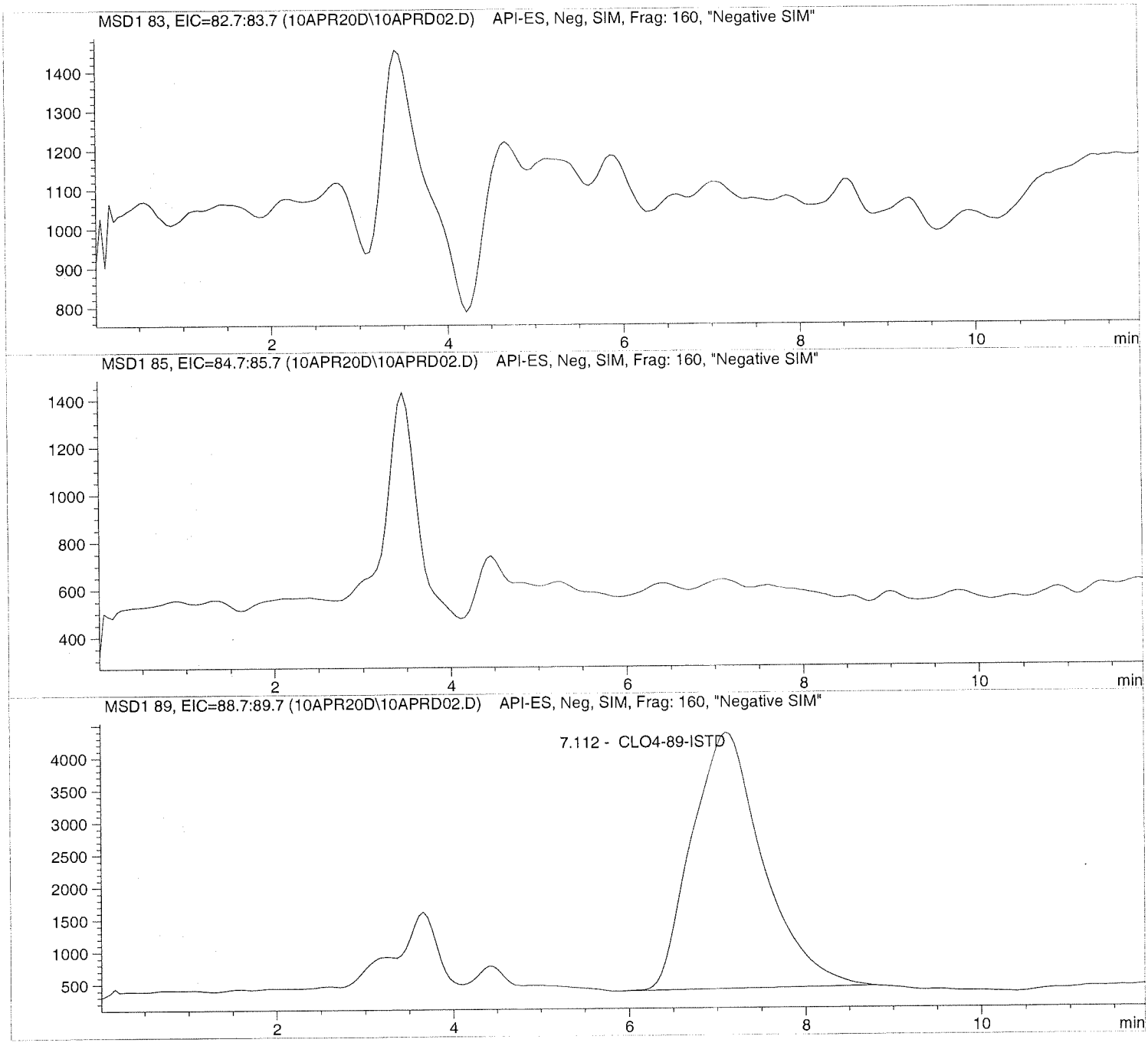
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD02.D Sample Name: 2009423001 10X

Injection Date:	4/10/2020 13:30:01	Seq Line:	2
Sample Name:	2009423001 10X	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD02.D Sample Name: 2009423001 10X

Injection Date:	4/10/2020 13:30:01	Seq Line:	2
Sample Name:	2009423001 10X	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.112	PBA	221088.0	50.0000	CLO4-89-ISTD

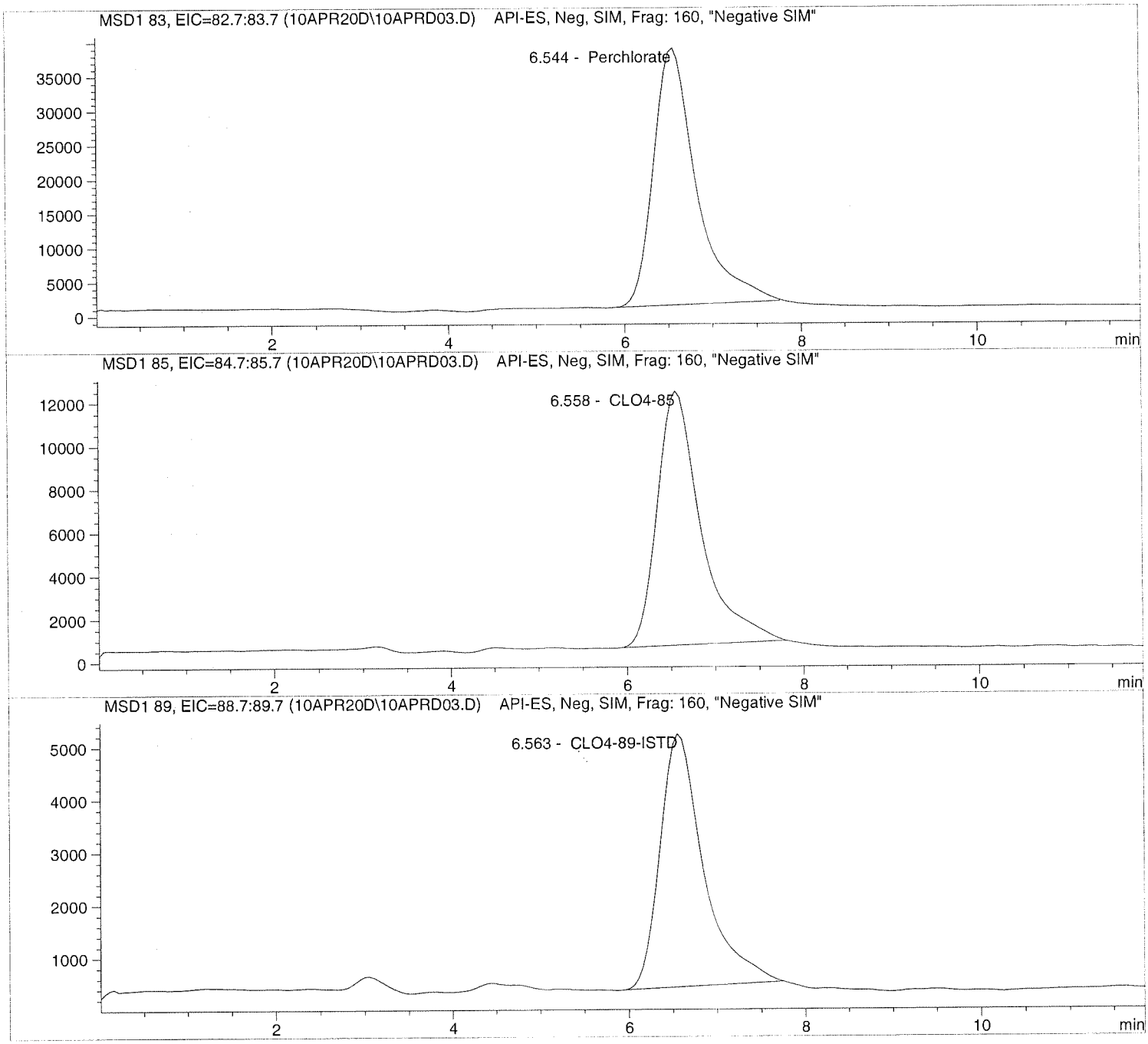
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD03.D Sample Name: 702251 CCV@25

Injection Date:	4/10/2020 13:44:41	Seq Line:	3
Sample Name:	702251 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD03.D Sample Name: 702251 CCV@25

Injection Date:	4/10/2020 13:44:41	Seq Line:	3
Sample Name:	702251 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.544	PBA	1273561.2	26.2700	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.558	PBA	404372.1	27.2656	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.563	PBA	164786.6	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

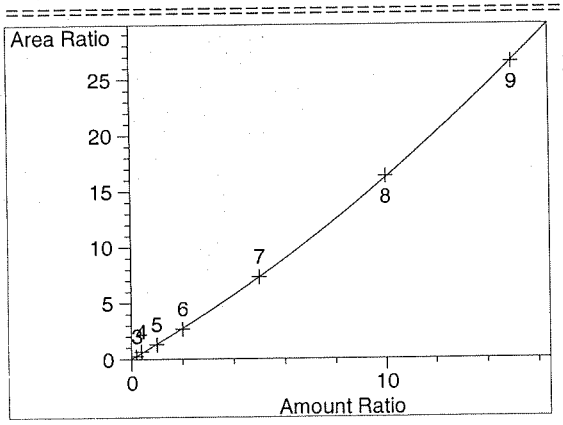
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

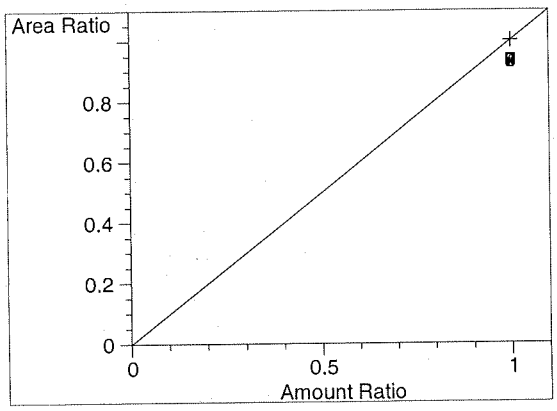
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

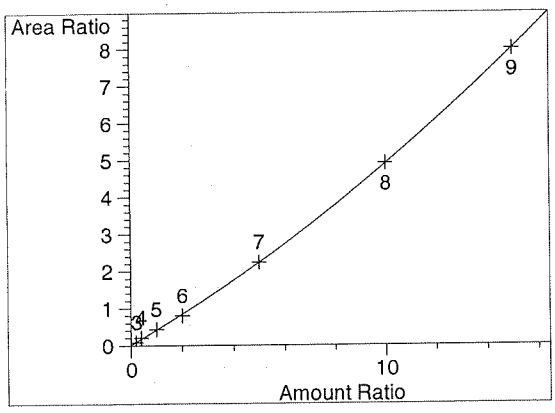
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

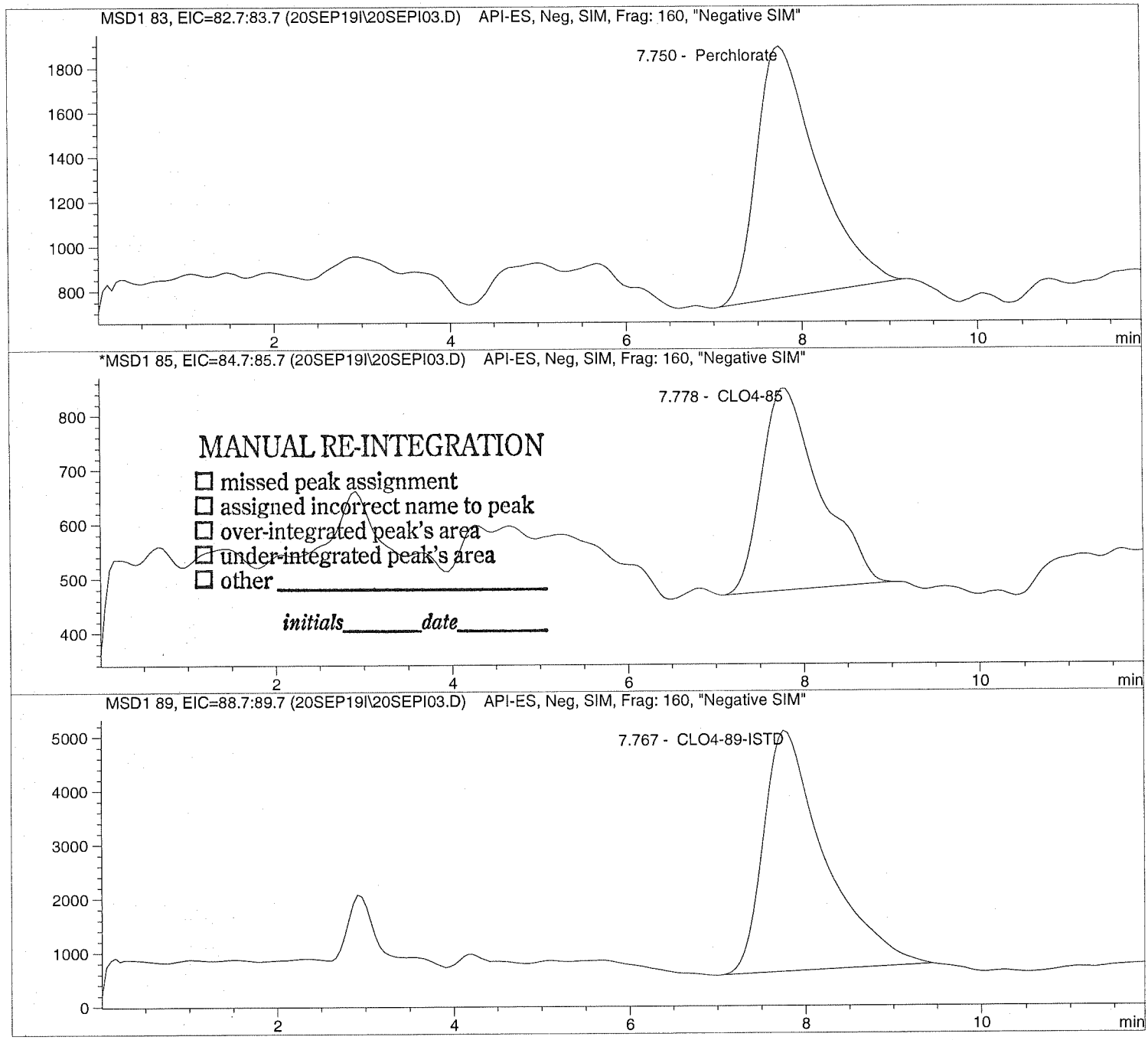
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

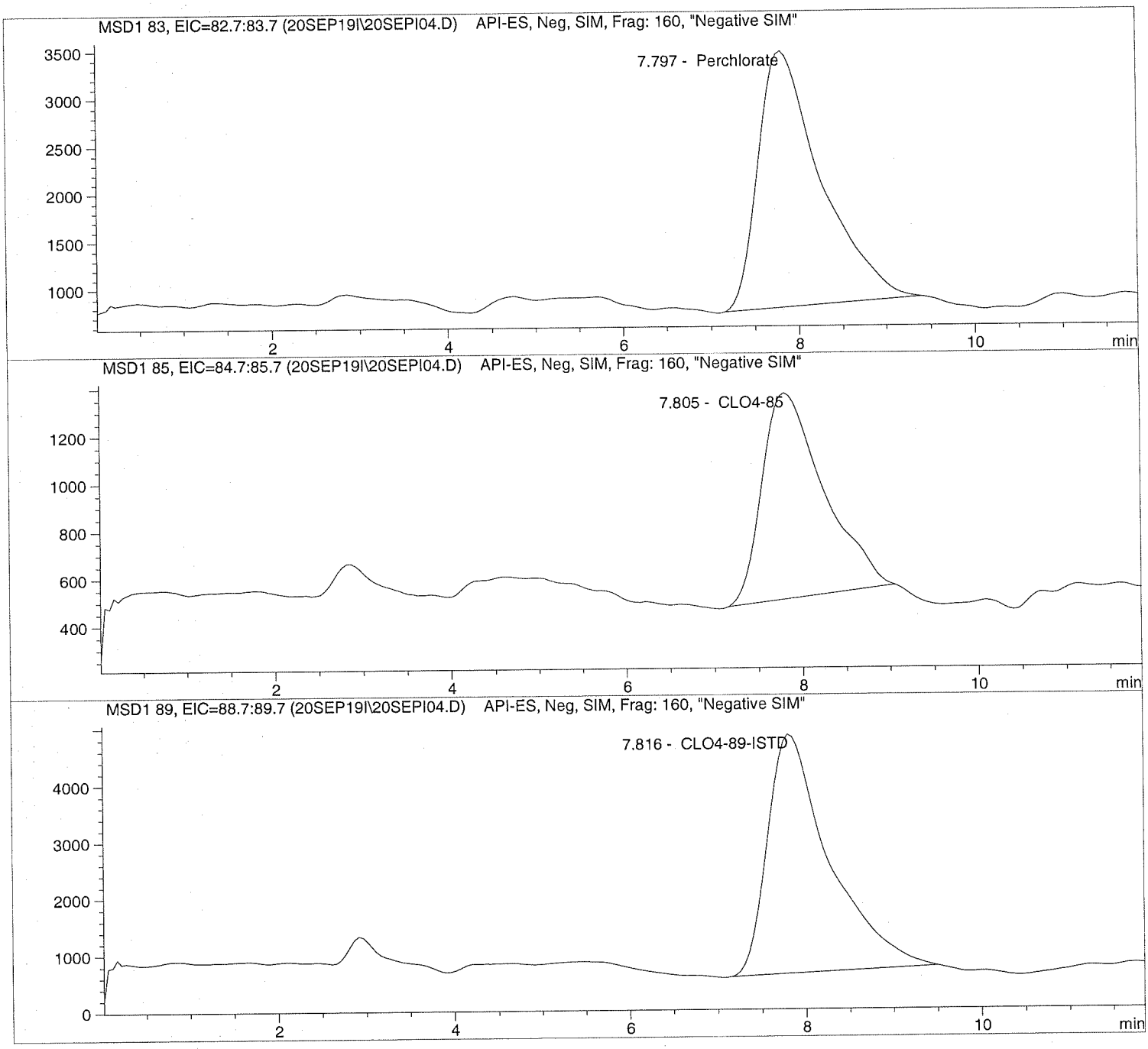
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

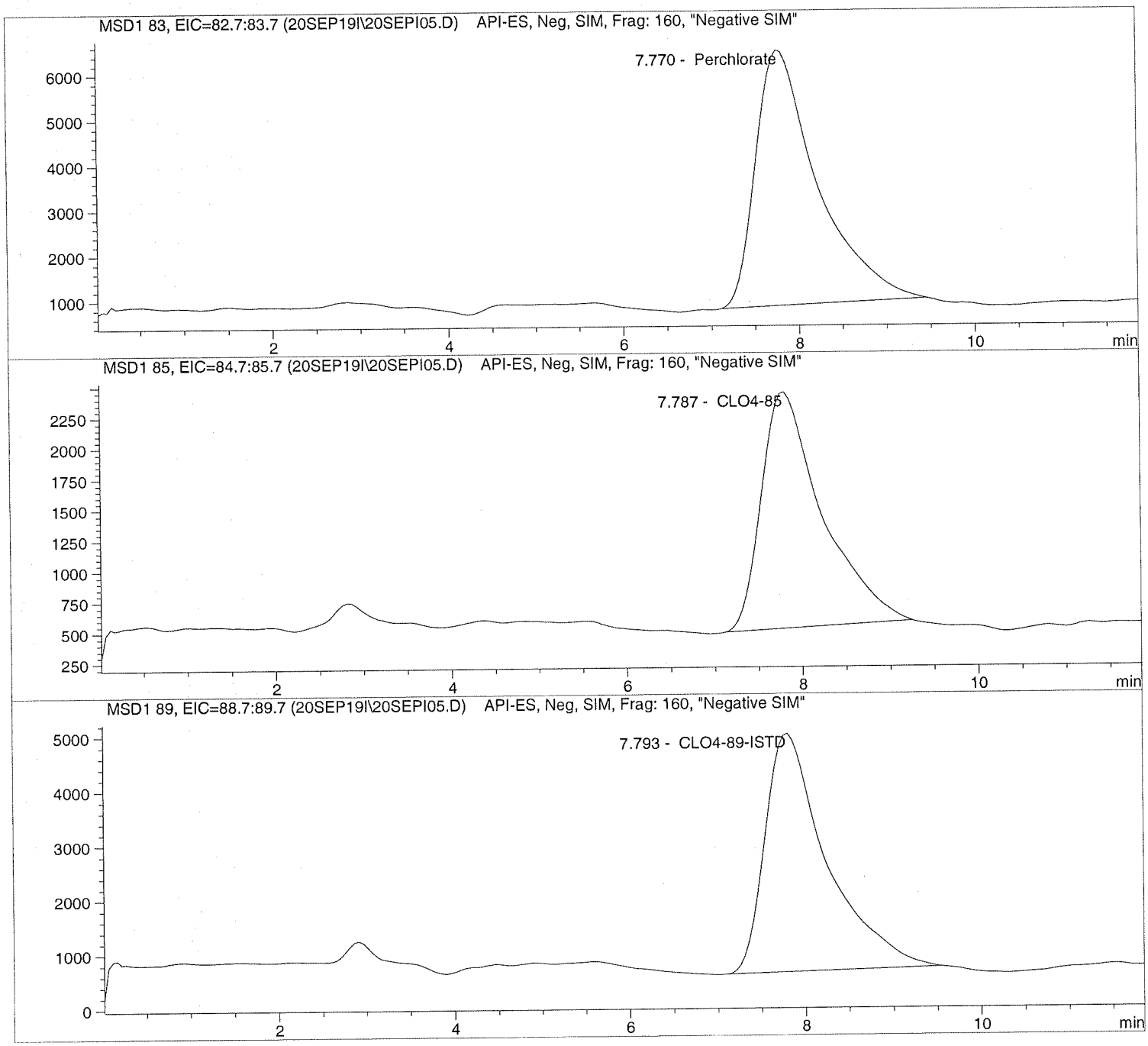
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

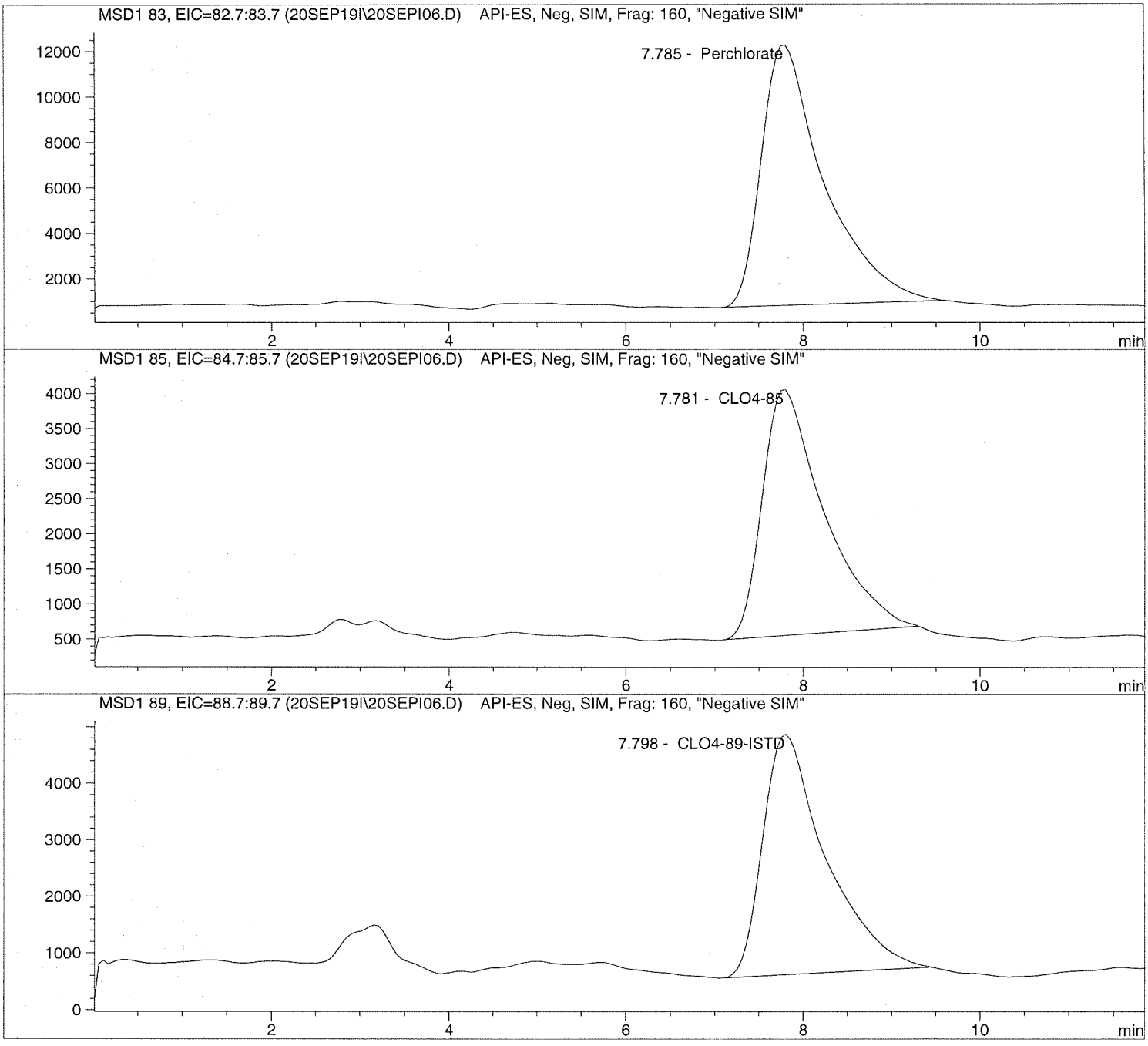
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

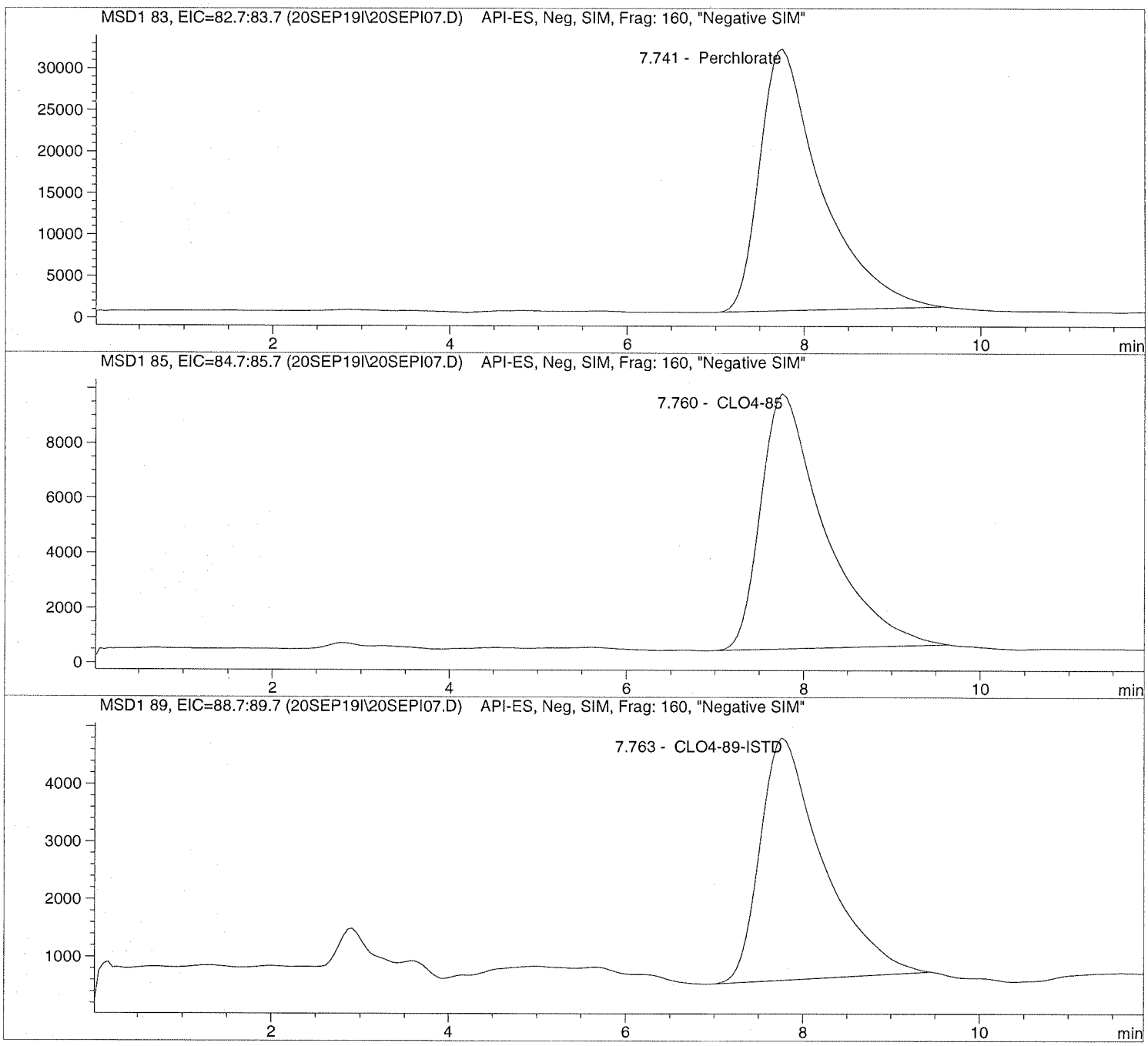
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

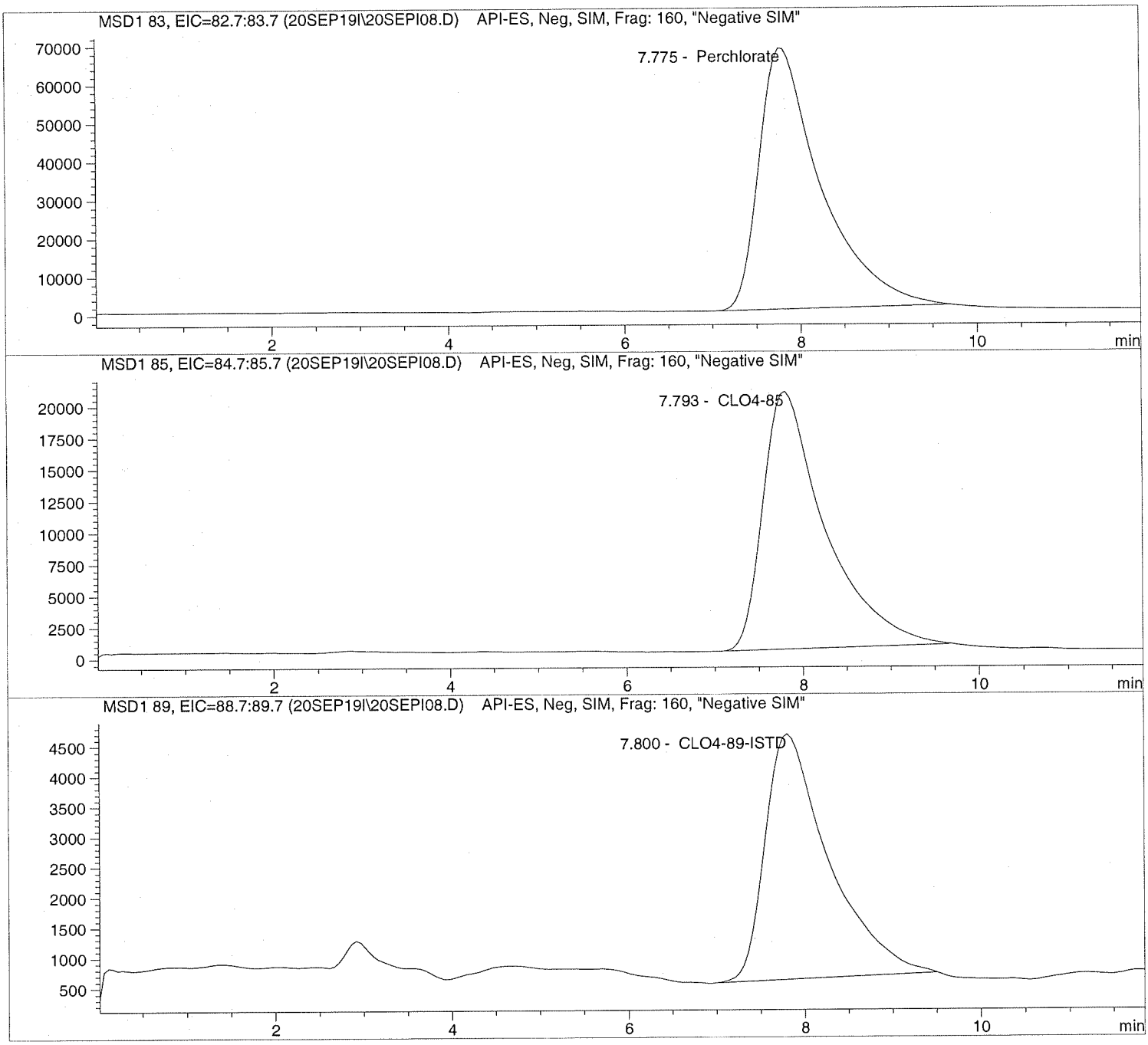
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

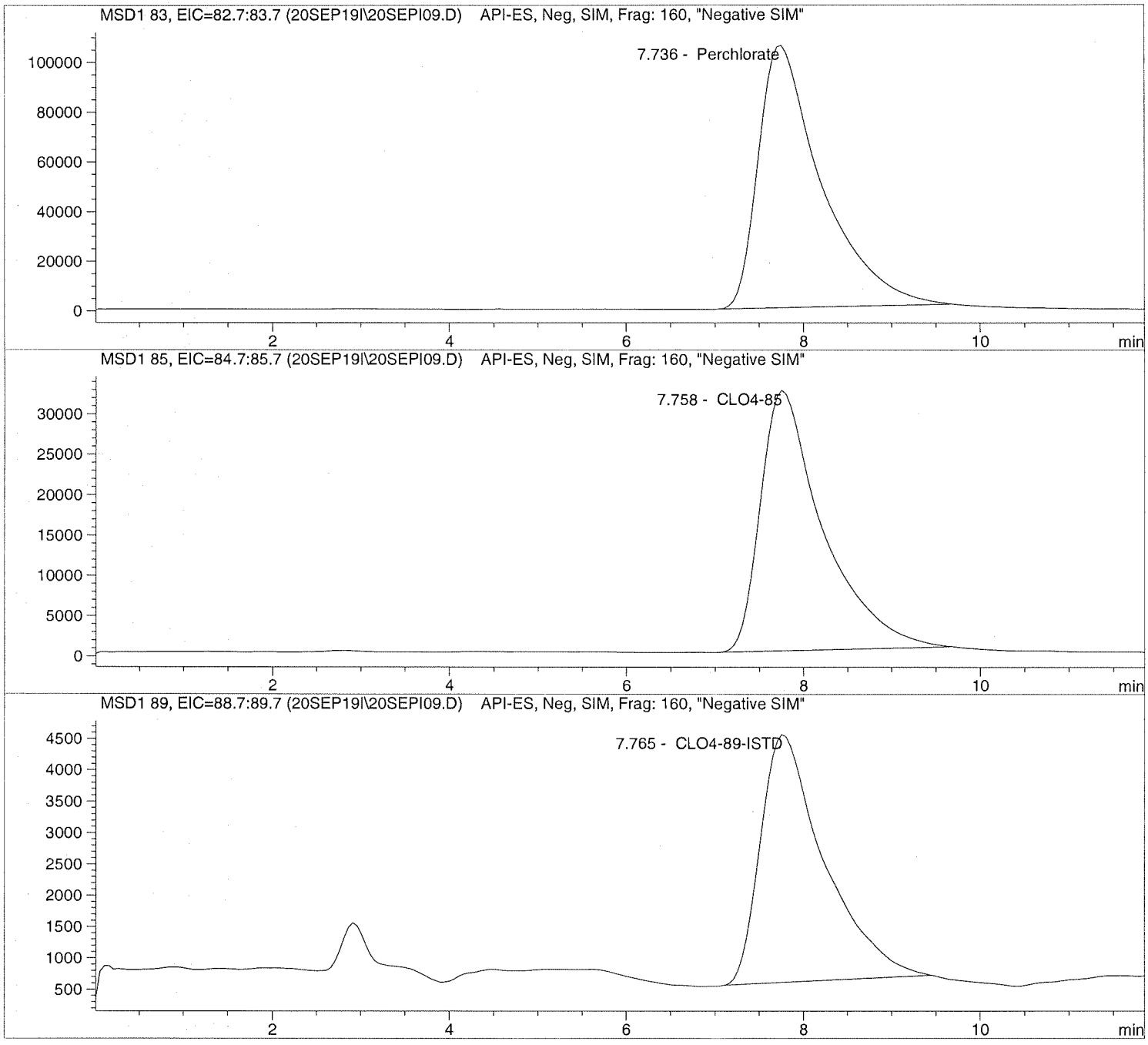
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

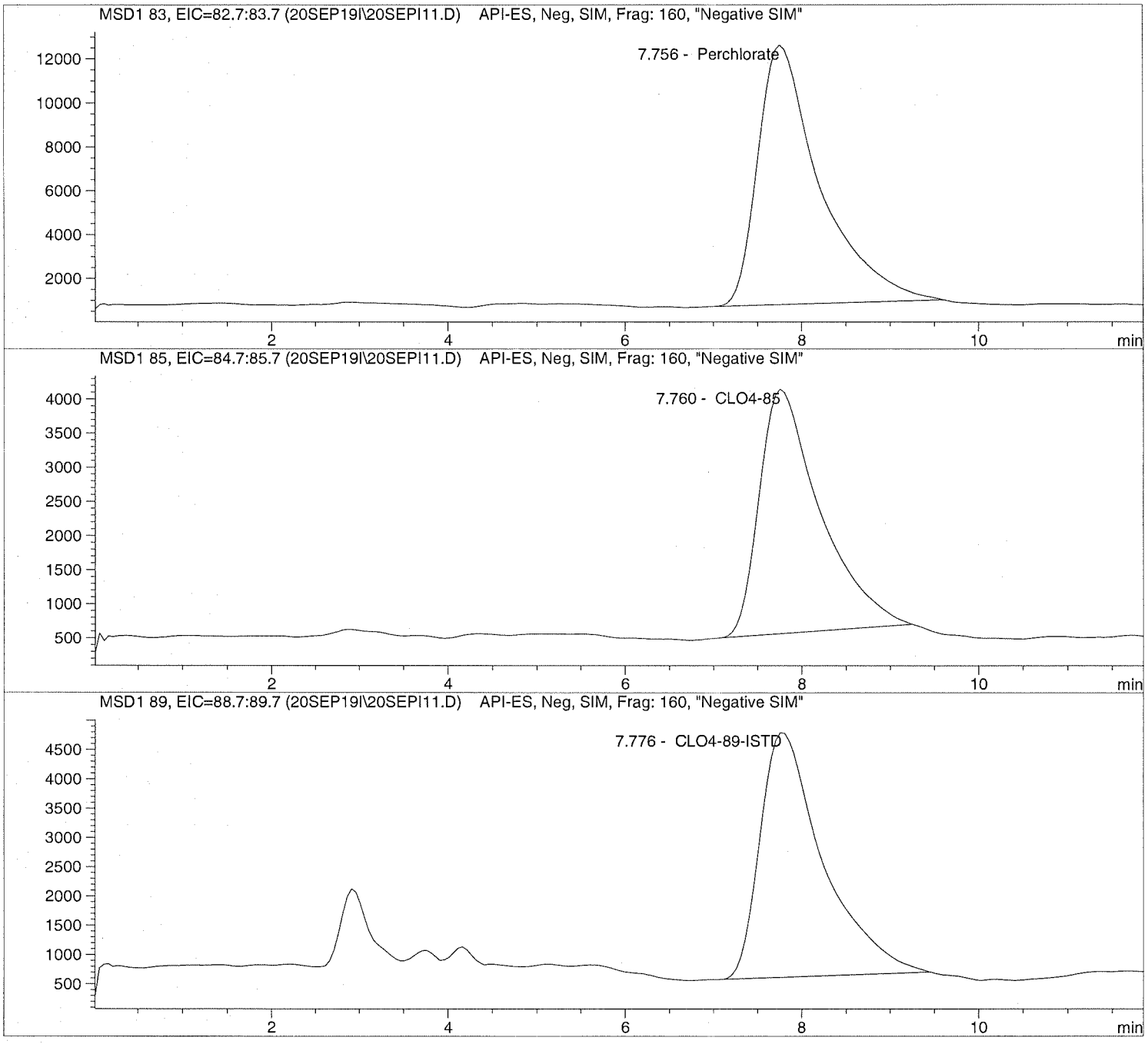
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

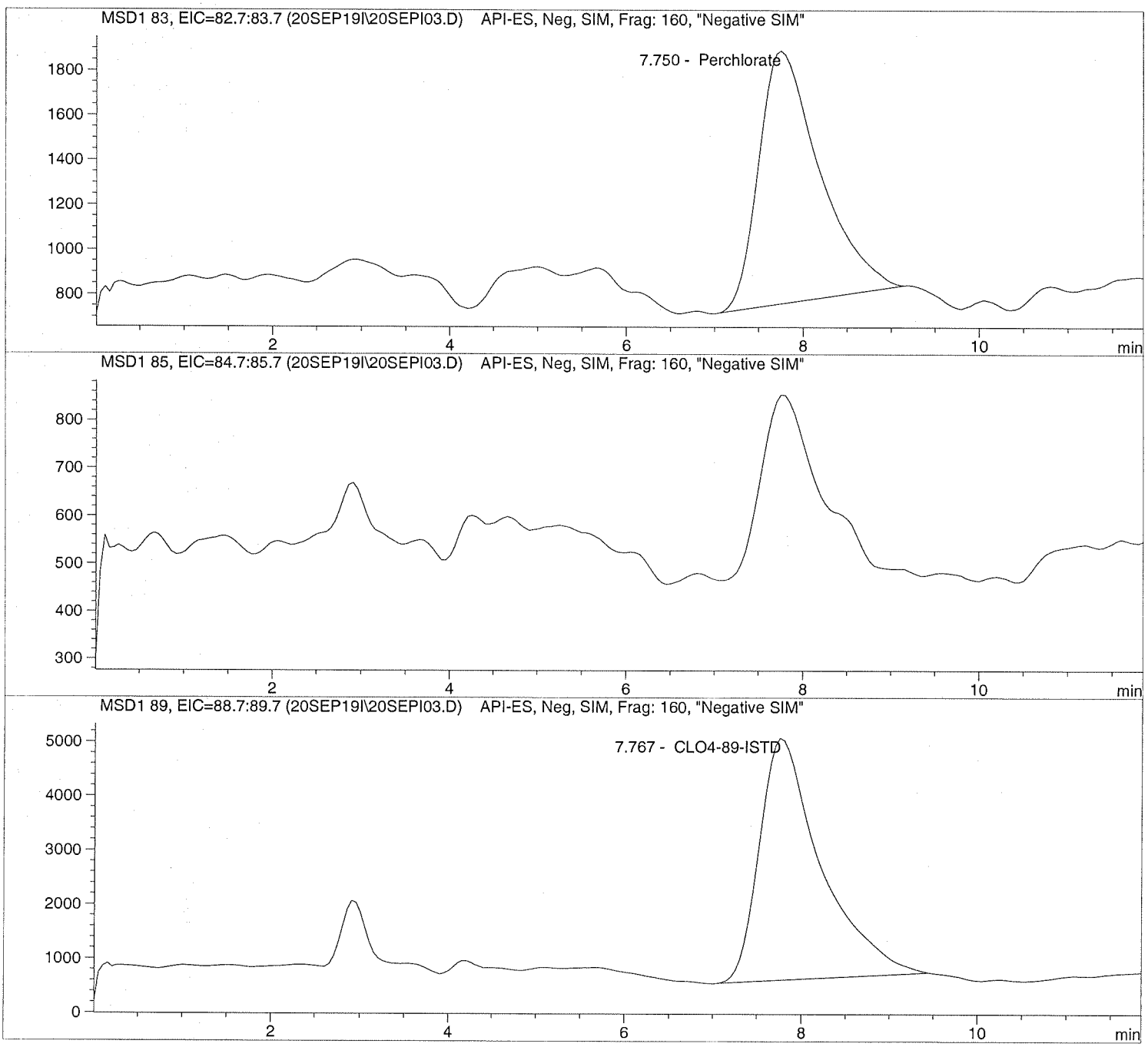
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

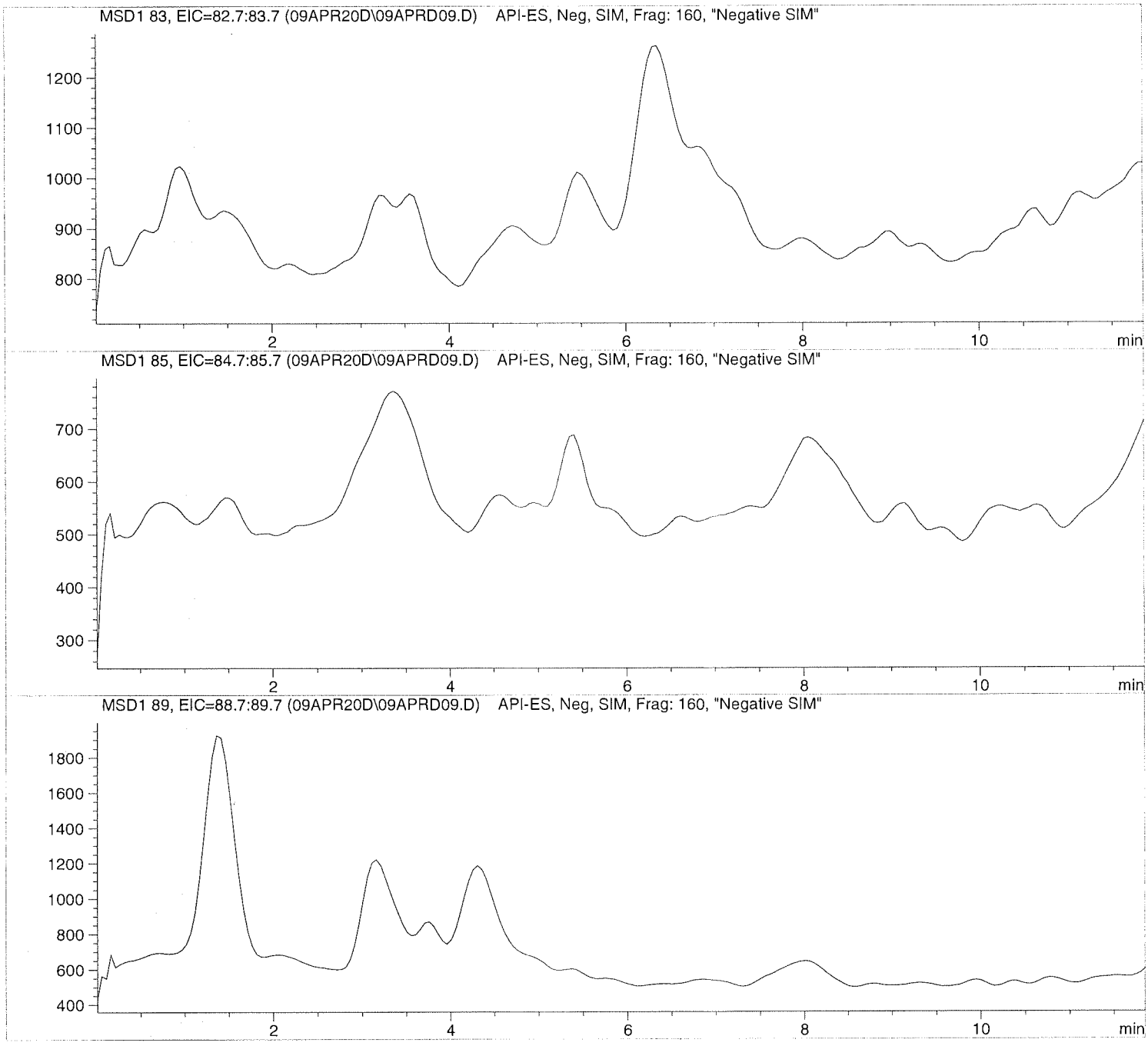
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD09.D Sample Name: 2009235005

Injection Date:	4/09/2020 10:34:44	Seq Line:	9
Sample Name:	2009235005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD09.D Sample Name: 2009235005

Injection Date:	4/09/2020 10:34:44	Seq Line:	9
Sample Name:	2009235005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-89-ISTD

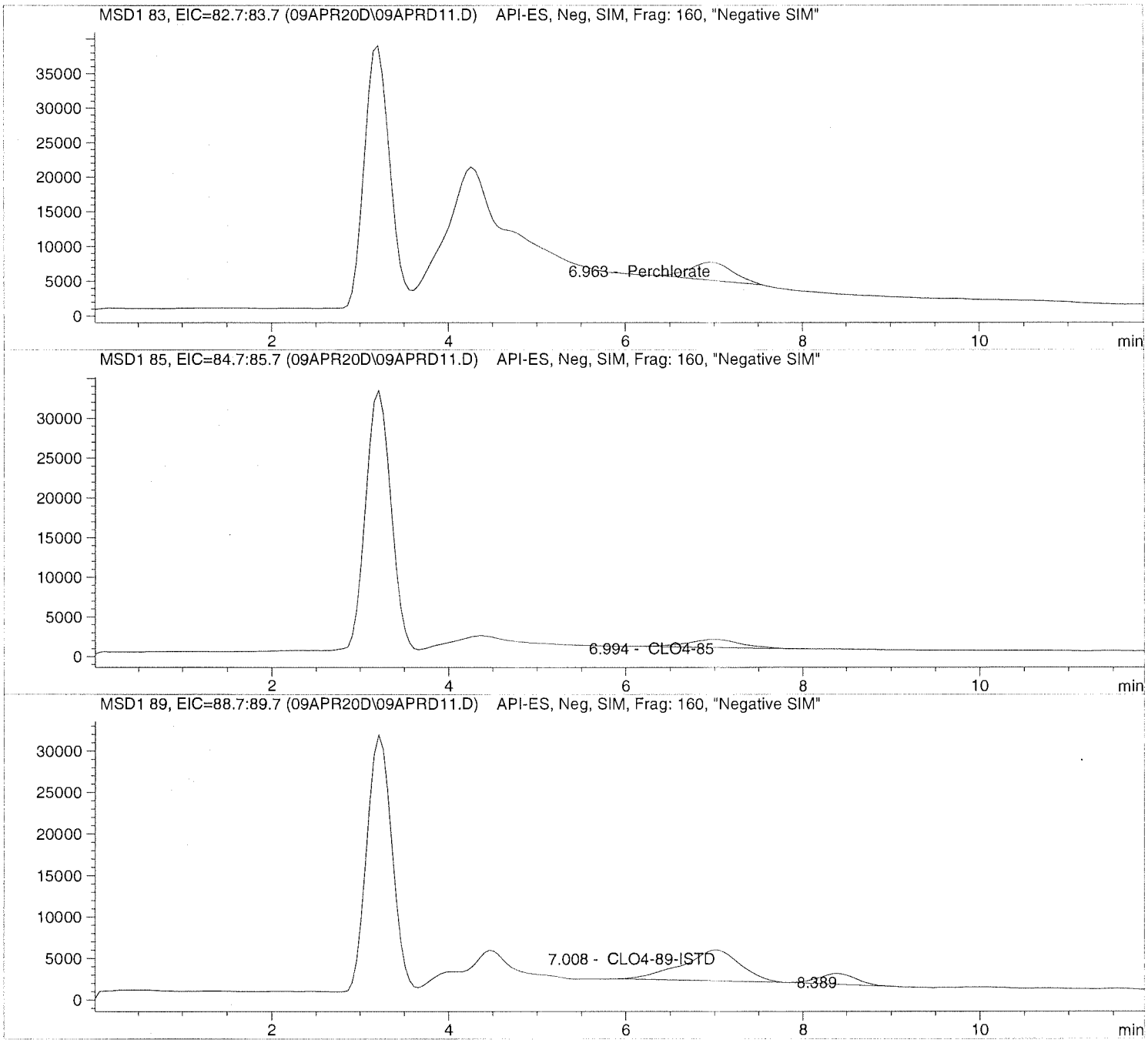
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD11.D Sample Name: 2009235007 MSD

Injection Date:	4/09/2020 11:02:39	Seq Line:	11
Sample Name:	2009235007 MSD	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD11.D Sample Name: 2009235007 MSD

Injection Date:	4/09/2020 11:02:39	Seq Line:	11
Sample Name:	2009235007 MSD	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.963	PBA	87377.1	1.8866	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.994	PBA	42982.8	2.9860	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.008	PB	168588.4	5.0000	CLO4-89-ISTD
8.389	VBA	38495.4	0.0000	

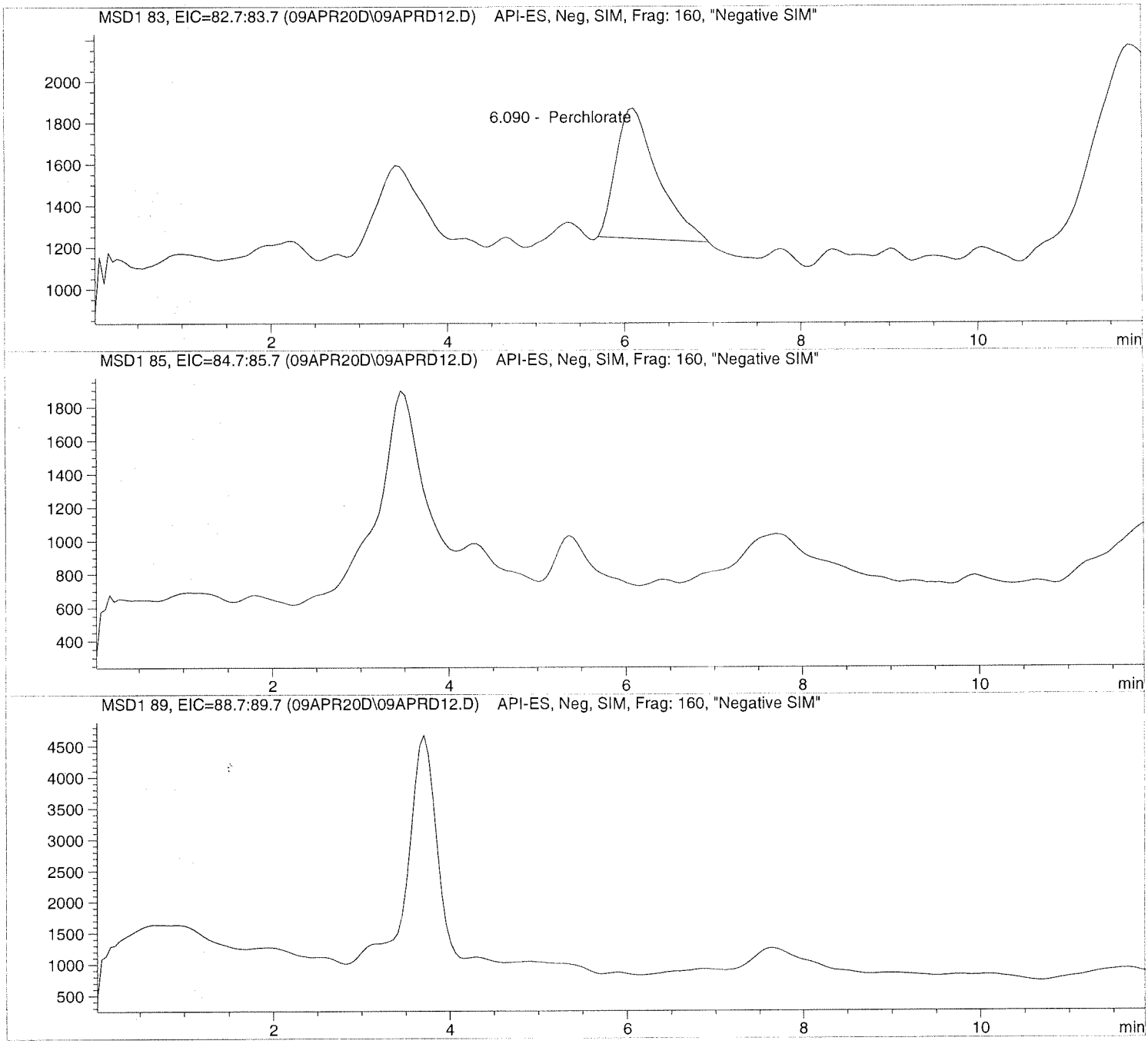
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD12.D Sample Name: 2009423001

Injection Date:	4/09/2020 11:16:34	Seq Line:	12
Sample Name:	2009423001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD12.D Sample Name: 2009423001

Injection Date:	4/09/2020 11:16:34	Seq Line:	12
Sample Name:	2009423001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.090	PBA	20400.1	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-89-ISTD

*** End of Report ***

10450 Stancliff Rd. Suite 210
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April 15, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20040041**

Laboratory Results for: **Longhorn Army Ammunition Plant - 16**

Dear Susan,

ALS Environmental received 8 sample(s) on Apr 01, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Work Order: HS20040041

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20040041-01	16EW08-200331	Groundwater		31-Mar-2020 08:35	01-Apr-2020 09:00	☐
HS20040041-02	16WW23-20331	Groundwater		31-Mar-2020 09:20	01-Apr-2020 09:00	☐
HS20040041-03	16WW24-20331	Groundwater		31-Mar-2020 10:10	01-Apr-2020 09:00	☐
HS20040041-04	16WW24-20331-FD	Groundwater		31-Mar-2020 10:10	01-Apr-2020 09:00	☐
HS20040041-05	16SW-03-200331	Groundwater		31-Mar-2020 13:00	01-Apr-2020 09:00	☐
HS20040041-06	16SW-02-200331	Groundwater		31-Mar-2020 13:15	01-Apr-2020 09:00	☐
HS20040041-07	16SW-01-200331	Groundwater		31-Mar-2020 13:30	01-Apr-2020 09:00	☐
HS20040041-08	Trip blank -200331	Water	CG-021720-11	31-Mar-2020 00:00	01-Apr-2020 09:00	☐

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Work Order: HS20040041

CASE NARRATIVE

Work Order Comments

• The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R359449

Sample ID: 16EW08-200331 (HS20040041-01)

• Lowest practical dilution for sample HS20040041-01 due to matrix.

Metals by Method SW6020

Batch ID: 152654

Sample ID: HS20040284-01MS

• MS and MSD are for an unrelated sample

WetChemistry by Method SW9056

Batch ID: R360018

Sample ID: 16EW08-200331 (HS20040041-01)

• Sample reported at 5x due to sample matrix.

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16EW08-200331
Collection Date: 31-Mar-2020 08:35

ANALYTICAL REPORT
WorkOrder:HS20040041
Lab ID:HS20040041-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	100	U	30	100	100	UG/L	100	02-Apr-2020 16:14
1,1-Dichloroethene	50	U	20	50	100	UG/L	100	02-Apr-2020 16:14
1,2-Dichloroethane	50	U	20	50	100	UG/L	100	02-Apr-2020 16:14
cis-1,2-Dichloroethene	50	U	20	50	100	UG/L	100	02-Apr-2020 16:14
Methylene chloride	100	U	40	100	200	UG/L	100	02-Apr-2020 16:14
Trichloroethene	**52**	J	**20**	**50**	**100**	**UG/L**	100	02-Apr-2020 16:14
Vinyl chloride	50	U	20	50	100	UG/L	100	02-Apr-2020 16:14
Surr: 1,2-Dichloroethane-d4	*86.9*			**0**	*81-118*	*%REC*	*100*	*02-Apr-2020 16:14*
Surr: 4-Bromofluorobenzene	*93.3*			**0**	*85-114*	*%REC*	*100*	*02-Apr-2020 16:14*
Surr: Dibromofluoromethane	*94.6*			**0**	*80-119*	*%REC*	*100*	*02-Apr-2020 16:14*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*100*	*02-Apr-2020 16:14*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: JHD
Bromide	0.500	U	0.150	0.500	0.500	mg/L	5	15-Apr-2020 12:13
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	10-Apr-2020 10:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW23-20331
Collection Date: 31-Mar-2020 09:20

ANALYTICAL REPORT
WorkOrder:HS20040041
Lab ID:HS20040041-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	02-Apr-2020 13:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:49
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:49
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Apr-2020 13:49
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:49
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*81-118*	*%REC*	*1*	*02-Apr-2020 13:49*
Surr: 4-Bromofluorobenzene	*98.0*			**0**	*85-114*	*%REC*	*1*	*02-Apr-2020 13:49*
Surr: Dibromofluoromethane	*93.5*			**0**	*80-119*	*%REC*	*1*	*02-Apr-2020 13:49*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*02-Apr-2020 13:49*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW24-20331
Collection Date: 31-Mar-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20040041
Lab ID:HS20040041-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	02-Apr-2020 14:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:13
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Apr-2020 14:13
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:13
Surr: 1,2-Dichloroethane-d4	*89.3*			**0**	*81-118*	*%REC*	*1*	*02-Apr-2020 14:13*
Surr: 4-Bromofluorobenzene	*95.5*			**0**	*85-114*	*%REC*	*1*	*02-Apr-2020 14:13*
Surr: Dibromofluoromethane	*94.1*			**0**	*80-119*	*%REC*	*1*	*02-Apr-2020 14:13*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*02-Apr-2020 14:13*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16WW24-20331-FD
Collection Date: 31-Mar-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20040041
Lab ID:HS20040041-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	02-Apr-2020 14:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:38
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:38
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Apr-2020 14:38
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 14:38
Surr: 1,2-Dichloroethane-d4	*89.2*			**0**	*81-118*	*%REC*	*1*	*02-Apr-2020 14:38*
Surr: 4-Bromofluorobenzene	*97.3*			**0**	*85-114*	*%REC*	*1*	*02-Apr-2020 14:38*
Surr: Dibromofluoromethane	*94.0*			**0**	*80-119*	*%REC*	*1*	*02-Apr-2020 14:38*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*02-Apr-2020 14:38*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16SW-03-200331
Collection Date: 31-Mar-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20040041
Lab ID:HS20040041-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	02-Apr-2020 15:02
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:02
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:02
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:02
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Apr-2020 15:02
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:02
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:02
Surr: 1,2-Dichloroethane-d4	*88.4*			**0**	*81-118*	*%REC*	*1*	*02-Apr-2020 15:02*
Surr: 4-Bromofluorobenzene	*97.5*			**0**	*85-114*	*%REC*	*1*	*02-Apr-2020 15:02*
Surr: Dibromofluoromethane	*95.6*			**0**	*80-119*	*%REC*	*1*	*02-Apr-2020 15:02*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*02-Apr-2020 15:02*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 13-Apr-2020		Analyst: JHD
Arsenic	**0.00120**	J	**0.000400**	**0.000500**	**0.00500**	**mg/L**	1	14-Apr-2020 22:39
Chromium	**0.00206**	J	**0.000400**	**0.000500**	**0.00500**	**mg/L**	1	14-Apr-2020 22:39
Manganese	**0.136**		**0.000700**	**0.00250**	**0.00500**	**mg/L**	1	14-Apr-2020 22:39
Nickel	**0.00436**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	14-Apr-2020 22:39
Thallium	0.000500	U	0.000200	0.000500	0.00200	mg/L	1	14-Apr-2020 22:39
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16SW-02-200331
Collection Date: 31-Mar-2020 13:15

ANALYTICAL REPORT
WorkOrder:HS20040041
Lab ID:HS20040041-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	02-Apr-2020 15:26
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:26
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:26
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:26
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Apr-2020 15:26
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:26
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:26
Surr: 1,2-Dichloroethane-d4	*89.5*			**0**	*81-118*	*%REC*	*1*	*02-Apr-2020 15:26*
Surr: 4-Bromofluorobenzene	*96.2*			**0**	*85-114*	*%REC*	*1*	*02-Apr-2020 15:26*
Surr: Dibromofluoromethane	*95.4*			**0**	*80-119*	*%REC*	*1*	*02-Apr-2020 15:26*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*02-Apr-2020 15:26*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 13-Apr-2020		Analyst: JHD
Arsenic	**0.00102**	J	**0.000400**	**0.000500**	**0.00500**	**mg/L**	1	14-Apr-2020 22:41
Chromium	**0.00138**	J	**0.000400**	**0.000500**	**0.00500**	**mg/L**	1	14-Apr-2020 22:41
Manganese	**0.114**		**0.000700**	**0.00250**	**0.00500**	**mg/L**	1	14-Apr-2020 22:41
Nickel	**0.00349**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	14-Apr-2020 22:41
Thallium	0.000500	U	0.000200	0.000500	0.00200	mg/L	1	14-Apr-2020 22:41
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: 16SW-01-200331
Collection Date: 31-Mar-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20040041
Lab ID:HS20040041-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	02-Apr-2020 15:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:50
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Apr-2020 15:50
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 15:50
Surr: 1,2-Dichloroethane-d4	*87.8*			**0**	*81-118*	*%REC*	*1*	*02-Apr-2020 15:50*
Surr: 4-Bromofluorobenzene	*97.3*			**0**	*85-114*	*%REC*	*1*	*02-Apr-2020 15:50*
Surr: Dibromofluoromethane	*94.8*			**0**	*80-119*	*%REC*	*1*	*02-Apr-2020 15:50*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*02-Apr-2020 15:50*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 13-Apr-2020		Analyst: JHD
Arsenic	**0.00106**	J	**0.000400**	**0.000500**	**0.00500**	**mg/L**	1	14-Apr-2020 22:43
Chromium	**0.00185**	J	**0.000400**	**0.000500**	**0.00500**	**mg/L**	1	14-Apr-2020 22:43
Manganese	**0.123**		**0.000700**	**0.00250**	**0.00500**	**mg/L**	1	14-Apr-2020 22:43
Nickel	**0.00397**	J	**0.000600**	**0.00100**	**0.00500**	**mg/L**	1	14-Apr-2020 22:43
Thallium	0.000500	U	0.000200	0.000500	0.00200	mg/L	1	14-Apr-2020 22:43
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Apr-2020 10:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
Sample ID: Trip blank -200331
Collection Date: 31-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20040041
Lab ID:HS20040041-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	02-Apr-2020 13:25
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:25
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Apr-2020 13:25
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Apr-2020 13:25
Surr: 1,2-Dichloroethane-d4	*89.1*			**0**	*81-118*	*%REC*	*1*	*02-Apr-2020 13:25*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*85-114*	*%REC*	*1*	*02-Apr-2020 13:25*
Surr: Dibromofluoromethane	*94.3*			**0**	*80-119*	*%REC*	*1*	*02-Apr-2020 13:25*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*02-Apr-2020 13:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 15-Apr-20

Weight / Prep Log

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20040041

Batch ID: 152654 **Start Date:** 13 Apr 2020 08:00 **End Date:** 13 Apr 2020 12:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20040041-05		10 (mL)	10 (mL)	1
HS20040041-06		10 (mL)	10 (mL)	1
HS20040041-07		10 (mL)	10 (mL)	1

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20040041

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 152654 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Groundwater	
HS20040041-05	16SW-03-200331	31 Mar 2020 13:00		13 Apr 2020 12:00	14 Apr 2020 22:39	1
HS20040041-06	16SW-02-200331	31 Mar 2020 13:15		13 Apr 2020 12:00	14 Apr 2020 22:41	1
HS20040041-07	16SW-01-200331	31 Mar 2020 13:30		13 Apr 2020 12:00	14 Apr 2020 22:43	1
Batch ID: R359449 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20040041-08	Trip blank -200331	31 Mar 2020 00:00			02 Apr 2020 13:25	1
Batch ID: R359449 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20040041-01	16EW08-200331	31 Mar 2020 08:35			02 Apr 2020 16:14	100
HS20040041-02	16WW23-20331	31 Mar 2020 09:20			02 Apr 2020 13:49	1
HS20040041-03	16WW24-20331	31 Mar 2020 10:10			02 Apr 2020 14:13	1
HS20040041-04	16WW24-20331-FD	31 Mar 2020 10:10			02 Apr 2020 14:38	1
HS20040041-05	16SW-03-200331	31 Mar 2020 13:00			02 Apr 2020 15:02	1
HS20040041-06	16SW-02-200331	31 Mar 2020 13:15			02 Apr 2020 15:26	1
HS20040041-07	16SW-01-200331	31 Mar 2020 13:30			02 Apr 2020 15:50	1
Batch ID: R359771 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20040041-01	16EW08-200331	31 Mar 2020 08:35			10 Apr 2020 10:19	1
Batch ID: R359852 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20040041-01	16EW08-200331	31 Mar 2020 08:35			13 Apr 2020 10:47	1
HS20040041-02	16WW23-20331	31 Mar 2020 09:20			13 Apr 2020 10:47	1
HS20040041-03	16WW24-20331	31 Mar 2020 10:10			13 Apr 2020 10:47	1
HS20040041-04	16WW24-20331-FD	31 Mar 2020 10:10			13 Apr 2020 10:47	1
HS20040041-05	16SW-03-200331	31 Mar 2020 13:00			13 Apr 2020 10:47	1
HS20040041-06	16SW-02-200331	31 Mar 2020 13:15			13 Apr 2020 10:47	1
HS20040041-07	16SW-01-200331	31 Mar 2020 13:30			13 Apr 2020 10:47	1
Batch ID: R360018 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20040041-01	16EW08-200331	31 Mar 2020 08:35			15 Apr 2020 12:13	5

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20040041

QC BATCH REPORT

Batch ID: 152654 (0) **Instrument: ICPMS06** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-152654** Units: **mg/L** Analysis Date: **14-Apr-2020 22:22**
Client ID: Run ID: **ICPMS06_359908** SeqNo: **5554534** PrepDate: **13-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00500								U
Chromium	0.000500	0.00500								U
Manganese	0.00250	0.00500								U
Nickel	0.00100	0.00500								U
Thallium	0.000500	0.00200								U

LCS Sample ID: **LCS-152654** Units: **mg/L** Analysis Date: **14-Apr-2020 22:24**
Client ID: Run ID: **ICPMS06_359908** SeqNo: **5554535** PrepDate: **13-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0492	0.00500	0.05	0	98.4	84 - 116				
Chromium	0.0471	0.00500	0.05	0	94.2	85 - 116				
Manganese	0.04696	0.00500	0.05	0	93.9	87 - 115				
Nickel	0.04798	0.00500	0.05	0	96.0	85 - 117				
Thallium	0.04763	0.00200	0.05	0	95.3	82 - 116				

MS Sample ID: **HS20040284-01MS** Units: **mg/L** Analysis Date: **14-Apr-2020 22:30**
Client ID: Run ID: **ICPMS06_359908** SeqNo: **5554538** PrepDate: **13-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05009	0.00500	0.05	0.000716	98.8	84 - 116				
Chromium	0.0485	0.00500	0.05	0.001643	93.7	85 - 116				
Manganese	0.1738	0.00500	0.05	0.1137	120	87 - 115				S
Nickel	0.05121	0.00500	0.05	0.004967	92.5	85 - 117				
Thallium	0.04734	0.00200	0.05	0.000067	94.6	82 - 116				

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20040041

QC BATCH REPORT

Batch ID: 152654 (0) **Instrument: ICPMS06** **Method: METALS BY ICPMS BY SW6020A**

MSD Sample ID: **HS20040284-01MSD** Units: **mg/L** Analysis Date: **14-Apr-2020 22:31**
Client ID: Run ID: **ICPMS06_359908** SeqNo: **5554539** PrepDate: **13-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05041	0.00500	0.05	0.000716	99.4	84 - 116	0.05009	0.633	20	
Chromium	0.04838	0.00500	0.05	0.001643	93.5	85 - 116	0.0485	0.235	20	
Manganese	0.1746	0.00500	0.05	0.1137	122	87 - 115	0.1738	0.46	20	S
Nickel	0.05074	0.00500	0.05	0.004967	91.5	85 - 117	0.05121	0.916	20	
Thallium	0.04569	0.00200	0.05	0.000067	91.2	82 - 116	0.04734	3.56	20	

PDS Sample ID: **HS20040284-01PDS** Units: **mg/L** Analysis Date: **14-Apr-2020 22:33**
Client ID: Run ID: **ICPMS06_359908** SeqNo: **5554540** PrepDate: **13-Apr-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1103	0.00500	0.1	0.000716	110	80 - 120				
Chromium	0.1066	0.00500	0.1	0.001643	105	80 - 120				
Manganese	0.2244	0.00500	0.1	0.1137	111	80 - 120				
Nickel	0.105	0.00500	0.1	0.004967	100	80 - 120				
Thallium	0.09907	0.00200	0.1	0.000067	99.0	80 - 120				

SD Sample ID: **HS20040284-01SD** Units: **mg/L** Analysis Date: **14-Apr-2020 22:28**
Client ID: Run ID: **ICPMS06_359908** SeqNo: **5554537** PrepDate: **13-Apr-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.00250	0.0250					0.000716	0	10	U
Chromium	0.00250	0.0250					0.001643	0	10	U
Manganese	0.1148	0.0250					0.1137	0.988	10	
Nickel	0.005064	0.0250					0.004967	0	10	J
Thallium	0.00250	0.0100					0.000067	0	10	U

The following samples were analyzed in this batch: HS20040041-05 HS20040041-06 HS20040041-07

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20040041

QC BATCH REPORT

Batch ID: R359449 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200402** Units: **UG/L** Analysis Date: **02-Apr-2020 13:01**
Client ID: Run ID: **VOA6_359449** SeqNo: **5543009** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.46*	*1.0*	*50*	*0*	*88.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.64*	*1.0*	*50*	*0*	*97.3*	*85 - 114*				
Surr: Dibromofluoromethane	*47.15*	*1.0*	*50*	*0*	*94.3*	*80 - 119*				
Surr: Toluene-d8	*50.78*	*1.0*	*50*	*0*	*102*	*89 - 112*				

LCS Sample ID: **VLCSW-200402** Units: **UG/L** Analysis Date: **02-Apr-2020 12:13**
Client ID: Run ID: **VOA6_359449** SeqNo: **5543008** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.63	1.0	20	0	98.1	80 - 119				
1,1-Dichloroethene	18.01	1.0	20	0	90.1	71 - 131				
1,2-Dichloroethane	19.29	1.0	20	0	96.5	73 - 128				
cis-1,2-Dichloroethene	19.94	1.0	20	0	99.7	78 - 123				
Methylene chloride	18.92	2.0	20	0	94.6	74 - 124				
Trichloroethene	19.31	1.0	20	0	96.6	79 - 123				
Vinyl chloride	16.52	1.0	20	0	82.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.73*	*1.0*	*50*	*0*	*99.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.56*	*1.0*	*50*	*0*	*99.1*	*85 - 114*				
Surr: Dibromofluoromethane	*51.44*	*1.0*	*50*	*0*	*103*	*80 - 119*				
Surr: Toluene-d8	*49.99*	*1.0*	*50*	*0*	*100.0*	*89 - 112*				

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20040041

QC BATCH REPORT

Batch ID: R359449 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20040041-02MS** Units: **UG/L** Analysis Date: **02-Apr-2020 16:38**
Client ID: **16WW23-20331** Run ID: **VOA6_359449** SeqNo: **5543018** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.35	1.0	20	0	96.8	80 - 119				
1,1-Dichloroethene	19.61	1.0	20	0	98.0	71 - 131				
1,2-Dichloroethane	19.44	1.0	20	0	97.2	73 - 128				
cis-1,2-Dichloroethene	19.32	1.0	20	0	96.6	78 - 123				
Methylene chloride	18.34	2.0	20	0	91.7	74 - 124				
Trichloroethene	20.87	1.0	20	0	104	79 - 123				
Vinyl chloride	18.9	1.0	20	0	94.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.63*	*1.0*	*50*	*0*	*89.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.24*	*1.0*	*50*	*0*	*96.5*	*85 - 114*				
Surr: Dibromofluoromethane	*48.21*	*1.0*	*50*	*0*	*96.4*	*80 - 119*				
Surr: Toluene-d8	*50.95*	*1.0*	*50*	*0*	*102*	*89 - 112*				

MSD Sample ID: **HS20040041-02MSD** Units: **UG/L** Analysis Date: **02-Apr-2020 17:02**
Client ID: **16WW23-20331** Run ID: **VOA6_359449** SeqNo: **5543019** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.36	1.0	20	0	96.8	80 - 119	19.35	0.0483	20	
1,1-Dichloroethene	18.44	1.0	20	0	92.2	71 - 131	19.61	6.11	20	
1,2-Dichloroethane	18.67	1.0	20	0	93.4	73 - 128	19.44	4.01	20	
cis-1,2-Dichloroethene	18.88	1.0	20	0	94.4	78 - 123	19.32	2.31	20	
Methylene chloride	17.16	2.0	20	0	85.8	74 - 124	18.34	6.64	20	
Trichloroethene	20.31	1.0	20	0	102	79 - 123	20.87	2.71	20	
Vinyl chloride	17.14	1.0	20	0	85.7	58 - 137	18.9	9.77	20	
Surr: 1,2-Dichloroethane-d4	*44.05*	*1.0*	*50*	*0*	*88.1*	*81 - 118*	*44.63*	*1.31*	*20*	
Surr: 4-Bromofluorobenzene	*48.12*	*1.0*	*50*	*0*	*96.2*	*85 - 114*	*48.24*	*0.266*	*20*	
Surr: Dibromofluoromethane	*47.95*	*1.0*	*50*	*0*	*95.9*	*80 - 119*	*48.21*	*0.535*	*20*	
Surr: Toluene-d8	*51.38*	*1.0*	*50*	*0*	*103*	*89 - 112*	*50.95*	*0.852*	*20*	

The following samples were analyzed in this batch:

HS20040041-01	HS20040041-02	HS20040041-03	HS20040041-04
HS20040041-05	HS20040041-06	HS20040041-07	HS20040041-08

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: HS20040041

QC BATCH REPORT

Batch ID: R360018 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK041520** Units: **mg/L** Analysis Date: **15-Apr-2020 11:37**
Client ID: Run ID: **ICS-Integrion_360018** SeqNo: **5555470** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **15-Apr-2020 11:55**
Client ID: Run ID: **ICS-Integrion_360018** SeqNo: **5555471** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.85	0.100	4	0	96.2	80 - 120				

MS Sample ID: **HS20040583-01MS** Units: **mg/L** Analysis Date: **15-Apr-2020 13:08**
Client ID: Run ID: **ICS-Integrion_360018** SeqNo: **5555475** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1.697	0.100	2	0.0607	81.8	80 - 120				

MSD Sample ID: **HS20040583-01MSD** Units: **mg/L** Analysis Date: **15-Apr-2020 13:26**
Client ID: Run ID: **ICS-Integrion_360018** SeqNo: **5555476** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	1.692	0.100	2	0.0607	81.5	80 - 120	1.697	0.301	20	

The following samples were analyzed in this batch: HS20040041-01

ALS Houston, US Date: 15-Apr-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 16
WorkOrder: **HS20040041**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

ALS Houston, US Date: 15-Apr-20

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS20040041
Date/Time Received: **01-Apr-2020 09:00**
Received by: **JRM**

Checklist completed by: *Paresh M. Giga* eSignature 1-Apr-2020 Date
Reviewed by: *RJ Modashia* eSignature 2-Apr-2020 Date

Matrices: **GW/Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.9C U/c	IR11
Cooler(s)/Kit(s):	45387	
Date/Time sample(s) sent to storage:	4/1/2020 16:40	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: LHAAP16 March 2020__-ALS

TURNAROUND TIME: Normal

RUSH:

Page 1 of

PROJECT/CLIENT INFO

Facility Name	Longhorn AAP
Project Number	501032
	LHAAP-16
Address	1203-B East Grand Avenue
	PMB 202
City	Marshall
State	TX
Postal Code	75670
Country	USA
Phone Number	713.243.7264
Project Manager	Praveen Srivastav

LABORATORY

Lab Name	ALS Laboratories
Lab Contact	RJ Modashia
Email	RJ.Modashia@alsglobal.com
Address	10450 Stanciff Rd., Suite 210
City	Houston
State	TX
Postal Code	77099
Country	USA
Phone Number	281.575.2279 or 281 530.5656

OTHER INFO

Email Invoice To	FedInvoices@aptim.com
Email Report To	Susan.Huang@aptim.com
Mail Reports To	Susan Huang
Address	4005 Port Chicago Highway, Suite 200
City	Concord
State	CA
Postal Code	94520
Country	USA
Shipping Company	

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	Sample Container and Preservatives	3-40 ml VOA/HCL	3-40 ml VOA/HCL	2-40ml Amber/H2SO4	1-250 ml PE/HNO3	1-250ml PE/Ice	1-250ml PE /Ice	1-250ml PE/Ice	1-125ml PE/Ice		
									ANALYSIS	VOCs by SW8260B	MEE by RSK175	TOC by SM5310C	Metals (arsenic, chromium, manganese, nickel, and thallium) by SW6020	Anions (sulfate/nitrate/bromide) by SW9056	Anions (bromide only) by SW9056	Alkalinity by SM2320	Perchlorate by SW6850		
16EW08-200331	LHAAP16				WG	3/31/20	0835	7		X		X			X		X		
16WW23-200331	LHAAP16				WG	3/31/20	0920	4		X							X		
16WW24-200331	LHAAP16				WG	3/31/20	1010	4		X							X		
16WW24-200331-FD	LHAAP16				WG	3/31/20	1010	4		X							X		
16SW03-200331	LHAAP16				WG	3/31/20	1300	5		X			X				X		
16SW02-200331	LHAAP16				WG	3/31/20	1315	5		X			X				X		
16SW01-200331	LHAAP16				WG	3/31/20	1330	5		X			X				X		
TRIP BLANK	LHAAP16				W	3/31/20		2		X									

HS20040041

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant - 16

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Scott Billings / BHATE	3/31/20 1430	J. Mummy	4/1/20 09:00

Cooler - 95387
Temp 0.9°C
1 of 1 COC

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

45387

CUSTODY SEAL

Date: 31/3/20 Time: 1430
Name: Scott Beesinger
Company: BHMTS

Seal Broken By:
Date: 04/01/20

45387 APR 0 1 2020

Must Deliver Next Business Day
Time and Tempature Sensitive!

45387

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINGER
APTIM
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 25FEB20
ACTWGT: 1.00 LB MAN
CAD: 3001304/CAFE3211
DIMS: 26x14x14 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP 16 -- BQ 70505 -- RJ
RMA:

FedEx Express

FedEx
TRK# 0221 1251 0294 7900

WED - 01 APR 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

FID LG2785 31MAR20 GGGA 56BC9/9C29/65A2

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www.alsglobal.com

April 09, 2020

Analytical Report for Service Request No: K2002855

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS20040041

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory April 03, 2020
For your reference, these analyses have been assigned our service request number **K2002855.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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ALS Group USA, Corp
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    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS20040041
Sample Matrix: Ground Water

Service Request: K2002855
Date Received: 04/03/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One ground water sample was received for analysis at ALS Environmental on 04/03/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The sample was stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 04/09/2020

Chain of Custody

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K2002855

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13613**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20040041
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20040041-01**	**16EW08-200331**	**Groundwater**	**31 Mar 2020 08:35**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			15 Apr 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 4/2/2020 1800.

Received By: _____ Date/Time: 4/3/20 1000

Cooler ID(s): _____ Temperature(s): _____

PC KL

Cooler Receipt and Preservation Form

Client ALS/Houston Service Request K20 02855

Received: 4/3/20 Opened: 4/3/20 By: Unloaded: 4/9/20 By:

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2, sides
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID NA	Tracking Number NA	Filed
0.3	—	—	—	—	39800488WS	13608	1251 0296 1167	
						13613		
						13618		

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y (N)
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

11/16 EW08-206331 "did not ptt. Did not add acid due to sample matrix.

RUSH

General Chemistry

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2002855
Project:	HS20040041	**Date Collected:**	03/31/20
Sample Matrix:	Ground Water	**Date Received:**	04/3/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16EW08-200331	K2002855-001	**800**	200	80	30	400	04/05/20 14:16	
Method Blank	K2002855-MB	ND U	0.50	0.20	0.07	1	04/05/20 07:13	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002855
Project	HS20040041	**Date Collected:**	03/31/20
Sample Matrix:	Ground Water	**Date Received:**	04/03/20
		Date Analyzed:	04/05/20

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	16EW08-200331	**Units:**	mg/L
Lab Code:	K2002855-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K2002855-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	200	80	30	800	850	828	6	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002855
Project:	HS20040041	**Date Analyzed:**	04/05/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	675809

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2002855-LCS	23.1	25.0	93	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2002855
Project: HS20040041

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	675809	KQ2004679-01	04/05/20 02:26	25.0	24.1	96	90-110
CCV2	675809	KQ2004679-02	04/05/20 06:43	25.0	24.8	99	90-110
CCV3	675809	KQ2004679-03	04/05/20 11:54	25.0	24.2	97	90-110
CCV4	675809	KQ2004679-04	04/05/20 17:18	25.0	24.3	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2002855
Project: HS20040041

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	675809	KQ2004679-05	04/05/20 02:41	0.50	0.20	0.07	ND	U
CCB2	675809	KQ2004679-06	04/05/20 06:58	0.50	0.20	0.07	ND	U
CCB3	675809	KQ2004679-07	04/05/20 12:09	0.50	0.20	0.07	ND	U
CCB4	675809	KQ2004679-08	04/05/20 17:33	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original ( ) K2002766, 2824, 2730, 2744, 2782, 2854, 2855, 2876, 2883, 2760

Tier: IV IV II IV I IV IV II IV II

Date Analyzed: 4/4/08 TOC: 675809, 675809

Analyst: BCP Run # DOC: 675810

Analysis: TOC/DOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K2002744-5/5d, and 2883-1/1d report a high %RSD. However, these samples are less than 5x the MRL.

Final Approved by: _____ Date: 4/8/08

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675808 **Method/Testcode:** 415.1/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002766-001	Carbon, Total Organic	N/A		Water	0.51 mg/L	10 ml	51 mg/L	100	7	50			4/4/20 23:37	N	IV
K2002766-002	Carbon, Total Organic	N/A		Water	15.44 mg/L	10 ml	15.4 mg/L	1	0.07	0.50			4/5/20 00:05	N	IV
K2002766-003	Carbon, Total Organic	N/A		Water	0.94 mg/L	10 ml	94 mg/L	100	7	50			4/5/20 01:02	N	IV
K2002766-004	Carbon, Total Organic	N/A		Water	10.84 mg/L	10 ml	10.8 mg/L	1	0.07	0.50			4/5/20 01:30	N	IV
K2002824-004	Carbon, Total Organic	N/A		Water	0.59 mg/L	10 ml	59 mg/L	100	7	50			4/5/20 01:58	N	IV
K2002824-005	Carbon, Total Organic	N/A		Water	15.49 mg/L	10 ml	15.5 mg/L	1	0.07	0.50			4/5/20 02:56	N	IV
K2002824-006	Carbon, Total Organic	N/A		Water	0.58 mg/L	10 ml	58 mg/L	100	7	50			4/5/20 03:24	N	IV
KQ2004678-01	Carbon, Total Organic	CCV		Water	25.78 mg/L	10 ml	25.8 mg/L	1					4/4/20 22:23	N	IV
KQ2004678-02	Carbon, Total Organic	CCV		Water	24.12 mg/L	10 ml	24.1 mg/L	1					4/5/20 02:26	N	IV
KQ2004678-03	Carbon, Total Organic	CCV		Water	24.81 mg/L	10 ml	24.8 mg/L	1					4/5/20 06:43	N	IV
KQ2004678-04	Carbon, Total Organic	CCB		Water	0.38 mg/L	10 ml	0.38 mg/L J	1	0.07	0.50			4/4/20 22:38	N	IV
KQ2004678-05	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 02:41	N	IV
KQ2004678-06	Carbon, Total Organic	CCB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 06:58	N	IV
KQ2004678-07	Carbon, Total Organic	MB		Water	0.10 mg/L	10 ml	0.10 mg/L J	1	0.07	0.50			4/4/20 22:53	N	IV
KQ2004678-08	Carbon, Total Organic	LCS		Water	23.65 mg/L	10 ml	23.7 mg/L	1	0.07	0.50	95		4/4/20 23:08	N	IV
KQ2004678-09	Carbon, Total Organic	MS	K2002766-002	Water	32.15 mg/L	10 ml	129 mg/L	4	0.3	2.0	113		4/5/20 00:33	N	IV
KQ2004678-10	Carbon, Total Organic	DUP	K2002766-001	Water	0.50 mg/L	10 ml	50 mg/L J	100	7	50		4	4/4/20 23:37	N	IV
KQ2004678-11	Carbon, Total Organic	DUP	K2002766-002	Water	15.32 mg/L	10 ml	15.3 mg/L	1	0.07	0.50		<1	4/5/20 00:05	N	IV
KQ2004678-12	Carbon, Total Organic	DUP	K2002766-003	Water	0.98 mg/L	10 ml	98 mg/L	100	7	50		4	4/5/20 01:02	N	IV
KQ2004678-13	Carbon, Total Organic	DUP	K2002766-004	Water	10.78 mg/L	10 ml	10.8 mg/L	1	0.07	0.50		<1	4/5/20 01:30	N	IV
KQ2004678-14	Carbon, Total Organic	DUP	K2002824-004	Water	0.54 mg/L	10 ml	54 mg/L	100	7	50		8	4/5/20 01:58	N	IV
KQ2004678-15	Carbon, Total Organic	DUP	K2002824-005	Water	15.47 mg/L	10 ml	15.5 mg/L	1	0.07	0.50		<1	4/5/20 02:56	N	IV
KQ2004678-16	Carbon, Total Organic	DUP	K2002824-006	Water	0.51 mg/L	10 ml	51 mg/L	100	7	50		13	4/5/20 03:24	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675809 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002730-001	Carbon, Total Organic	N/A		Water	0.68 mg/L	10 ml	0.68 mg/L	1	0.07	0.50			4/5/20 10:02	N	II
K2002730-002	Carbon, Total Organic	N/A		Water	0.69 mg/L	10 ml	0.69 mg/L	1	0.07	0.50			4/5/20 10:30	N	II
K2002730-003	Carbon, Total Organic	N/A		Water	0.53 mg/L	10 ml	0.53 mg/L	1	0.07	0.50			4/5/20 10:58	N	II
K2002730-004	Carbon, Total Organic	N/A		Water	0.94 mg/L	10 ml	0.94 mg/L	1	0.07	0.50			4/5/20 11:26	N	II
K2002730-005	Carbon, Total Organic	N/A		Water	0.77 mg/L	10 ml	0.77 mg/L	1	0.07	0.50			4/5/20 12:24	N	II
K2002730-006	Carbon, Total Organic	N/A		Water	1.49 mg/L	10 ml	1.49 mg/L	1	0.07	0.50			4/5/20 12:52	N	II
K2002730-007	Carbon, Total Organic	N/A		Water	0.88 mg/L	10 ml	0.88 mg/L	1	0.07	0.50			4/5/20 13:20	N	II
K2002744-001	Carbon, Total Organic	N/A		Ground Water	5.23 mg/L	10 ml	5.23 mg/L	1	0.07	0.50			4/5/20 04:50	N	IV
K2002744-002	Carbon, Total Organic	N/A		Ground Water	15.99 mg/L	10 ml	16.0 mg/L	1	0.07	0.50			4/5/20 05:18	Y	IV
K2002744-003	Carbon, Total Organic	N/A		Ground Water	9.82 mg/L	10 ml	9.82 mg/L	1	0.07	0.50			4/5/20 06:15	N	IV
K2002744-004	Carbon, Total Organic	N/A		Ground Water	9.50 mg/L	10 ml	9.50 mg/L	1	0.07	0.50			4/5/20 07:42	N	IV
K2002744-005	Carbon, Total Organic	N/A		Ground Water	0.76 mg/L	10 ml	300 mg/L	400	30	200			4/5/20 08:10	N	IV
K2002782-001	Carbon, Total Organic	N/A		Reagent Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 04:21	N	I
K2002782-002	Carbon, Total Organic	N/A		Reagent Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 04:35	N	I
K2002854-001	Carbon, Total Organic	N/A		Water	2.92 mg/L	10 ml	2.92 mg/L	1	0.07	0.50			4/5/20 09:34	N	IV
K2002855-001	Carbon, Total Organic	N/A		Ground Water	2.01 mg/L	10 ml	800 mg/L	400	30	200			4/5/20 14:16	N	IV
K2002858-001	Carbon, Total Organic	N/A		Water	2.11 mg/L	10 ml	2.11 mg/L	1	0.07	0.50			4/5/20 13:48	N	II
K2002876-001	Carbon, Total Organic	N/A		Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 15:40	N	II
K2002883-001	Carbon, Total Organic	N/A		Water	0.28 mg/L	10 ml	0.28 mg/L J	1	0.07	0.50			4/5/20 16:08	N	IV
KQ2004679-01	Carbon, Total Organic	CCV		Reagent Water	24.12 mg/L	10 ml	24.1 mg/L	1					4/5/20 02:26	N	I
KQ2004679-02	Carbon, Total Organic	CCV		Reagent Water	24.81 mg/L	10 ml	24.8 mg/L	1					4/5/20 06:43	N	I
KQ2004679-03	Carbon, Total Organic	CCV		Reagent Water	24.17 mg/L	10 ml	24.2 mg/L	1					4/5/20 11:54	N	I
KQ2004679-04	Carbon, Total Organic	CCV		Reagent Water	24.31 mg/L	10 ml	24.3 mg/L	1					4/5/20 17:18	N	I
KQ2004679-05	Carbon, Total Organic	CCB		Reagent Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 02:41	N	I
KQ2004679-06	Carbon, Total Organic	CCB		Reagent Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 06:58	N	I
KQ2004679-07	Carbon, Total Organic	CCB		Reagent Water	-0.09 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 12:09	N	I
KQ2004679-08	Carbon, Total Organic	CCB		Reagent Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 17:33	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675809 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2004679-09	Carbon, Total Organic	MB		Reagent Water	-0.05 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 07:13	N	I
KQ2004679-10	Carbon, Total Organic	LCS		Reagent Water	23.13 mg/L	10 ml	23.1 mg/L	1	0.07	0.50	93		4/5/20 07:27	N	I
KQ2004679-11	Carbon, Total Organic	MS	K2002744-002	Ground Water	31.79 mg/L	10 ml	127 mg/L	4	0.3	2.0	111		4/5/20 05:46	N	IV
KQ2004679-12	Carbon, Total Organic	DUP	K2002730-001	Water	0.64 mg/L	10 ml	0.64 mg/L	1	0.07	0.50		7	4/5/20 10:02	N	II
KQ2004679-13	Carbon, Total Organic	DUP	K2002730-002	Water	0.68 mg/L	10 ml	0.68 mg/L	1	0.07	0.50		<1	4/5/20 10:30	N	II
KQ2004679-14	Carbon, Total Organic	DUP	K2002730-003	Water	0.55 mg/L	10 ml	0.55 mg/L	1	0.07	0.50		4	4/5/20 10:58	N	II
KQ2004679-15	Carbon, Total Organic	DUP	K2002730-004	Water	0.94 mg/L	10 ml	0.94 mg/L	1	0.07	0.50		<1	4/5/20 11:26	N	II
KQ2004679-16	Carbon, Total Organic	DUP	K2002730-005	Water	0.72 mg/L	10 ml	0.72 mg/L	1	0.07	0.50		7	4/5/20 12:24	N	II
KQ2004679-17	Carbon, Total Organic	DUP	K2002730-006	Water	1.53 mg/L	10 ml	1.53 mg/L	1	0.07	0.50		3	4/5/20 12:52	N	II
KQ2004679-18	Carbon, Total Organic	DUP	K2002730-007	Water	0.85 mg/L	10 ml	0.85 mg/L	1	0.07	0.50		3	4/5/20 13:20	N	II
KQ2004679-19	Carbon, Total Organic	DUP	K2002744-002	Ground Water	15.96 mg/L	10 ml	16.0 mg/L	1	0.07	0.50		<1	4/5/20 05:18	N	IV
KQ2004679-20	Carbon, Total Organic	DUP	K2002744-001	Ground Water	5.27 mg/L	10 ml	5.27 mg/L	1	0.07	0.50		<1	4/5/20 04:50	N	IV
KQ2004679-21	Carbon, Total Organic	DUP	K2002744-003	Ground Water	9.62 mg/L	10 ml	9.62 mg/L	1	0.07	0.50		2	4/5/20 06:15	N	IV
KQ2004679-22	Carbon, Total Organic	DUP	K2002744-004	Ground Water	9.21 mg/L	10 ml	9.21 mg/L	1	0.07	0.50		3	4/5/20 07:42	N	IV
KQ2004679-23	Carbon, Total Organic	DUP	K2002744-005	Ground Water	0.85 mg/L	10 ml	340 mg/L	400	30	200		11*	4/5/20 08:10	N	IV
KQ2004679-26	Carbon, Total Organic	DUP	K2002854-001	Water	2.96 mg/L	10 ml	2.96 mg/L	1	0.07	0.50		1	4/5/20 09:34	N	IV
KQ2004679-27	Carbon, Total Organic	DUP	K2002855-001	Ground Water	2.14 mg/L	10 ml	850 mg/L	400	30	200		6	4/5/20 14:16	N	IV
KQ2004679-28	Carbon, Total Organic	DUP	K2002858-001	Water	2.11 mg/L	10 ml	2.11 mg/L	1	0.07	0.50		<1	4/5/20 13:48	N	II
KQ2004679-29	Carbon, Total Organic	DUP	K2002876-001	Water	-0.08 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	4/5/20 15:40	N	II
KQ2004679-30	Carbon, Total Organic	DUP	K2002883-001	Water	0.22 mg/L	10 ml	0.22 mg/L J	1	0.07	0.50		25*	4/5/20 16:08	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675810 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002760-001	Carbon, Dissolved Organic (DOC)	N/A		Effluent	1.26 mg/L	10 ml	1.26 mg/L	1	0.07	0.50			4/5/20 16:36	N	II
K2002760-002	Carbon, Dissolved Organic (DOC)	N/A		Water	1.30 mg/L	10 ml	1.30 mg/L	1	0.07	0.50			4/5/20 18:17	N	II
KQ2004680-01	Carbon, Dissolved Organic (DOC)	CCV		Effluent	24.17 mg/L	10 ml	24.2 mg/L	1					4/5/20 11:54	N	II
KQ2004680-02	Carbon, Dissolved Organic (DOC)	CCV		Effluent	24.31 mg/L	10 ml	24.3 mg/L	1					4/5/20 17:18	N	II
KQ2004680-03	Carbon, Dissolved Organic (DOC)	CCV		Effluent	24.12 mg/L	10 ml	24.1 mg/L	1					4/5/20 18:45	N	II
KQ2004680-04	Carbon, Dissolved Organic (DOC)	CCB		Effluent	-0.09 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 12:09	N	II
KQ2004680-05	Carbon, Dissolved Organic (DOC)	CCB		Effluent	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 17:33	N	II
KQ2004680-06	Carbon, Dissolved Organic (DOC)	CCB		Effluent	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 19:00	N	II
KQ2004680-07	Carbon, Dissolved Organic (DOC)	MB		Effluent	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			4/5/20 17:48	N	II
KQ2004680-08	Carbon, Dissolved Organic (DOC)	LCS		Effluent	23.12 mg/L	10 ml	23.1 mg/L	1	0.07	0.50	92		4/5/20 18:03	N	II
KQ2004680-09	Carbon, Dissolved Organic (DOC)	MS	K2002760-001	Effluent	29.25 mg/L	10 ml	29.3 mg/L	1	0.07	0.50	112		4/5/20 17:04	N	II
KQ2004680-10	Carbon, Dissolved Organic (DOC)	DUP	K2002760-001	Effluent	1.29 mg/L	10 ml	1.29 mg/L	1	0.07	0.50		2	4/5/20 16:36	N	II
KQ2004680-11	Carbon, Dissolved Organic (DOC)	DUP	K2002760-002	Water	1.29 mg/L	10 ml	1.29 mg/L	1	0.07	0.50		1	4/5/20 18:17	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

0.486			OBSERVATIONS	9	ABOVE
0.204	0.204		STD Deviation	0.15797	0.2044
0.073	0.073	0.073	AVERAGE	0.10796	0.0726
0.135	0.135	0.135	UCL	0.26593	0.1346
0.056	0.056		LCL	-0.05002	0.0558
0.019	0.019				0.0185
0.000					0
0.000			OBSERVATIONS	5	0
0.000			STD Deviation	0.03997	0
			AVERAGE	0.09718	0
			UCL	0.13715	0
			LCL	0.05721	0
					0
					0
			OBSERVATIONS	2	0
			STD Deviation	0.03002	0
			AVERAGE	0.10360	0
			UCL	0.13362	0
			LCL	0.07358	0
					0
					0
			OBSERVATIONS	0	0
			STD Deviation	#DIV/0!	0
			AVERAGE	#DIV/0!	0
					0
					0
					0
					0
					0
					0

4/4/20

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.884	0.1036	25.7801	25.7801	25.8	4/4/2020
3	ccb	1	0.486	0.1036	0.3821	0.3821	<0.5	4/4/2020
4	mb	1	0.204	0.1036	0.1008	0.1008	<0.5	4/4/2020
5	lcs	1	23.755	0.1036	23.6517	23.6517	23.7	4/4/2020
6	K2002766-001	100	0.618	0.1036	0.5148	51.48	51.48	4/4/2020
7	K2002766-001	100	0.599	0.1036	0.4954	49.54	49.5	4/4/2020
8	K2002766-002	1	15.545	0.1036	15.4418	15.4418	15	4/5/2020
9	K2002766-002	1	15.423	0.1036	15.3194	15.3194	15.32	4/5/2020
10	KQ2004678-09	4	32.257	0.1036	32.1530	128.612	128.61	4/5/2020
11	K2002766-003	100	1.044	0.1036	0.9404	94.04	94.0	4/5/2020
12	K2002766-003	100	1.079	0.1036	0.9756	97.56	97.56	4/5/2020
13	K2002766-004	1	10.939	0.1036	10.8356	10.8356	10.84	4/5/2020
14	K2002766-004	1	10.885	0.1036	10.7811	10.7811	10.78	4/5/2020
15	K2002824-004	100	0.692	0.1036	0.5884	58.84	58.8	4/5/2020
16	K2002824-004	100	0.646	0.1036	0.5421	54.21	54.2	4/5/2020
17	ccv	1	24.225	0.1036	24.1217	24.1217	24.12	4/5/2020
18	ccb	1	0.073	0.1036	-0.0310	-0.031	<0.5	4/5/2020
19	K2002824-005	1	15.591	0.1036	15.4873	15.4873	15.5	4/5/2020
20	K2002824-005	1	15.572	0.1036	15.4684	15.4684	15.47	4/5/2020
21	K2002824-006	100	0.684	0.1036	0.5805	58.05	58.05	4/5/2020
22	K2002824-006	100	0.612	0.1036	0.5084	50.84	50.8	4/5/2020
23	ccv	1	24.911	0.1036	24.8069	24.8069	24.8	4/5/2020
24	ccb	1	0.135	0.1036	0.0310	0.031	<0.5	4/5/2020
~~25~~		~~1~~		~~0.1036~~	~~0.0000~~	~~0~~	~~<0.5~~	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

	date	time
Analyzed By: BD	Date Analyzed 4/7/20	
Reviewed By: JC	Date Reviewed 4/8/20	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.225	0.1036	24.1217	24.1217	24.1	4/5/2020
3	ccb	1	0.073	0.1036	-0.0310	-0.031	<0.5	4/5/2020
4	K2002782-001	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
5	K2002782-002	1	0.074	0.1036	-0.0299	-0.0299	<0.5	4/5/2020
6	K2002744-001	1	5.337	0.1036	5.2333	5.2333	5.23	4/5/2020
7	K2002744-001	1	5.376	0.1036	5.2723	5.2723	5.3	4/5/2020
8	K2002744-002	1	16.090	0.1036	15.9861	15.9861	16	4/5/2020
9	K2002744-002	1	16.060	0.1036	15.9559	15.9559	15.96	4/5/2020
10	KQ2004679-11	4	31.898	0.1036	31.7943	127.1772	127.18	4/5/2020
11	K2002744-003	1	9.927	0.1036	9.8231	9.8231	9.8	4/5/2020
12	K2002744-003	1	9.722	0.1036	9.6186	9.6186	9.62	4/5/2020
13	ccv	1	24.911	0.1036	24.8069	24.8069	24.81	4/5/2020
14	ccb	1	0.135	0.1036	0.0310	0.031	<0.5	4/5/2020
15	mb	1	0.056	0.1036	-0.0478	-0.0478	<0.5	4/5/2020
16	lcs	1	23.236	0.1036	23.1325	23.1325	23.1	4/5/2020
17	K2002744-004	1	9.607	0.1036	9.5035	9.5035	9.50	4/5/2020
18	K2002744-004	1	9.316	0.1036	9.2125	9.2125	9.2	4/5/2020
19	K2002744-005	400	0.865	0.1036	0.7609	304.36	304.4	4/5/2020
20	K2002744-005	400	0.950	0.1036	0.8459	338.36	338.36	4/5/2020
21	K2002854-001	1	3.027	0.1036	2.9236	2.9236	2.92	4/5/2020
22	K2002854-001	1	3.064	0.1036	2.9601	2.9601	3.0	4/5/2020
23	K2002730-001	1	0.787	0.1036	0.6838	0.6838	0.7	4/5/2020
24	K2002730-001	1	0.740	0.1036	0.6367	0.6367	0.64	4/5/2020
25	K2002730-002	1	0.792	0.1036	0.6880	0.688	0.69	4/5/2020

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

	date	time
Analyzed By: [illegible]	Date Analyzed 9/7/20	
Reviewed By: JS	Date Reviewed 9/8/20	

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K2002730-002	1	0.788	0.1036	0.6840	0.684	0.68	4/5/2020
27	K2002730-003	1	0.631	0.1036	0.5274	0.5274	0.53	4/5/2020
28	K2002730-003	1	0.650	0.1036	0.5463	0.5463	0.5	4/5/2020
29	K2002730-004	1	1.041	0.1036	0.9375	0.9375	0.9	4/5/2020
30	K2002730-004	1	1.046	0.1036	0.9423	0.9423	0.9	4/5/2020
31	ccv	1	24.276	0.1036	24.1725	24.1725	24.2	4/5/2020
32	ccb	1	0.019	0.1036	-0.0851	-0.0851	<0.5	4/5/2020
33	K2002730-005	1	0.869	0.1036	0.7653	0.7653	0.8	4/5/2020
34	K2002730-005	1	0.821	0.1036	0.7170	0.717	0.7	4/5/2020
35	K2002730-006	1	1.593	0.1036	1.4892	1.4892	1.5	4/5/2020
36	K2002730-006	1	1.633	0.1036	1.5298	1.5298	1.5	4/5/2020
37	K2002730-007	1	0.984	0.1036	0.8807	0.8807	0.9	4/5/2020
38	K2002730-007	1	0.954	0.1036	0.8505	0.8505	0.9	4/5/2020
39	K2002858-001	1	2.216	0.1036	2.1127	2.1127	2.1	4/5/2020
40	K2002858-001	1	2.216	0.1036	2.1123	2.1123	2.1	4/5/2020
41	K2002855-001	400	2.109	0.1036	2.0053	802.12	802.1	4/5/2020
42	K2002855-001	400	2.240	0.1036	2.1362	854.48	854.5	4/5/2020
43	K2002876-001	1	0.004	0.1036	-0.0998	-0.0998	<0.5	4/5/2020
44	K2002876-001	1	0.019	0.1036	-0.0848	-0.0848	<0.5	4/5/2020
45	K2002883-001	1	0.387	0.1036	0.2834	0.2834	<0.5	4/5/2020
46	K2002883-001	1	0.324	0.1036	0.2204	0.2204	<0.5	4/5/2020
47	ccv	1	24.411	0.1036	24.3074	24.3074	24.3	4/5/2020
48	ccb	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: BW	Date Analyzed 4/7/20
Reviewed By:	Date Reviewed 4/8/20

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.276	0.1036	24.1725	24.1725	24.2	4/5/2020
3	ccb	1	0.019	0.1036	-0.0851	-0.0851	<0.5	4/5/2020
4	K2002760-001	1	1.365	0.1036	1.2610	1.261	1.3	4/5/2020
5	K2002760-001	1	1.392	0.1036	1.2886	1.2886	1.3	4/5/2020
6	KQ2004680-09	1	29.358	0.1036	29.2544	29.2544	29.25	4/5/2020
7	ccv	1	24.411	0.1036	24.3074	24.3074	24.3	4/5/2020
8	ccb	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
9	mb	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
10	lcs	1	23.223	0.1036	23.1192	23.1192	23.12	4/5/2020
11	K2002760-002	1	1.407	0.1036	1.3032	1.3032	1.3	4/5/2020
12	K2002760-002	1	1.389	0.1036	1.2852	1.2852	1.29	4/5/2020
13	ccv	1	24.220	0.1036	24.1165	24.1165	24.12	4/5/2020
14	ccb	1	0.000	0.1036	-0.1036	-0.1036	<0.5	4/5/2020
15		1		0.0000	0.0000	0	<0.5	
16		1		0.0000	0.0000	0	<0.5	
17		1		0.0000	0.0000	0	<0.5	
18		1		0.0000	0.0000	0	<0.5	
19		1		0.0000	0.0000	0	<0.5	
20		1		0.0000	0.0000	0	<0.5	
21		1		0.0000	0.0000	0	<0.5	
22		1		0.0000	0.0000	0	<0.5	
23		1		0.0000	0.0000	0	<0.5	
24		1		0.0000	0.0000	0	<0.5	
25		1		0.0000	0.0000	0	<0.5	

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By:		Date Analyzed	4/7/20
Reviewed By:		Date Reviewed	4/8/20

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

TOC: 675808, 675809,
DOC: 675810

Schedule: 04042020

Version: 2
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/04/04 20:29 - Saturday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2002766-001.03 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2002766-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2002766-002.03 ms 4x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
7	Sample	K2002766-003.03 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2002766-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2002824-004.03 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2002824-005.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2002824-006.03 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2002782-001.01	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
14	Sample	K2002782-002.01	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
15	Sample	K2002744-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2002744-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2002744-002.01 ms 4x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
18	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
19	Sample	K2002744-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K2002744-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K2002744-005.01 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
24	Sample	K2002854-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2002730-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2002730-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2002730-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2002730-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2002730-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K2002730-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K2002730-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K2002858-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2002855-001.01 400x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
35	Sample	K2002876-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K2002883-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K2002760-001.03 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K2002760-001.03 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 04042020

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K2002760-002.04 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 04042020
Saturday, April 04, 2020 08:29 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/04/07 09:10 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	04042020	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/04/04 20:29

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.60	17.72	4.12	49.79	05:25
2	TC Clean	15.12	19.33	4.20	49.95	04:03
3	TC Clean	3.74	7.76	4.01	50.06	03:57
4	TC Clean	2.77	6.74	3.97	50.02	03:56

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/04/04 20:52

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.27	5.16	3.89	49.75	05:23
2	TC Clean	6.26	10.30	4.04	50.04	04:02
3	TC Clean	2.00	6.00	4.00	49.92	03:48
4	TC Clean	2.09	6.00	3.91	49.93	03:51

Sample Type: Clean From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/04/04 21:14

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.19	5.23	4.05	49.80	05:24
2	TC Clean	5.69	9.69	4.01	50.02	04:00
3	TC Clean	2.00	6.21	4.20	49.92	03:44
4	TC Clean	2.02	6.00	3.97	49.93	03:45

Sample Type: Blank (Creating v1370) From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/04/04 21:35

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.84	4.90	4.06	49.59	05:11
2	TC Clean	5.35	9.59	4.24	49.94	03:58
3	TC Clean	2.20	6.32	4.12	50.02	03:48
4	TC Clean	2.02	6.22	4.20	49.92	03:54
5	Reagent Blank	8.29	12.45	4.16	49.89	05:03
6	Acid Blank	1.52	5.63	4.11	49.53	05:27

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.3677 ppm	0.0000 ppm	0.0000%	2020/04/04 22:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3677	3.6767	10.06	14.29	4.23	50.00	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.8837 ppm (PASS)	0.0000 ppm	0%	2020/04/04 22:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.8837	258.8374	181.88	185.92	4.04	50.03	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.4857 ppm (PASS)	0.0000 ppm	0%	2020/04/04 22:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.4857	4.8571	11.08	15.12	4.03	50.02	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.2044 ppm	0.0000 ppm	0.0000%	2020/04/04 22:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2044	2.0440	8.96	12.91	3.95	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	23.7553 ppm (PASS)	0.0000 ppm	0%	2020/04/04 23:08

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

	Type									
C	TOC	25.0 ppm	1	23.7553	237.5525	167.57	171.50	3.93	50.02	10:36

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.5427 ppm	0.0000 ppm	0.0000%	2020/04/04 23:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5427	5.4269	11.24	15.23	3.99	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	K2002766-001.03 100x	0.6087 ppm	0.0137 ppm	2.2500%	2020/04/04 23:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6184	6.1838	11.75	15.78	4.03	50.03	10:26
2	TOC	0.5990	5.9905	11.62	15.49	3.87	50.02	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	K2002766-002.03	15.4842 ppm	0.0865 ppm	0.5600%	2020/04/05 00:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.5454	155.4543	112.13	116.00	3.86	50.03	10:26
2	TOC	15.4230	154.2305	111.31	115.22	3.91	50.03	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	K2002766-002.03 ms 4x	32.2566 ppm	0.0000 ppm	0.0000%	2020/04/05 00:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.2566	322.5658	224.51	228.49	3.97	50.05	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC)	CAS_salt_010711	CAS_salt_010711

(v1370) (v4) (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	RB	0.3031 ppm	0.0000 ppm	0.0000%	2020/04/05 00:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3031	3.0314	9.63	13.58	3.95	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K2002766-003.03 100x	1.0616 ppm	0.0249 ppm	2.3500%	2020/04/05 01:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0440	10.4396	14.61	18.58	3.97	50.07	10:26
2	TOC	1.0792	10.7920	14.85	18.60	3.76	50.06	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2002766-004.03	10.9120 ppm	0.0385 ppm	0.3500%	2020/04/05 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.9392	109.3916	81.15	84.97	3.82	50.03	10:29
2	TOC	10.8847	108.8474	80.79	84.41	3.63	50.04	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K2002824-004.03 100x	0.6689 ppm	0.0327 ppm	4.8900%	2020/04/05 01:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6920	6.9198	12.24	15.94	3.70	50.03	10:29
2	TOC	0.6457	6.4574	11.93	15.69	3.76	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25	0 / infinity	24.2253	0.0000	0%	2020/04/05 02:26

					ppm [25 ppm]	(NA / NA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2253	242.2529	170.73	174.61	3.88	50.01	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0726 ppm (PASS)	0.0000 ppm	0%	2020/04/05 02:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0726	0.7263	8.31	12.27	3.96	50.00	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K2002824-005.03	15.5815 ppm	0.0134 ppm	0.0900%	2020/04/05 02:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.5909	155.9093	112.44	116.33	3.89	49.96	10:31
2	TOC	15.5720	155.7205	112.31	116.14	3.83	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K2002824-006.03 100x	0.6480 ppm	0.0510 ppm	7.8700%	2020/04/05 03:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6841	6.8410	12.19	15.98	3.79	49.95	10:25
2	TOC	0.6120	6.1198	11.70	15.59	3.88	49.97	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	RB	0.0847 ppm	0.0013 ppm	1.4900%	2020/04/05 03:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0856	0.8559	8.16	12.04	3.88	49.94	10:28
2	TOC	0.0838	0.8380	8.15	12.08	3.93	49.97	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2002782-001.01	0.0000 ppm	0.0000 ppm	0.0000%	2020/04/05 04:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.54	11.45	3.91	49.98	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2002782-002.01	0.0737 ppm	0.0000 ppm	0.0000%	2020/04/05 04:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0737	0.7369	8.08	11.94	3.86	49.97	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K2002744-001.01	5.3564 ppm	0.0275 ppm	0.5100%	2020/04/05 04:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.3369	53.3691	43.48	47.35	3.87	50.00	10:25
2	TOC	5.3759	53.7587	43.74	47.56	3.82	49.97	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K2002744-002.01	16.0746 ppm	0.0213 ppm	0.1300%	2020/04/05 05:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.0897	160.8967	115.79	119.74	3.95	49.99	10:25
2	TOC	16.0595	160.5948	115.59	119.70	4.11	49.98	10:29

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K2002744-002.01 ms 4x	31.8979 ppm	0.0000 ppm	0.0000%	2020/04/05 05:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.8979	318.9791	222.10	226.10	4.00	50.01	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	RB	0.1837 ppm	0.0000 ppm	0.0000%	2020/04/05 06:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1837	1.8373	8.82	12.75	3.92	50.04	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K2002744-003.01	9.8244 ppm	0.1446 ppm	1.4700%	2020/04/05 06:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.9267	99.2667	74.34	78.39	4.05	50.00	10:26
2	TOC	9.7222	97.2221	72.97	77.00	4.03	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9105 ppm (PASS)	0.0000 ppm	0%	2020/04/05 06:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9105	249.1050	175.34	179.18	3.84	50.04	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.1346 ppm (PASS)	0.0000 ppm	0%	2020/04/05 06:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.1346	1.3464	8.72	12.68	3.95	50.07	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0558 ppm	0.0000 ppm	0.0000%	2020/04/05 07:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0558	0.5585	7.96	11.92	3.95	50.06	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	23.2361 ppm (PASS)	0.0000 ppm	0%	2020/04/05 07:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.2361	232.3614	164.08	168.09	4.01	50.08	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K2002744-004.01	9.4616 ppm	0.2058 ppm	2.1700%	2020/04/05 07:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	9.6071	96.0711	72.20	76.18	3.99	50.04	10:25
2	TOC	9.3161	93.1611	70.24	74.19	3.95	50.07	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K2002744-005.01 400x	0.9070 ppm	0.0601 ppm	6.6300%	2020/04/05 08:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8645	8.6448	13.40	17.38	3.98	50.06	10:30
2	TOC	0.9495	9.4953	13.97	17.82	3.84	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	RB	0.0957 ppm	0.0583 ppm	60.9900%	2020/04/05 08:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1709	1.7094	8.74	12.61	3.88	50.07	10:30
2	TOC	0.1073	1.0730	8.31	12.16	3.85	50.06	10:27
3	TOC	0.0700	0.6997	8.06	11.85	3.79	50.07	10:26
4	TOC	0.0344	0.3444	7.82	11.68	3.86	50.06	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K2002854-001.01	3.0455 ppm	0.0259 ppm	0.8500%	2020/04/05 09:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0272	30.2716	27.95	31.66	3.71	50.05	10:29
2	TOC	3.0637	30.6374	28.19	32.15	3.96	50.05	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2002730-001.01	0.7639 ppm	0.0333 ppm	4.3600%	2020/04/05 10:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7874	7.8745	12.88	16.93	4.05	50.05	10:31
2	TOC	0.7403	7.4031	12.57	16.52	3.95	50.06	10:31

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K2002730-002.01	0.7896 ppm	0.0028 ppm	0.3600%	2020/04/05 10:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7916	7.9161	12.91	16.88	3.97	50.09	10:27
2	TOC	0.7876	7.8760	12.88	16.87	3.99	50.08	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K2002730-003.01	0.6405 ppm	0.0134 ppm	2.0900%	2020/04/05 10:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6310	6.3102	11.83	15.66	3.83	50.07	10:29
2	TOC	0.6499	6.4990	11.96	15.80	3.84	50.05	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K2002730-004.01	1.0435 ppm	0.0034 ppm	0.3200%	2020/04/05 11:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0411	10.4113	14.59	18.47	3.88	50.04	10:26
2	TOC	1.0459	10.4589	14.62	18.46	3.84	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2761 ppm (PASS)	0.0000 ppm	0%	2020/04/05 11:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2761	242.7615	171.07	174.85	3.78	50.02	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0185 ppm (PASS)	0.0000 ppm	0%	2020/04/05 12:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0185	0.1850	7.94	11.86	3.92	50.00	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K2002730-005.01	0.8448 ppm	0.0342 ppm	4.0500%	2020/04/05 12:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8689	8.6894	13.43	17.34	3.91	49.99	10:29
2	TOC	0.8206	8.2061	13.11	17.08	3.97	49.97	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K2002730-006.01	1.6131 ppm	0.0287 ppm	1.7800%	2020/04/05 12:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5928	15.9281	18.30	22.08	3.78	49.96	10:28
2	TOC	1.6334	16.3340	18.57	22.45	3.88	49.94	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K2002730-007.01	0.9692 ppm	0.0213 ppm	2.2000%	2020/04/05 13:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9843	9.8433	14.21	17.97	3.76	49.94	10:26
2	TOC	0.9541	9.5414	14.00	17.91	3.90	49.91	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2002858-001.01	2.2161 ppm	0.0003 ppm	0.0100%	2020/04/05 13:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2163	22.1630	22.49	26.32	3.82	49.90	10:27
2	TOC	2.2159	22.1586	22.49	26.19	3.70	49.90	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2002855-001.01 400x	2.1744 ppm	0.0925 ppm	4.2600%	2020/04/05 14:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1089	21.0894	21.77	25.54	3.77	49.88	10:33
2	TOC	2.2398	22.3980	22.65	26.38	3.73	49.86	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	RB	0.0556 ppm	0.0730 ppm	131.1800%	2020/04/05 14:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1562	1.5622	8.64	12.25	3.61	49.84	10:26
2	TOC	0.0628	0.6284	8.01	11.94	3.93	49.84	10:26
3	TOC	0.0035	0.0351	7.61	11.39	3.77	49.84	10:26
4	TOC	0.0000	0.0000	7.45	11.29	3.84	49.85	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K2002876-001.02	0.0113 ppm	0.0106 ppm	93.8800%	2020/04/05 15:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0038	0.0380	7.61	11.65	4.03	49.82	10:29
2	TOC	0.0188	0.1882	7.72	11.66	3.94	49.82	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K2002883-001.01	0.3555 ppm	0.0446 ppm	12.5400%	2020/04/05 16:08

Rep	Base			Adjusted		Baseline	Pressure	Run

#	Analysis Type	ppm	µg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	0.3870	3.8700	10.19	13.98	3.79	49.79	10:26
2	TOC	0.3240	3.2395	9.77	13.73	3.96	49.80	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K2002760-001.03 doc	1.3784 ppm	0.0196 ppm	1.4200%	2020/04/05 16:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3646	13.6455	16.76	20.62	3.85	49.80	10:27
2	TOC	1.3922	13.9221	16.95	20.81	3.86	49.78	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K2002760-001.03 ms doc	29.3580 ppm	0.0000 ppm	0.0000%	2020/04/05 17:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.3580	293.5798	205.02	208.83	3.81	49.77	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4110 ppm (PASS)	0.0000 ppm	0%	2020/04/05 17:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4110	244.1102	171.98	175.94	3.96	49.76	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm	0.0000 ppm	0%	2020/04/05 17:33

							(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.17	11.10	3.93	49.75	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/04/05 17:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.56	10.48	3.92	49.76	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC) (v1370)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	23.2228 ppm (PASS)	0.0000 ppm	0%	2020/04/05 18:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.2228	232.2276	163.99	167.94	3.95	49.77	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K2002760-002.04 doc	1.3978 ppm	0.0127 ppm	0.9100%	2020/04/05 18:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4068	14.0678	17.05	21.20	4.15	49.77	10:29
2	TOC	1.3888	13.8879	16.93	20.82	3.90	49.79	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.5884 (IC)	CAS_salt_010711	CAS_salt_010711

(v1370) (v4) (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2201 ppm (PASS)	0.0000 ppm	0%	2020/04/05 18:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2201	242.2009	170.70	174.61	3.91	49.78	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/04/05 19:00

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.06	10.84	3.78	49.80	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1369	0.8713	0.5640	0.0000	0.0000	0.0000	2020/04/01 15:25	Fusion1 (Fusion1)
v1370	2.7630	1.5170	0.0000	0.0000	0.0000	2020/04/04 22:09	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v32	Calibration curve formula:	TOC: y = 6.725x + 7.818
Ver Creation:	2020/03/11 15:55	r^2 value:	TOC: r^2 = 0.99921
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	5.8640	0.0000		2020/03/11 14:28
0.500 ppm	9.5210	0.5000		2020/03/11 14:42
1.0 ppm	12.5930	1.0000		2020/03/11 14:56
5.0 ppm	40.5270	5.0000		2020/03/11 15:10
10 ppm	79.5310	10.0000		2020/03/11 15:25
25 ppm	181.4610	25.0000		2020/03/11 15:39
50 ppm	340.5610	50.0000		2020/03/11 15:53

Methods

Name: CAS_salt_010711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/02/21 17:57		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0

LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/04/05 19:15

ALS Environmental

StarLIMS Run: 675808, 675809, 675810

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/11/2020

ICAL ID: 19-GEN-8-7-E->J

ICS ID: 19-GEN-8-4-G

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-11-J

21 % H3PO4: 19-GEN-08-10-G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BCP	Date Analyzed: 4/4/20
Reviewed By: JC	Date Reviewed: 4/8/20

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 2009235; 2009423

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2366 (260406)

General Set Information: There were fourteen field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Field samples 2009235003/04 were re-analyzed and reported from 1:10 dilutions. Samples 2009235005 and 2009423001/02 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:10. The reporting limits have been adjusted accordingly.

Method QC data: The method blank (LMB 702142) was less than 1/2 the CRDL. The recovery for the LCS (702139) was within acceptable parameters.

MS/MSD Analysis: MS/MSD was performed on samples 2009235006/07 (Client ID: 16WW29-200330). 3.0µL of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. The spike target was 3.µg/L. The MSD (2009235007) failed QC acceptance criteria for percent recovery. The relative percent difference (RPD) passed acceptance criteria. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.1. The Reporting Limit Verification Standard (RLVS – 702140) is reported from the analysis of the Laboratory Control Sample (LCS – 702139) at a level of 3.0µg/L. Due to limitations of the Chemstation Software, some of the chromatographic peaks may require manual integrations. A manual integration was performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafiles 09APRD09/11/12.

Thomas Bosch — Analyst
April 10, 2020 — Date

ANALYTICAL REPORT

Report Date: April 10, 2020

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-2009423**
Project ID: HS20040041
Purchase Order: HS20040041
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
16EW08-200331	2009423001	03/31/20	04/03/20	
16WW23-200331	2009423002	03/31/20	04/03/20	
16WW24-200331	2009423003	03/31/20	04/03/20	
16WW24-200331-FD	2009423004	03/31/20	04/03/20	
16SW-03-200331	2009423005	03/31/20	04/03/20	
16SW-02-200331	2009423006	03/31/20	04/03/20	
16SW-01-200331	2009423007	03/31/20	04/03/20	

ANALYTICAL REPORT

Workorder: 34-2009423
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16EW08-200331** | Sampling Site: NA | Collected: 03/31/2020
Lab ID: 2009423001 | Media: 125 mL Nalgene | Received: 04/03/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/10/2020 13:30 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	10	20	40	10	U

Sample ID: **16WW23-200331** | Sampling Site: NA | Collected: 03/31/2020
Lab ID: 2009423002 | Media: 125 mL Nalgene | Received: 04/03/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 14:04 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	10	20	40	10	U

Sample ID: **16WW24-200331** | Sampling Site: NA | Collected: 03/31/2020
Lab ID: 2009423003 | Media: 125 mL Nalgene | Received: 04/03/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 11:44 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16WW24-200331-FD** | Sampling Site: NA | Collected: 03/31/2020
Lab ID: 2009423004 | Media: 125 mL Nalgene | Received: 04/03/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 12:12 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

ANALYTICAL REPORT

Workorder: 34-2009423
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **16SW-03-200331** | Sampling Site: NA | Collected: 03/31/2020
Lab ID: 2009423005 | Media: 125 mL Nalgene | Received: 04/03/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 12:26 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16SW-02-200331** | Sampling Site: NA | Collected: 03/31/2020
Lab ID: 2009423006 | Media: 125 mL Nalgene | Received: 04/03/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 12:40 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Sample ID: **16SW-01-200331** | Sampling Site: NA | Collected: 03/31/2020
Lab ID: 2009423007 | Media: 125 mL Nalgene | Received: 04/03/2020
Matrix: Water | Sampling Parameter: NA

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable
Analysis: EPA 6850, DoD QSM Water | **Instrument ID:** LCMS04
Batch: ELMS/2366 (HBN: 260406) | **%Solids:** NA
Analyzed: 04/09/2020 12:54 | **Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Comments

Quality Control: **EPA 6850, DoD QSM - (HBN: 260406)**

. Field samples 2009235003/04 were re-analyzed and reported from 1:10 dilutions. Samples 2009235005 and 2009423001/02 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:10. The reporting limits have been adjusted accordingly.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 04/10/2020 14:03	/S/ Stephen Brose 04/10/2020 22:28

ANALYTICAL REPORT

Workorder: 34-2009423
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
The following was provided by the client: Sample ID, Collection Date, Sampling Location, Media Type, Sampling Parameter.
Collection Date, Media Type, and Sampling Parameter can potentially affect the validity of the results.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	PJLA (DoD ELAP)	L20-57	http://www.pjlabs.com
	PJLA (ISO 17025)	L20-58	http://www.pjlabs.com
	Utah (TNI)	UT00953	http://lams.nelac-institute.org/search
	Kansas	E-10416	http://www.kdheks.gov/envlab/disclaimer.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP)	101574	http://www.aihaaccreditedlabs.org
	DOECAP-AP	L20-59	http://www.pjlabs.com
	Washington	C596	https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation
Dietary Supplements	PJLA (ISO 17025)	L17-507-R1	http://www.pjlabs.com

ANALYTICAL REPORT

Workorder: 34-2009423
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< Means this testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 2009423

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2366 (HBN: 260406)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 702142
Analyzed: 04/09/2020 09:24
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 702139
Analyzed: 04/09/2020 08:56
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	3.43	3.00	114	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample:	2009235002	**MS:**	2009235006	**MSD:**	2009235007
Analyzed:	04/09/2020 09:52	**Analyzed:**	04/09/2020 10:48	**Analyzed:**	04/09/2020 11:02
Dilution:	1	**Dilution:**	1	**Dilution:**	1
Units:	ug/L	**Units:**	ug/L	**Units:**	ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	2.47	3	82.2	78.8	123.8	2.12	# 70.6	15.2	0.0	20.0

Comments

. Field samples 2009235003/04 were re-analyzed and reported from 1:10 dilutions. Samples 2009235005 and 2009423001/02 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:10. The reporting limits have been adjusted accordingly.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
04/10/2020 14:03	04/10/2020 22:28

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

RE-PRINT COC

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

W 2009423

Custody

18698 / #2

SAMPLING STATE: **Dept of Defense**

COC ID: **13614**

SUBCONTRACT TO:

2669423

ALS Laboratory Group
960 LeVoy Dr
Salt Lake City, UT 84123

Phone: +1 801 266 7700

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20040041
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20040041-01**	**16EW08-200331**	**Groundwater**	**31 Mar 2020 08:35**
	SUB_Perch-6850			15 Apr 2020
2.	**HS20040041-02**	**16WW23-20331**	**Groundwater**	**31 Mar 2020 09:20**
	SUB_Perch-6850			15 Apr 2020
3.	**HS20040041-03**	**16WW24-20331**	**Groundwater**	**31 Mar 2020 10:10**
	SUB_Perch-6850			15 Apr 2020
4.	**HS20040041-04**	**16WW24-20331-FD**	**Groundwater**	**31 Mar 2020 10:10**
	SUB_Perch-6850			15 Apr 2020
5.	**HS20040041-05**	**16SW-03-200331**	**Groundwater**	**31 Mar 2020 13:00**
	SUB_Perch-6850			15 Apr 2020
6.	**HS20040041-06**	**16SW-02-200331**	**Groundwater**	**31 Mar 2020 13:15**
	SUB_Perch-6850			15 Apr 2020
7.	**HS20040041-07**	**16SW-01-200331**	**Groundwater**	**31 Mar 2020 13:30**
	SUB_Perch-6850			15 Apr 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **13614**

QC Level: DOD IV (DoD Data Package)

Relinquished By: [signature] Date/Time: ~~4/2/20 12:50~~ 4/2/2020 1800

Received By: [signature] Date/Time: 04-03-20 8:45

Cooler ID(s): Temperature(s):

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS20040041	*Split:*	**Workorder ID:** 2009423	**Level:** ENV_LVL4
Client: ALS Environmental (Houston)		**Account:** 8101	**Type:** 125Poly
Comments:			**Preservatives** COOL

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	Containers ID(s)	Containers Count	Requested Analysis EPA 6850, DoD QSM
1	03/31/2020 08:35	16EW08-200331	2009423001		Water	A	1	A
2	03/31/2020 09:20	16WW23-200331	2009423002		Water	A	1	A
3	03/31/2020 10:10	16WW24-200331	2009423003		Water	A	1	A
4	03/31/2020 10:10	16WW24-200331-FD	2009423004	FLDDUP	Water	A	1	A
5	03/31/2020 13:00	16SW-03-200331	2009423005	FLDDUP	Water	A	1	A
6	03/31/2020 13:15	16SW-02-200331	2009423006	FLDDUP	Water	A	1	A
7	03/31/2020 13:30	16SW-01-200331	2009423007	FLDDUP 4/1/2020	Water	A	1	A

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Wrath, Julie	04/03/2020 08:45	ALS Sample Receiving	Sample Login
Julie Wrath 4/3/20 1115		13C	storage
R-33.1 4/7/20 12:10		T. Bosch	cool analysis

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: HS0040241

Date/Time of Receipt: 04-03-20 8:45

Number of Coolers Received: 1 2009423

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.	Cooler Received	Cooler Condition	Temp.
1	Good	2 °C	4		°C	7		°C
2		°C	5		°C	8		°C
3		°C	6		°C	9		°C

Taken By: [signature] T. VanTassell 04-03-20
Signature / Printed Name / Date

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____



ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 02APR20
ACTWGT: 15.20 LB
CAD: 300130/CAFE3211
DIMS: 14x11x10 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
ALS ENVIRONMENTAL
960 W. LEVOY DRIVE

SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS20040041 - RJ

FedEx Express

FRI - 03 APR 3:00P
STANDARD OVERNIGHT

TRK# 0201 1251 0296 1215

AX BTFA

84123
UT-US SLC

Batch Worklist

Batch: ELMS/ 2366
Rule: EPA 6850, DoD QSM Water

Created: 4/9/2020 07:49
Analyst: T. Bosch

Instrument:
Status: WP

HBN: 260406

Workorder: 2009235 [ENV_LVL4]
Workorder: 2009423 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	702138	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	
2	702139	LCS for HBN 260406 [ELMS/2366]				LCS	3		E6850Q413Q	5311		4/14/2020	
3	702140	RLVS for HBN 260406 [ELMS/2366				RLVS	3		E685041C3Q	5311		4/14/2020	
4	702141	ICS for HBN 260406 [ELMS/2366]				ICS	3		E6850..D3Q	5311		4/14/2020	
5	702142	LMB for HBN 260406 [ELMS/2366]				LMB	3		E6850Q413Q	5311		4/14/2020	
6	2009235001	16WW30-200330				SAMPLE	3	2009235001-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
7	2009235002	16WW29-200330				SAMPLE	3	2009235002-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
8	2009235003	16WW48-200330				SAMPLE	3	2009235003-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
9	2009235004	16WW48-200330-FD				FLDDUP	3	2009235004-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
10	2009235005	16EW05-200330				SAMPLE	3	2009235005-A	E6850Q41.3	5480	4/27/2020	4/14/2020	
11	2009235006	16WW29-200330MS				MS	3	2009235006-A	E6850Q413Q	5480		4/14/2020	
12	2009235007	16WW29-200330MSD				MSD	3	2009235007-A	E6850Q413Q	5480		4/14/2020	
13	2009423001	16EW08-200331				SAMPLE	3	2009423001-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
14	2009423002	16WW23-200331				SAMPLE	3	2009423002-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
15	2009423003	16WW24-200331				SAMPLE	3	2009423003-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
16	702143	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	
17	2009423004	16WW24-200331-FD				FLDDUP	3	2009423004-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
18	2009423005	16SW-03-200331				FLDDUP	3	2009423005-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
19	2009423006	16SW-02-200331				FLDDUP	3	2009423006-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
20	2009423007	16SW-01-200331				FLDDUP	3	2009423007-A	E6850Q41.3	5480	4/28/2020	4/16/2020	
21	702144	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	
22	702250	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	
23	702251	CCV for HBN 260406 [ELMS/2366]				CCV	3		E685041C3Q	5311		4/14/2020	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

Analyst Write-up

ALS Work Order #'s & Sample #( )'s: 2009235 (001-07); 2009423 (001-07)
ELMS Batch/HBN ID: 2366 (260406)
Prep Date: 04/07/2020 Analysis Date: 04/09,10/2020 Analyst: Tom Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2020\APR\09APR20D.s & 10APR20D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by Tom Bosch. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/5%ACN (B&J Lot DU461-US)/0.1% glacial acetic acid (JT-Baker Lot 122550).
Eluent B1: 95% ACN (B&J Lot DU461-US)/5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 122550).

STANDARDS: Internal Standard Spiking Solution (ISTD) Horizon# 49946. Dilutions of Working Standards (Horizon: 49947/48) used for ICAL, CCV's, RLVS and ICS.

CALIBRATION CURVE: Used curve from 09/20/2019, sequence 20SEP19D.s Offline Quantitation Method: CLO4-DP3.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: LCMS04 Online Acquisition Method: CLO4-AQN.M Fragmentor: 160 Output Gain: 10 Injection Volume: 40µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1 Run time: 12.0min.

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.65
5.8	0.65
5.9	0.25
10.3	0.25
10.5	0.65
12.0	0.65

QC DATA: 3.0µL of QC Solution Horizon ID 52814 was used for LCS 702139; Target = 3.0µg/L. ASTM type II water was used for LMB 702142.

MS/MSD: The Matrix Spike and duplicate (MS/MSD) was performed on samples 2009235006/07 (Client ID: 16WW29-200330). 3.0µl of Working Standard Solution Horizon ID 49947 was added to 10.0mL of sample preparation. Spike target = 3.0µg/L.

COMMENTS:

1) Results reported in µg/L. Field samples 2009235003/04 were re-analyzed and reported from 1:10 dilutions. Samples 2009235005 and 2009423001/02 failed the 50-150% method requirement for ISTD recoveries. These samples were re-analyzed and reported at dilutions of 1:10. The reporting limits have been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters, except for the following. The MSD (2009235007) failed QC acceptance criteria for percent recovery. The relative percent difference (RPD) passed acceptance criteria. The Matrix Spike and Matrix Spike duplicate is reported for the clients' information only. The sample matrix may be inappropriate for the method selected.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2020\APR\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2020\DOD\260406-DoD-ALS-Hstn LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#
5) The Reporting Limit Verification Standard (RLVS – 702140) is reported from the analysis of the Laboratory Control Sample (LCS – 702139) at a level of 3.0µg/L.
6) Due to limitations of the Chemstation Software, some of the chromatographic peaks require manual integration. Manual Integrations were performed for one of the Initial Calibration analyses (datafile: 20SEPI03) along with datafiles 09APRD09/11/12.

5.5 Chromatography (GC, HPLC and LC/MS) Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

Chromatography (GC, HPLC, LC/MS) Technical Review Criteria **Batch(es)/SDG:** ELNS: 2366 HBN: 260406 **Sample Set IDs if Applicable:** 2009235/2009423	**Analyst Initials**	**Reviewer Initials**
Sample positions on autosampler verified against instrument sequence	TB	NA
Calibration standards analyzed and meets criteria	TB	SK
Standards traceability checked and meets criteria	TB	SK
Standard curve coefficients evaluated and meet criteria	TB	SK
ICVs analyzed and meet acceptance criteria	TB	SK
CCVs analyzed and meet acceptance criteria	TB	SK
Retention Time Windows checked	TB	SK
For method 8081A, Endrin/DDT Breakdown is checked for compliance	—	—
Surrogate recoveries checked and appropriately addressed	—	—
Method Preparation Blanks analyzed and meet acceptance criteria	TB	SK
MSs, MSDs, and/or MDs analyzed and calculations checked; applicable	TB	SK
RLVS analyzed	TB	SK
Preparation and analysis hold times met	TB	SK
Preparation deviations and re-preparations noted when performed	TB	SK
Analysis deviations and re-analyses noted when performed	TB	SK
Sample dilution factors noted on reports	TB	SK
Electronic records in HBN transcription accuracy and completeness	TB	SK
Preparation and analysis calculations checked	TB	SK
NCRs are completed as necessary NC/CAR#_____	TB	SK
Report forms are complete and accurate	TB	SK
Manual integrations checked	TB	SK

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L	
Standard: 49946	**Created By:** Thomas Bosch	**Amount:** 25 mL	
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 09/19/2020	
MFG Lot: TNB: 09/20/2019	**Verified By:** Thomas Bosch	**Usable:** Yes	
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK	

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
47863	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.25 mL	12/05/2028

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 47863	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 05/23/2019 10:05AM	**Expires:** 12/05/2028
MFG Lot: SDIH-016	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:**	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK — **Description - 6850 WKG Std 100.ug/L**

Standard: 49948
MFG: ALS/SLC
MFG Lot: TNB: 09/20/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 09/20/2019 03:09PM

Amount: 10 mL
Expires: 07/25/2020
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
49947	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	07/25/2020

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK		**Description - 6850 Stock AccStd 1,000ug/mL**
Standard: 43659	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: AccuStandard	**Create Date:** 09/17/2018 09:09AM	**Expires:** 07/25/2020
MFG Lot: 218065075		**Usable:** Yes
Part ID: IC-PER-10X-1		**Lab Lot:** CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT		**Description - 6850 Intermdt AccStd 10.ug/mL**
Standard: 49947	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 09/23/2019 03:09PM	**Expires:** 07/25/2020
MFG Lot: TNB: 09/20/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
43659	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	07/25/2020

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 47516	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/06/2019 03:05PM	**Expires:** 03/31/2020
MFG Lot: TNB: 05/06/2019		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
47515	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK		**Description - 6850 QC Stock STD 1,000ug/mL**
Standard: 36748	**Created By:** Thomas Bosch	**Amount:** 100 mL
MFG: Ultra Scientific	**Create Date:** 05/11/2017 01:05PM	**Expires:** 03/31/2020
MFG Lot: CP-0860		**Usable:** Yes
Part ID: ICC-013		**Lab Lot:** CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 47515
MFG: ALS/SLC
MFG Lot: TNB: 05/06/2019
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/06/2019 03:05PM

Amount: 10 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

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USA

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CERTIFICATE OF ANALYSIS

S 43659

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 218065075
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: None

Date Certified: Jun 25, 2018
Expiration: Jul 25, 2020
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO 17034 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.24%.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 5/18

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

TRIPLE ISO CERTIFICATION ISO 9001 • ISO GUIDE 34 • ISO 17025 ULTRA

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

S 36748

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ISO 9001 Registered Quality System – TUV USA

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ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013 **Lot Issue Date:** 29-Feb 2016
Lot Number: CP-0860 **Expiration Date:** 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

S 47863

Product Name: PERCHLORIC ACID, SODIUM SALT
(Isotopic Label & Enrichment Specification) (18O4, 90%+) 100 UG/ML IN WATER

Lot Number: SDIH-016

Catalog Number: OLM-7310-S

Product Information

Chemical Purity Specification: ≥ 98%

MW*: 130.44
*For isotopically labeled compounds, MW listed is for the fully enriched product.

$NaCl^{18}O_4$

Labeled CAS Number: NA

Unlabeled CAS Number: 7601-89-0

Chemical Formula: NaCl*O4

Storage: Store at room temperature away from light and moisture.
Stability: See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	12/05/2018
Expiration Date	12/05/2028
Concentration Based on Gravimetry	100.0 ± 1.0 µg/mL (k=2)
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	105.4 ± 1.1 µg/mL (k=2)

CIL subscribes to the following standards for different products: ISO Guide 34, ISO/IEC 17025, ISO 13485 and cGMP as appropriate.

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 52814	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 04/08/2020 10:04AM	**Expires:** 04/07/2021
MFG Lot: TNB: 04/08/2020		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L
2	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
52813	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	04/07/2021

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: 52813
MFG: ALS/SLC
MFG Lot: TNB: 04/08/2020
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 04/08/2020 10:04AM

Amount: 10 mL
Expires: 04/07/2021
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
51761	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	09/30/2021

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		**Description - ASTM Type II Water**
Standard: 109	**Created By:** ALS Support (Lims)	**Amount:** 1000 L
MFG: DCL In House	**Create Date:** 10/06/2005 09:10AM	**Expires:** 11/07/2025
MFG Lot: Not Provided		**Usable:** Yes
Part ID: Not Provided		**Lab Lot:** LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 51761
MFG: Agilent
MFG Lot: CR-3553
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 01/20/2020 01:01PM

Amount: 100 mL
Expires: 09/30/2021
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL
2	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/mL

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Batch Report: C:\HPCHEM\1\DATA\09APR20D\09APR20S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	702138 CCV@25	Vial 71	1	Control	1	1.25461e6	7.317	25.21039
*	702139 LCS@3.	Vial 72	1	Control	2	1.82292e5	7.232	3.43425
*	702141 ICS@3.0	Vial 73	1	Control	3	1.14532e5	7.458	3.04031
*	702142 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2009235001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	2009235002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2009235003	Vial 77	1	Sample	7	5.74497e6	7.004	86.97786 D1:5
*	2009235004	Vial 78	1	Sample	8	5.66332e6	6.969	90.84685
*	2009235005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	2009235006 MS	Vial 80	1	Sample	10	1.08189e5	7.022	2.46738
*	2009235007 MSD	Vial 81	1	Sample	11	9.77884e4	7.004	2.11905
*	2009423001	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	2009423002	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	2009423003	Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	702143 CCV@25	Vial 71	1	Control	15	1.12191e6	6.906	25.54068
*	2009423004	Vial 85	1	Sample	16	0.00000	0.000	0.00000
*	2009423005	Vial 86	1	Sample	17	0.00000	0.000	0.00000
*	2009423006	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*	2009423007	Vial 88	1	Sample	19	0.00000	0.000	0.00000
*	2009235003 10X	Vial 89	1	Sample	20	5.75574e5	6.777	121.25721
*	2009235004 10X	Vial 90	1	Sample	21	5.37023e5	6.769	110.28917
*	2009235005 10X	Vial 91	1	Sample	22	0.00000	0.000	0.00000
*	2009423001 10X	Vial 92	1	Sample	23	0.00000	0.000	0.00000
*	2009423002 10X	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	702144 CCV@25	Vial 71	1	Control	25	1.26488e6	6.713	26.06253

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	702138 CCV@25	Vial 71	1	Control	1	1.69898e5	7.343	5.00000
*	702139 LCS@3.	Vial 72	1	Control	2	1.95585e5	7.252	5.00000
*	702141 ICS@3.0	Vial 73	1	Control	3	1.38634e5	7.487	5.00000
*	702142 LMB	Vial 74	1	Control	4	2.01475e5	7.476	5.00000
*	2009235001	Vial 75	1	Sample	5	1.68635e5	7.457	5.00000
*	2009235002	Vial 76	1	Sample	6	1.29194e5	7.158	5.00000
*	2009235003	Vial 77	1	Sample	7	1.78998e5	7.031	5.00000
*	2009235004	Vial 78	1	Sample	8	1.66773e5	6.998	5.00000
*	2009235005	Vial 79	1	Sample	9	5617.33447 * NR	8.011	5.00000
*	2009235006 MS	Vial 80	1	Sample	10	1.60793e5	7.099	5.00000
*	2009235007 MSD	Vial 81	1	Sample	11	1.68588e5	7.008	5.00000
*	2009423001	Vial 82	1	Sample	12	1.46786e4 * NR	7.640	5.00000
*	2009423002	Vial 83	1	Sample	13	3.75010e5 * NR	6.893	5.00000
*	2009423003	Vial 84	1	Sample	14	1.91278e5	6.868	5.00000
*	702143 CCV@25	Vial 71	1	Control	15	1.49759e5	6.929	5.00000
*	2009423004	Vial 85	1	Sample	16	1.50790e5	6.755	5.00000
*	2009423005	Vial 86	1	Sample	17	1.73885e5	6.955	5.00000
*	2009423006	Vial 87	1	Sample	18	1.80346e5	6.967	5.00000
*	2009423007	Vial 88	1	Sample	19	1.63117e5	6.918	5.00000
*	2009235003 10X	Vial 89	1	Sample	20	1.70987e5	6.796	50.00000
*	2009235004 10X	Vial 90	1	Sample	21	1.76151e5	6.789	50.00000
*	2009235005 10X	Vial 91	1	Sample	22	2.19200e5	7.200	50.00000
*	2009423001 10X	Vial 92	1	Sample	23	2.67379e5 * NR	7.160	50.00000
*	2009423002 10X	Vial 93	1	Sample	24	1.91503e5	6.869	50.00000
*	702144 CCV@25	Vial 71	1	Control	25	1.65107e5	6.739	5.00000

* NR - NOT REPORTED. ISTD RECOVERIE FAIL 50-150% OF CCV ISTD

Batch Report: C:\HPCHEM\1\DATA\09APR20D\09APR20S.B

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	702138 CCV@25	Vial 71	1	Control	1	4.12302e5	7.333	26.99158
*	702139 LCS@3.	Vial 72	1	Control	2	6.27943e4	7.237	3.78958
*	702141 ICS@3.0	Vial 73	1	Control	3	4.25515e4	7.474	3.61835
*	702142 LMB	Vial 74	1	Control	4	0.00000	0.000	0.00000
*	2009235001	Vial 75	1	Sample	5	0.00000	0.000	0.00000
*	2009235002	Vial 76	1	Sample	6	0.00000	0.000	0.00000
*	2009235003	Vial 77	1	Sample	7	1.74802e6	7.019	87.87916
*	2009235004	Vial 78	1	Sample	8	1.72503e6	6.984	91.90684
*	2009235005	Vial 79	1	Sample	9	0.00000	0.000	0.00000
*	2009235006 MS	Vial 80	1	Sample	10	4.14318e4	7.033	3.01909
*	2009235007 MSD	Vial 81	1	Sample	11	4.29828e4	6.994	2.98597
*	2009423001	Vial 82	1	Sample	12	0.00000	0.000	0.00000
*	2009423002	Vial 83	1	Sample	13	0.00000	0.000	0.00000
*	2009423003	Vial 84	1	Sample	14	0.00000	0.000	0.00000
*	702143 CCV@25	Vial 71	1	Control	15	3.56121e5	6.917	26.49761
*	2009423004	Vial 85	1	Sample	16	0.00000	0.000	0.00000
*	2009423005	Vial 86	1	Sample	17	0.00000	0.000	0.00000
*	2009423006	Vial 87	1	Sample	18	0.00000	0.000	0.00000
*	2009423007	Vial 88	1	Sample	19	0.00000	0.000	0.00000
*	2009235003 10X	Vial 89	1	Sample	20	1.88018e5	6.790	128.68297
*	2009235004 10X	Vial 90	1	Sample	21	1.77385e5	6.777	118.23187
*	2009235005 10X	Vial 91	1	Sample	22	0.00000	0.000	0.00000
*	2009423001 10X	Vial 92	1	Sample	23	0.00000	0.000	0.00000
*	2009423002 10X	Vial 93	1	Sample	24	0.00000	0.000	0.00000
*	702144 CCV@25	Vial 71	1	Control	25	4.03640e5	6.725	27.17285

*** End of Report ***

Batch Report: C:\HPCHEM\1\DATA\10APR20D\10APR20S.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#*	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
*	702250	CCV@25	Vial 71	1	Control	1	1.26293e6	6.573	25.86383
*	2009423001	10X	Vial 72	1	Sample	2	0.00000	0.000	0.00000
*	702251	CCV@25	Vial 71	1	Control	3	1.27356e6	6.544	26.27000

#*	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
*	702250	CCV@25	Vial 71	1	Control	1	1.66255e5	6.597	5.00000
*	2009423001	10X	Vial 72	1	Sample	2	2.21088e5	7.112	50.00000
*	702251	CCV@25	Vial 71	1	Control	3	1.64787e5	6.563	5.00000

#*	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
*	702250	CCV@25	Vial 71	1	Control	1	3.99575e5	6.591	26.75518
*	2009423001	10X	Vial 72	1	Sample	2	0.00000	0.000	0.00000
*	702251	CCV@25	Vial 71	1	Control	3	4.04372e5	6.558	27.26558

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2020\APR\09APR20D.S

Sequence Table:

Method and Injection Info Part:

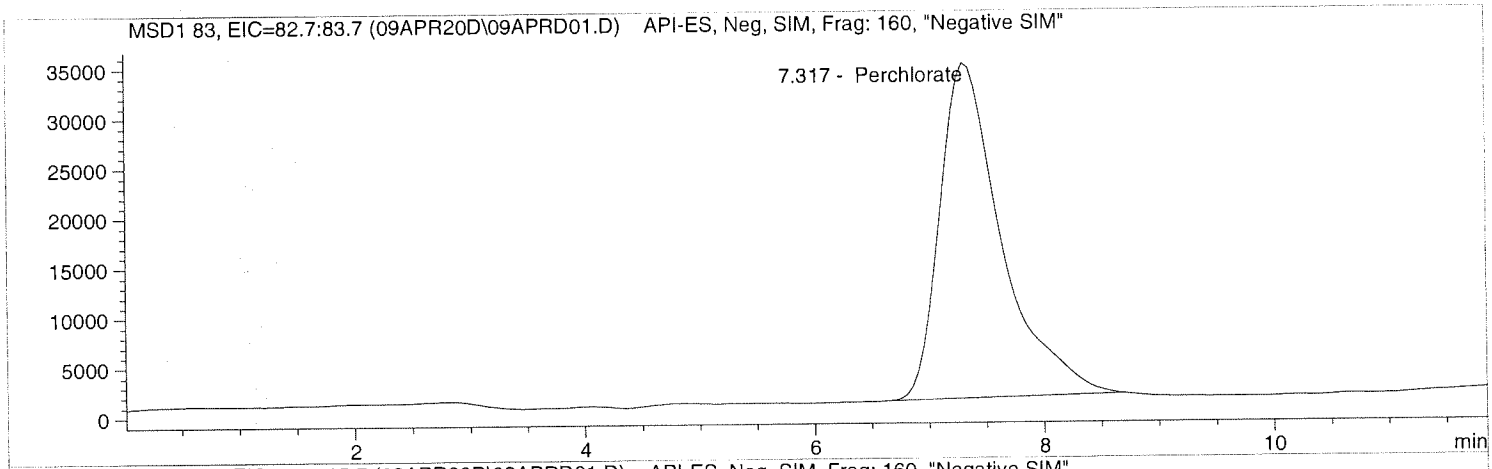
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	702138 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	702139 LCS@3.	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	702141 ICS@3.0	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	702142 LMB	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	2009235001	CLO4-AQN	1	Sample		
6	Vial 76	2009235002	CLO4-AQN	1	Sample		
7	Vial 77	2009235003	CLO4-AQN	1	Sample		
8	Vial 78	2009235004	CLO4-AQN	1	Sample		
9	Vial 79	2009235005	CLO4-AQN	1	Sample		
10	Vial 80	2009235006 MS	CLO4-AQN	1	Sample		
11	Vial 81	2009235007 MSD	CLO4-AQN	1	Sample		
12	Vial 82	2009423001	CLO4-AQN	1	Sample		
13	Vial 83	2009423002	CLO4-AQN	1	Sample		
14	Vial 84	2009423003	CLO4-AQN	1	Sample		
15	Vial 71	702143 CCV@25	CLO4-AQN	1	Ctrl Samp		
16	Vial 85	2009423004	CLO4-AQN	1	Sample		
17	Vial 86	2009423005	CLO4-AQN	1	Sample		
18	Vial 87	2009423006	CLO4-AQN	1	Sample		
19	Vial 88	2009423007	CLO4-AQN	1	Sample		
20	Vial 89	2009235003 10X	CLO4-AQN	1	Sample		
21	Vial 90	2009235004 10X	CLO4-AQN	1	Sample		
22	Vial 91	2009235005 10X	CLO4-AQN	1	Sample		
23	Vial 92	2009423001 10X	CLO4-AQN	1	Sample		
24	Vial 93	2009423002 10X	CLO4-AQN	1	Sample		
25	Vial 71	702144 CCV@25	CLO4-AQN	1	Ctrl Samp		

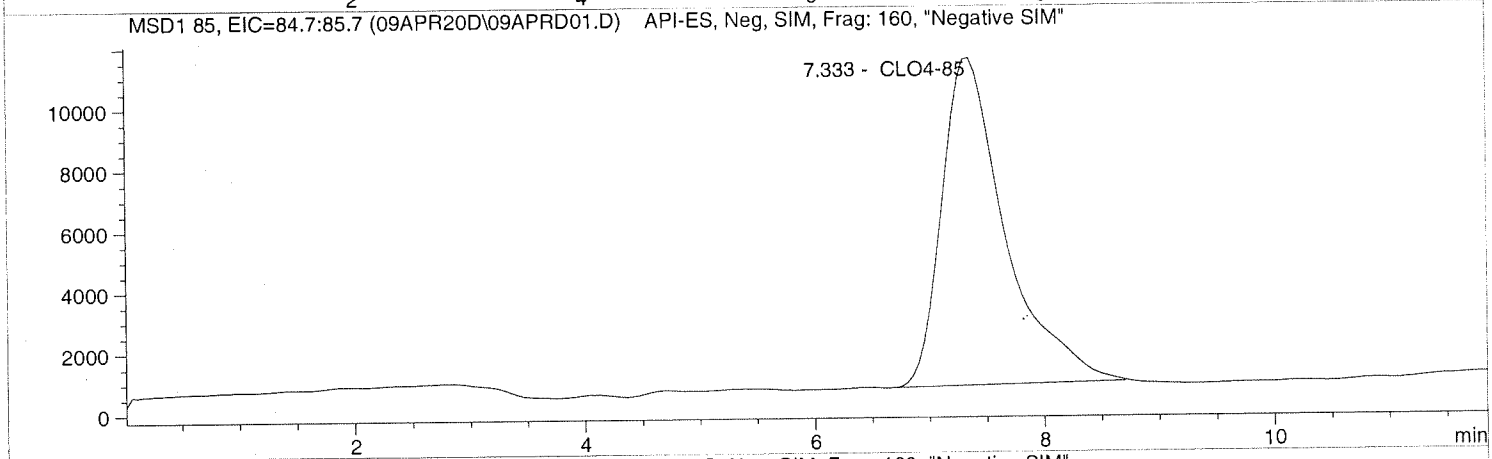
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD01.D Sample Name: 702138 CCV@25

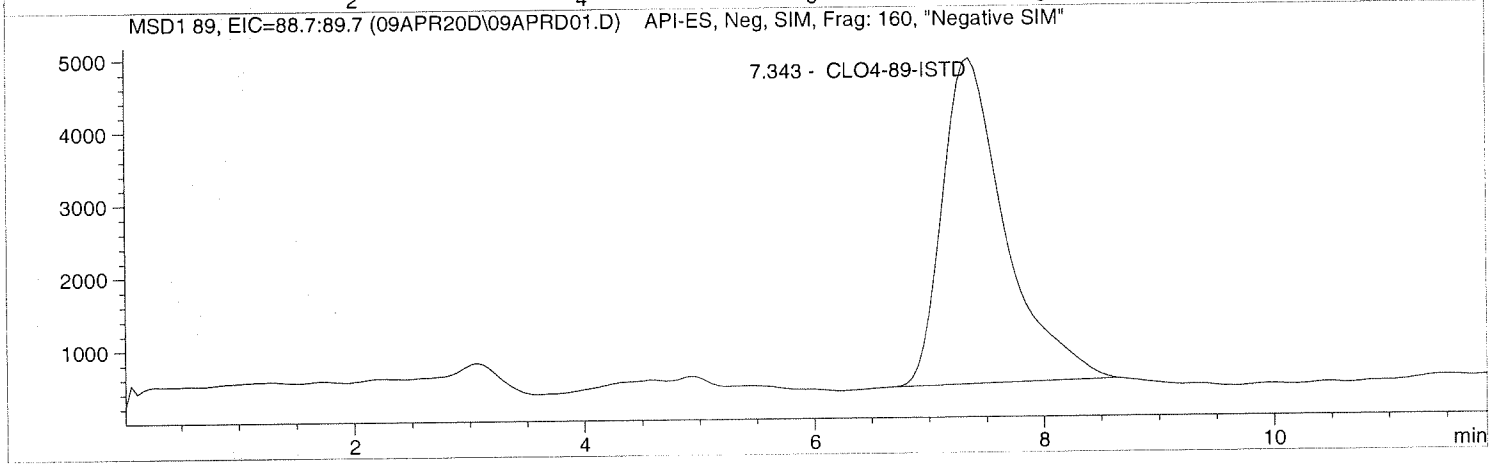
Injection Date:	4/09/2020 08:38:44	Seq Line:	1
Sample Name:	702138 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD01.D Sample Name: 702138 CCV@25

Injection Date:	4/09/2020 08:38:44	Seq Line:	1
Sample Name:	702138 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.317	PBA	1254613.4	25.2104	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.333	PBA	412302.4	26.9916	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.343	PBA	169897.6	5.0000	CLO4-89-ISTD

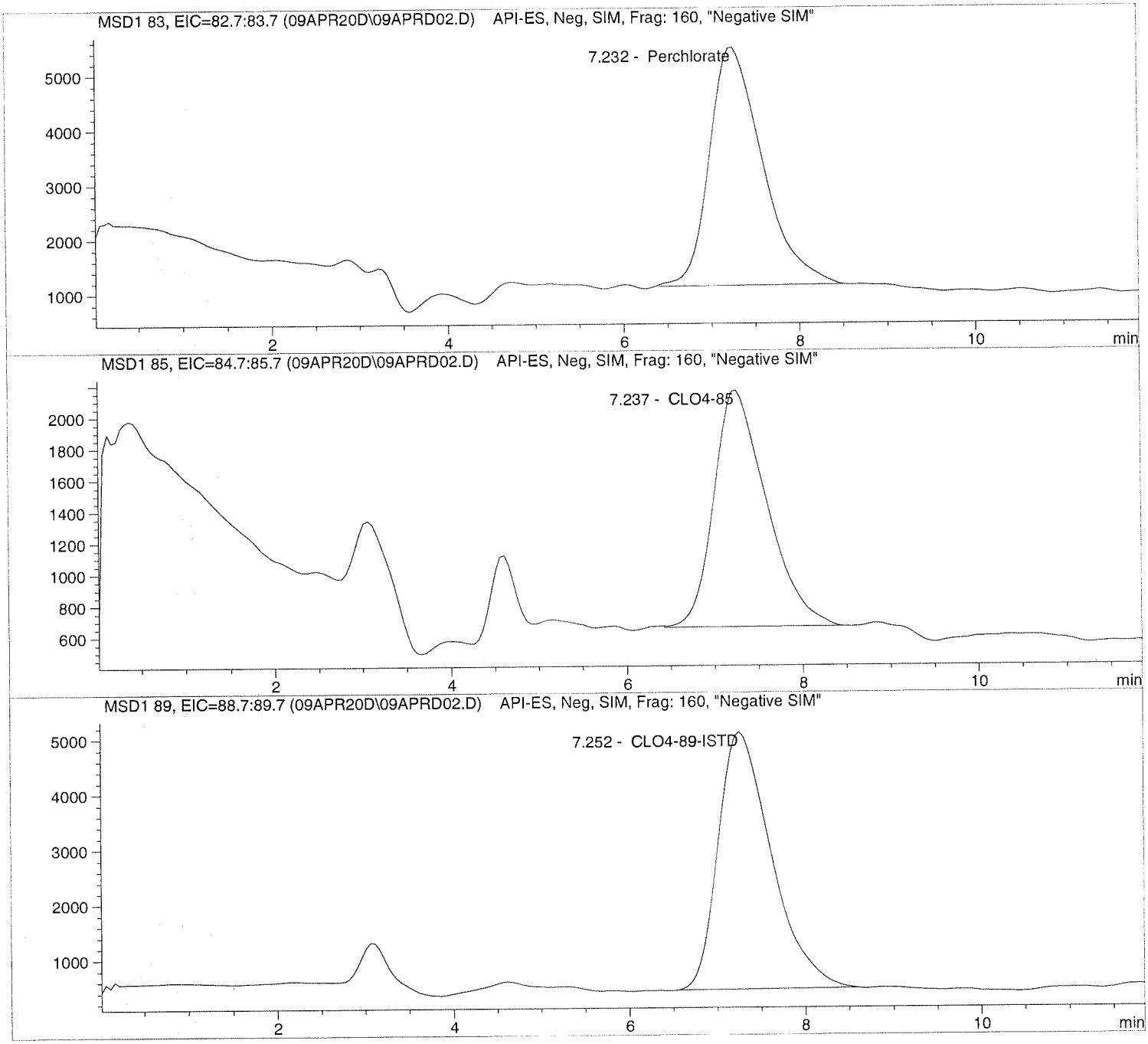
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD02.D Sample Name: 702139 LCS@3.

Injection Date:	4/09/2020 08:56:11	Seq Line:	2
Sample Name:	702139 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD02.D Sample Name: 702139 LCS@3.

Injection Date:	4/09/2020 08:56:11	Seq Line:	2
Sample Name:	702139 LCS@3.	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.232	BBA	182292.2	3.4342	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.237	BBA	62794.3	3.7896	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.252	BBA	195585.3	5.0000	CLO4-89-ISTD

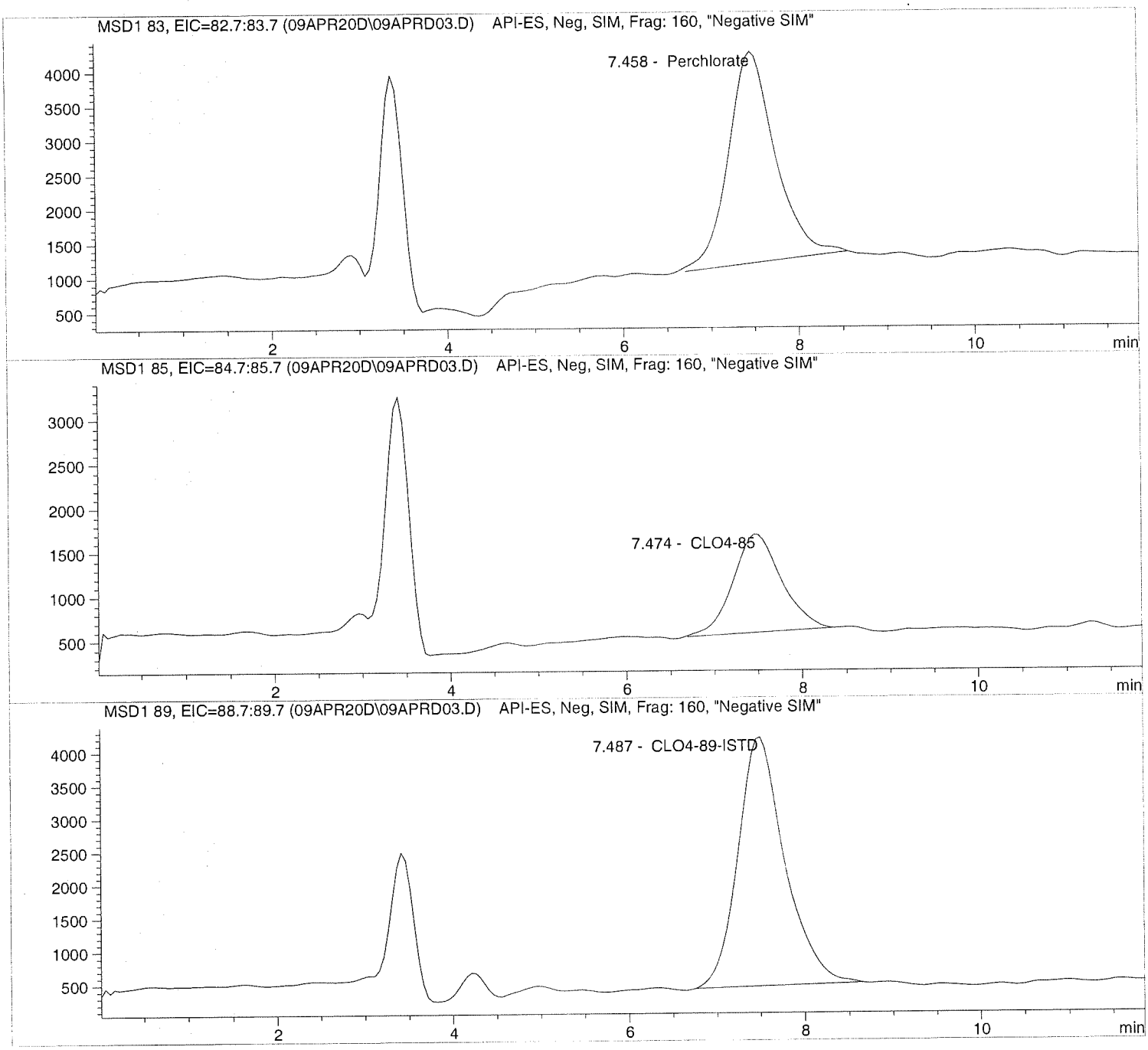
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Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD03.D Sample Name: 702141 ICS@3.0

Injection Date:	4/09/2020 09:10:09	Seq Line:	3
Sample Name:	702141 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD03.D Sample Name: 702141 ICS@3.0

Injection Date:	4/09/2020 09:10:09	Seq Line:	3
Sample Name:	702141 ICS@3.0	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	3.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.458	PBA	114532.4	3.0403	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.474	PBA	42551.5	3.6183	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.487	PBA	138633.5	5.0000	CLO4-89-ISTD

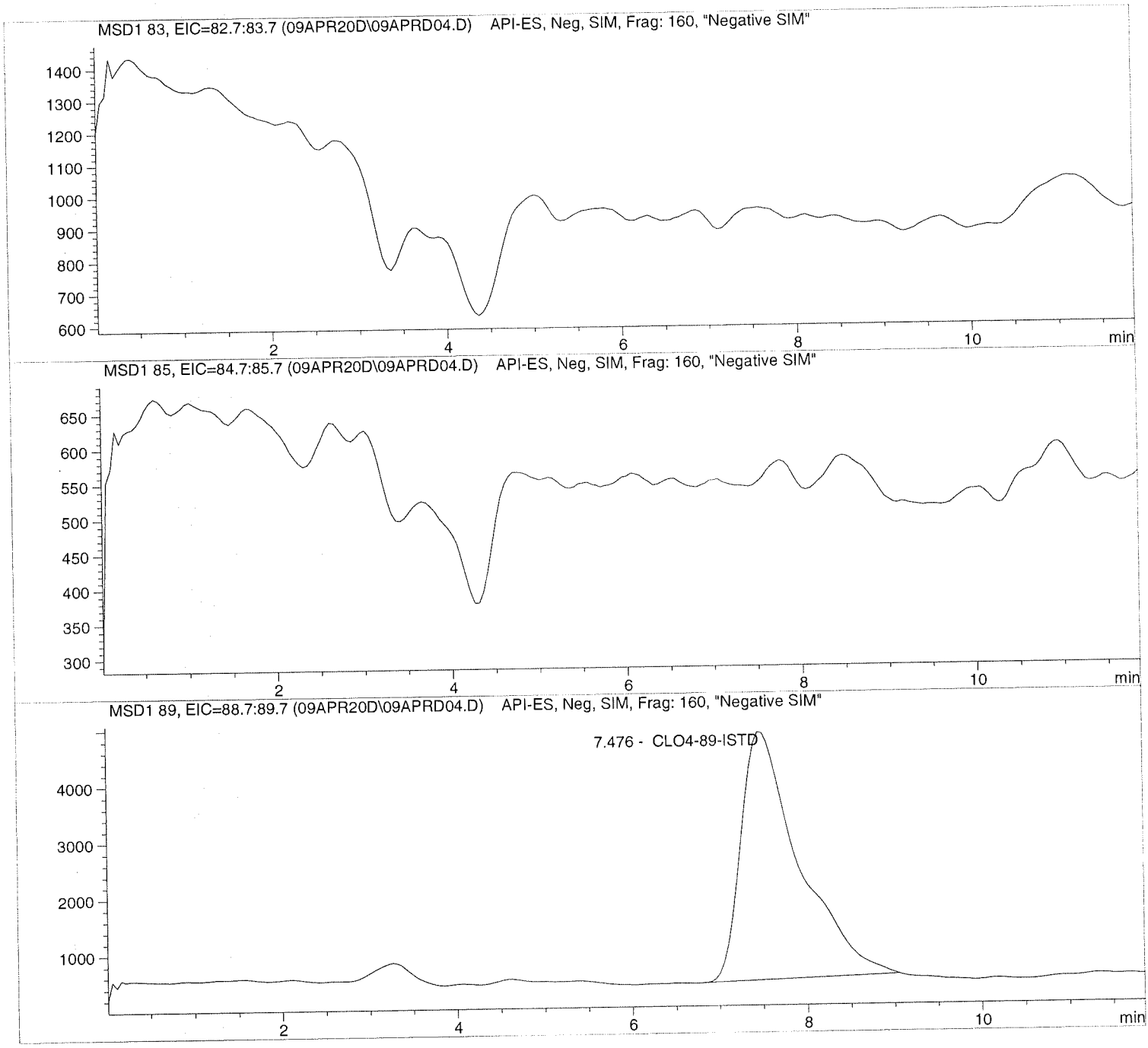
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD04.D Sample Name: 702142 LMB

Injection Date:	4/09/2020 09:24:11	Seq Line:	4
Sample Name:	702142 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD04.D Sample Name: 702142 LMB

Injection Date:	4/09/2020 09:24:11	Seq Line:	4
Sample Name:	702142 LMB	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.476	PBA	201475.1	5.0000	CLO4-89-ISTD

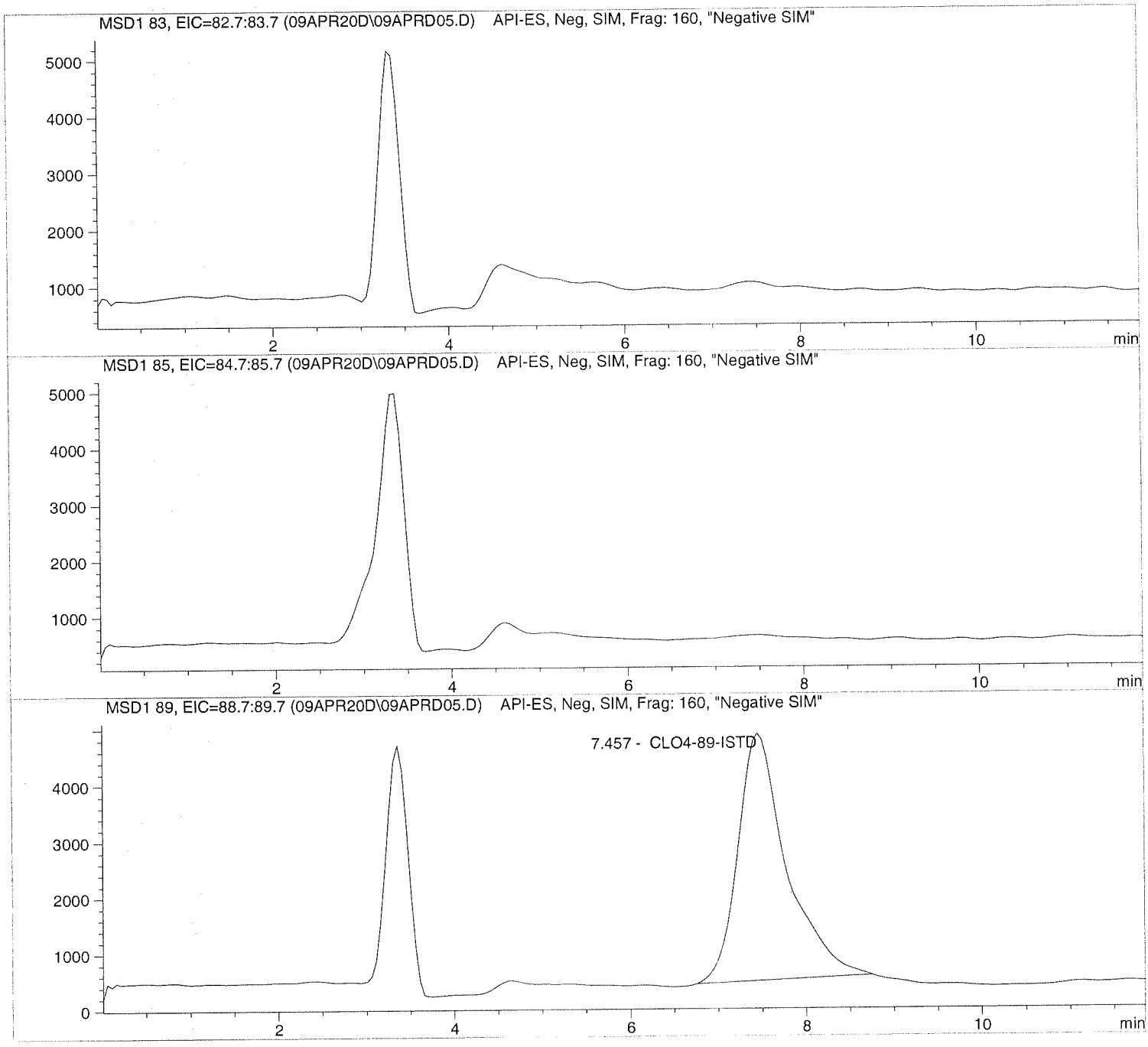
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD05.D Sample Name: 2009235001

Injection Date:	4/09/2020 09:38:09	Seq Line:	5
Sample Name:	2009235001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD05.D Sample Name: 2009235001

Injection Date:	4/09/2020 09:38:09	Seq Line:	5
Sample Name:	2009235001	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.457	PBA	168634.7	5.0000	CLO4-89-ISTD

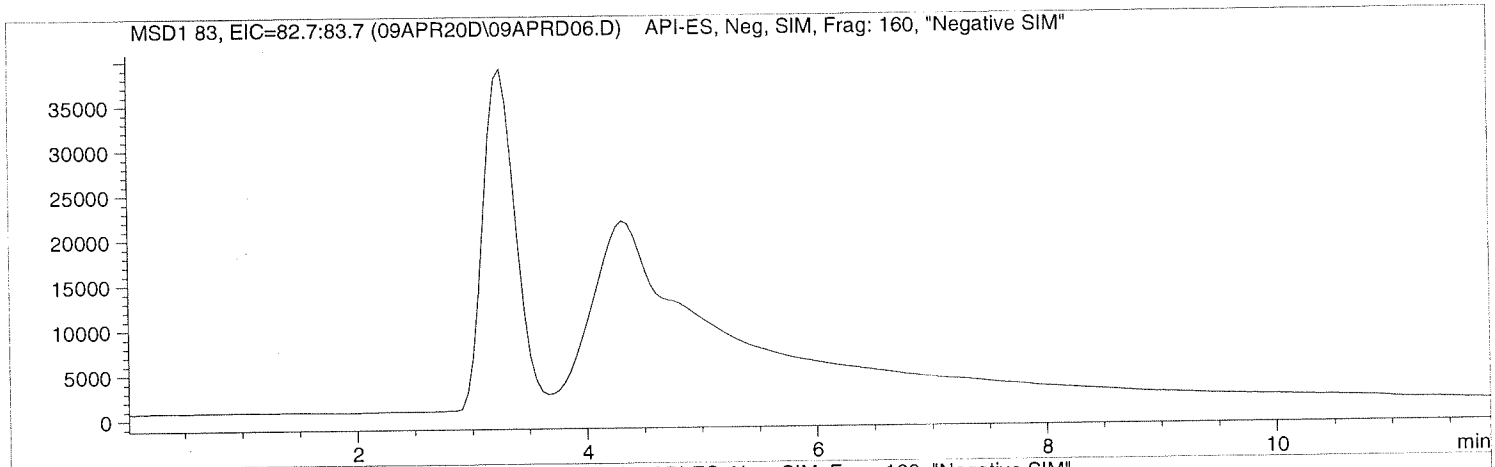
*** End of Report ***

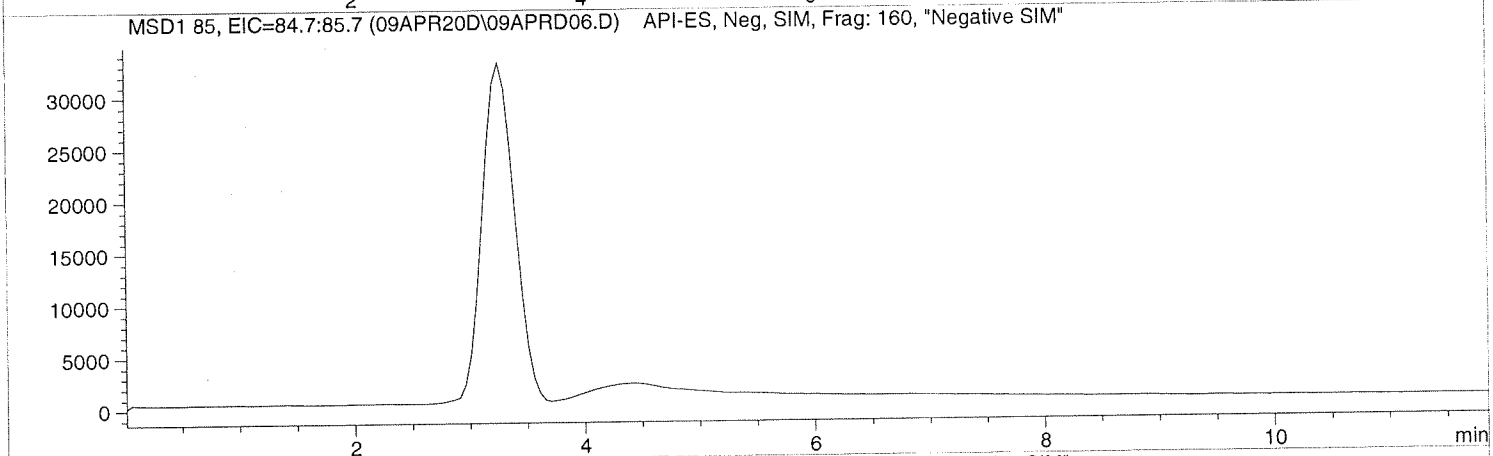
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD06.D Sample Name: 2009235002

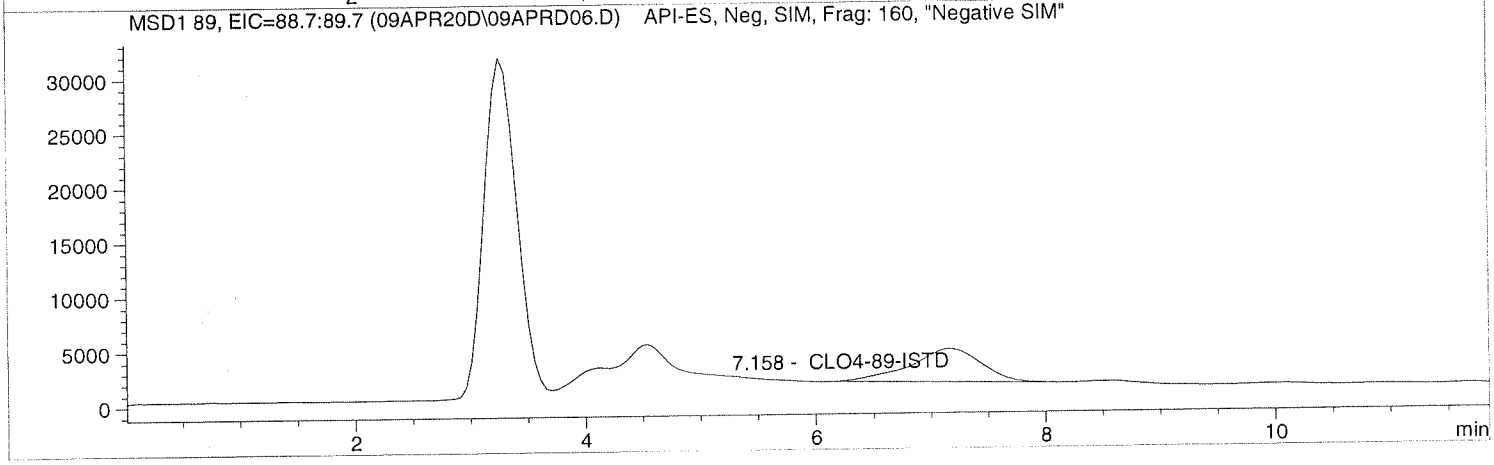
Injection Date:	4/09/2020 09:52:08	Seq Line:	6
Sample Name:	2009235002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD06.D Sample Name: 2009235002

Injection Date:	4/09/2020 09:52:08	Seq Line:	6
Sample Name:	2009235002	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.158	PBA	129194.4	5.0000	CLO4-89-ISTD

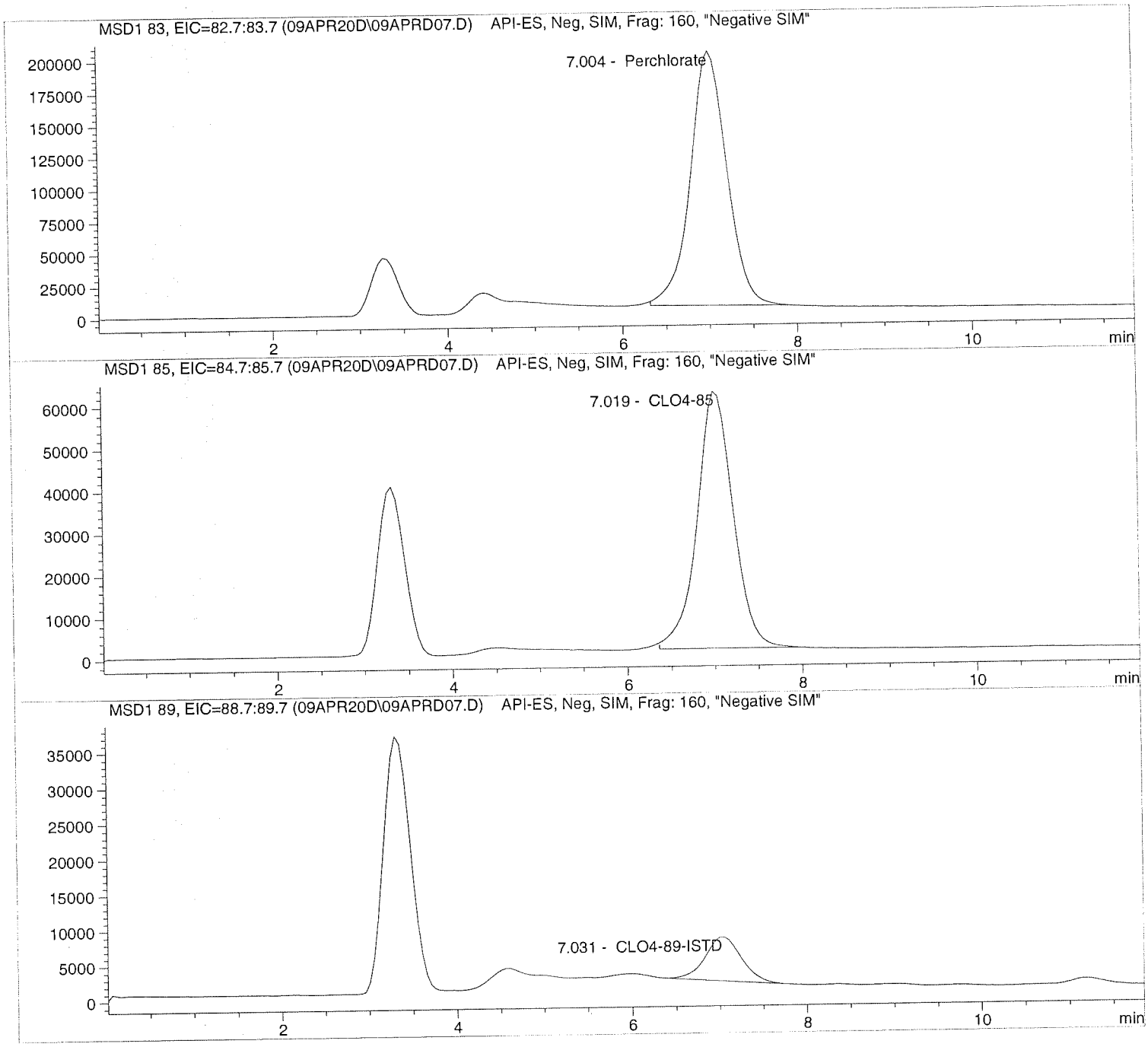
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD07.D Sample Name: 2009235003

Injection Date:	4/09/2020 10:06:45	Seq Line:	7
Sample Name:	2009235003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD07.D Sample Name: 2009235003

Injection Date:	4/09/2020 10:06:45	Seq Line:	7
Sample Name:	2009235003	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.004	BBA	5744974.5	86.9779	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.019	BBA	1748019.1	87.8792	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.031	VBA	178998.2	5.0000	CLO4-89-ISTD

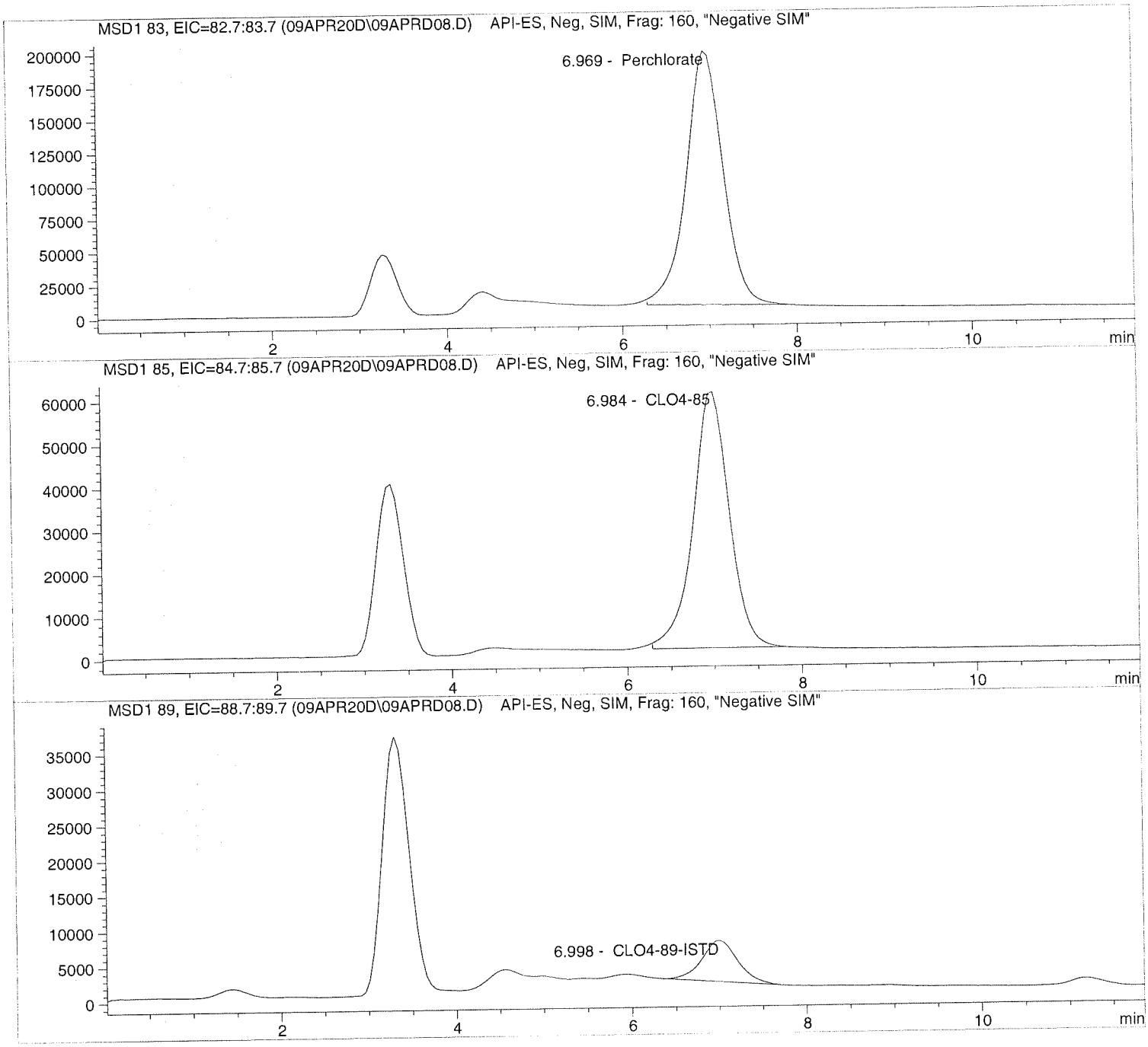
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD08.D Sample Name: 2009235004

Injection Date:	4/09/2020 10:20:44	Seq Line:	8
Sample Name:	2009235004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD08.D Sample Name: 2009235004

Injection Date:	4/09/2020 10:20:44	Seq Line:	8
Sample Name:	2009235004	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.969	BBA	5663323.5	90.8468	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.984	BBA	1725030.6	91.9068	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.998	VBA	166772.7	5.0000	CLO4-89-ISTD

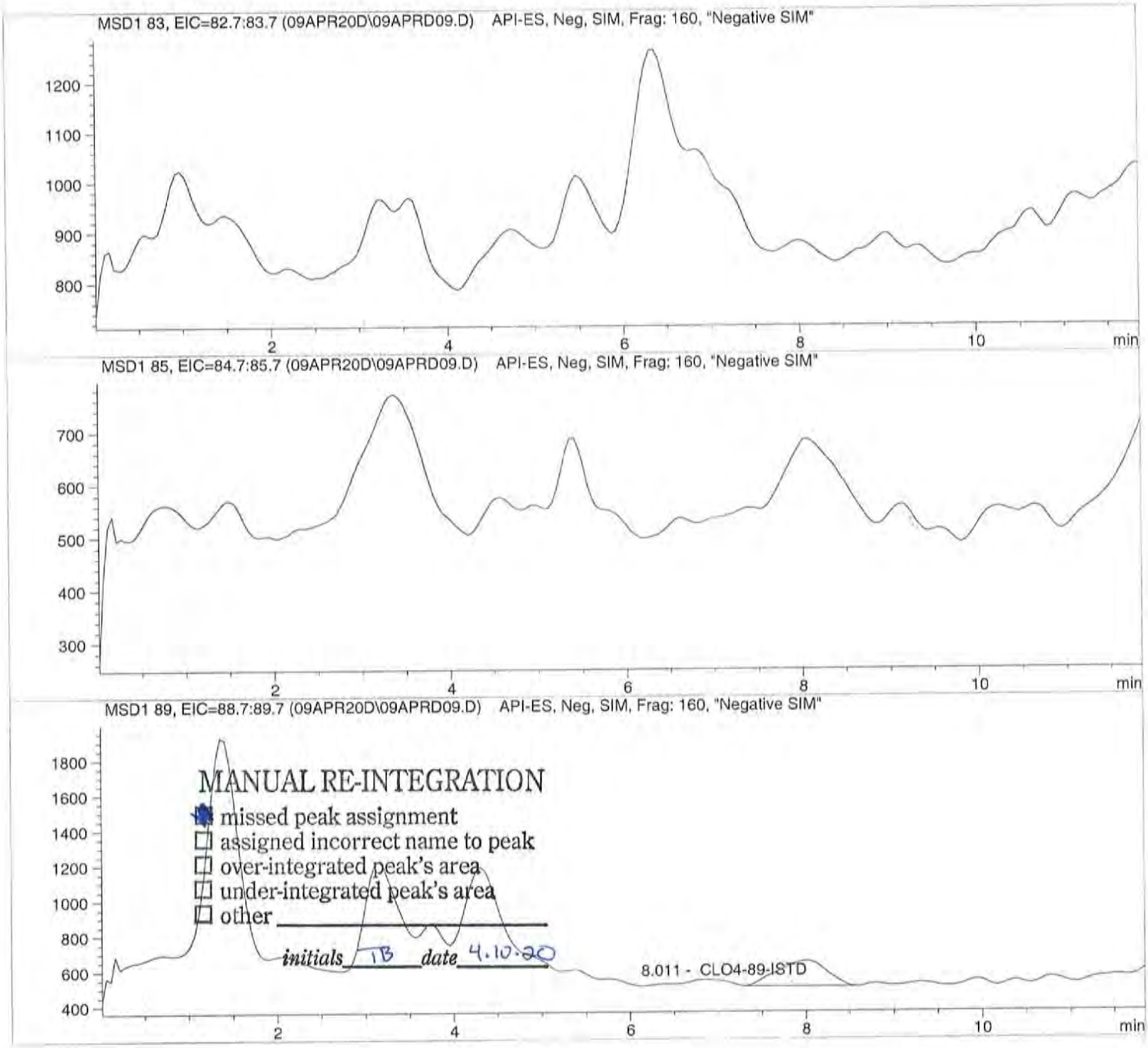
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD09.D Sample Name: 2009235005

Injection Date:	4/09/2020 10:34:44	Seq Line:	9
Sample Name:	2009235005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD09.D Sample Name: 2009235005

Injection Date:	4/09/2020 10:34:44	Seq Line:	9
Sample Name:	2009235005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
8.011	MM	5617.3	5.0000	CLO4-89-ISTD

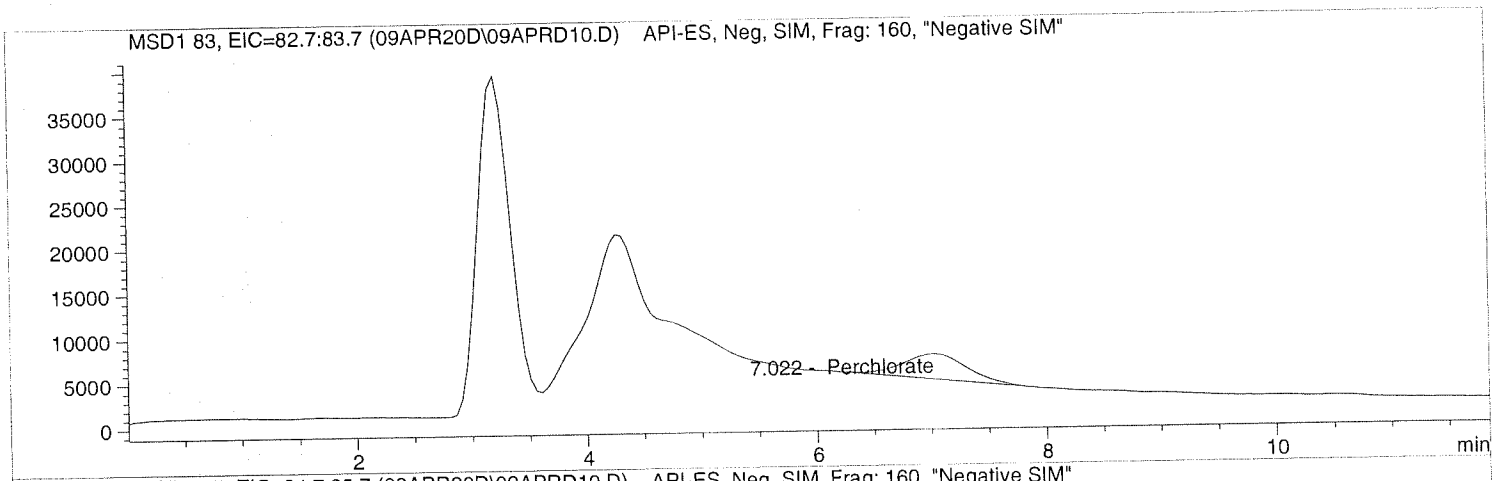
*** End of Report ***

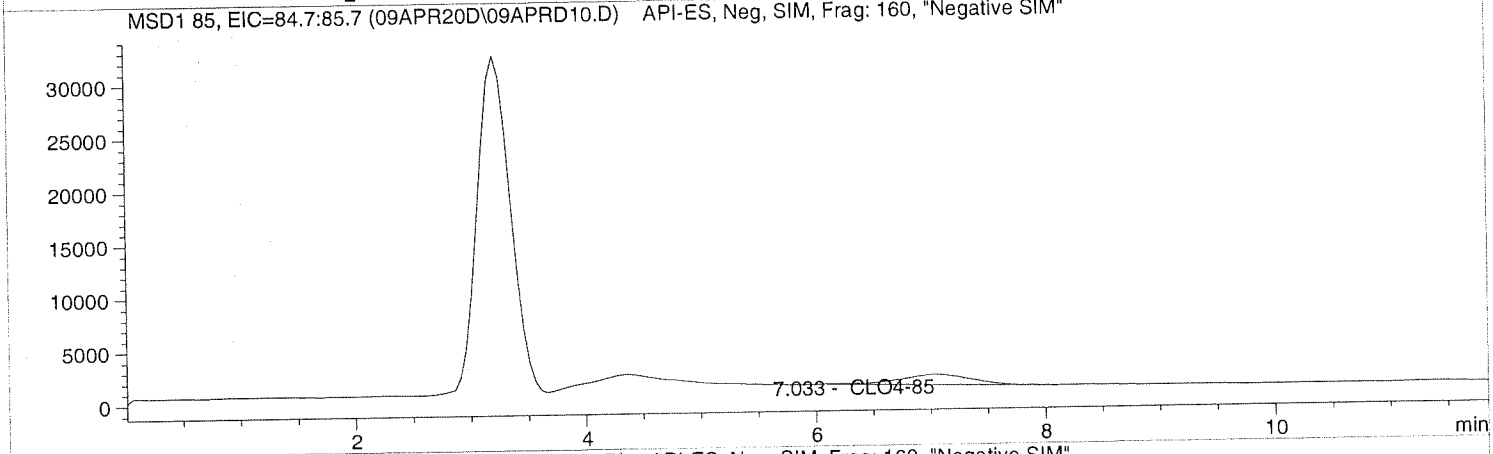
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD10.D Sample Name: 2009235006 MS

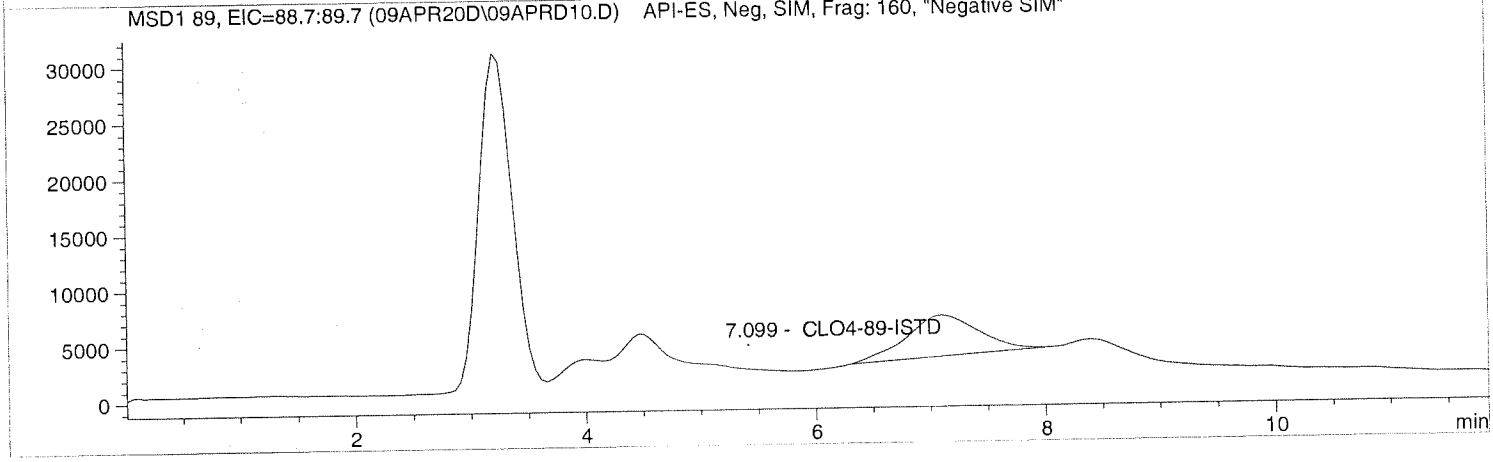
Injection Date:	4/09/2020 10:48:41	Seq Line:	10
Sample Name:	2009235006 MS	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD10.D Sample Name: 2009235006 MS

Injection Date:	4/09/2020 10:48:41	Seq Line:	10
Sample Name:	2009235006 MS	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.022	BBA	108189.3	2.4674	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.033	BBA	41431.8	3.0191	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.099	PB	160792.7	5.0000	CLO4-89-ISTD

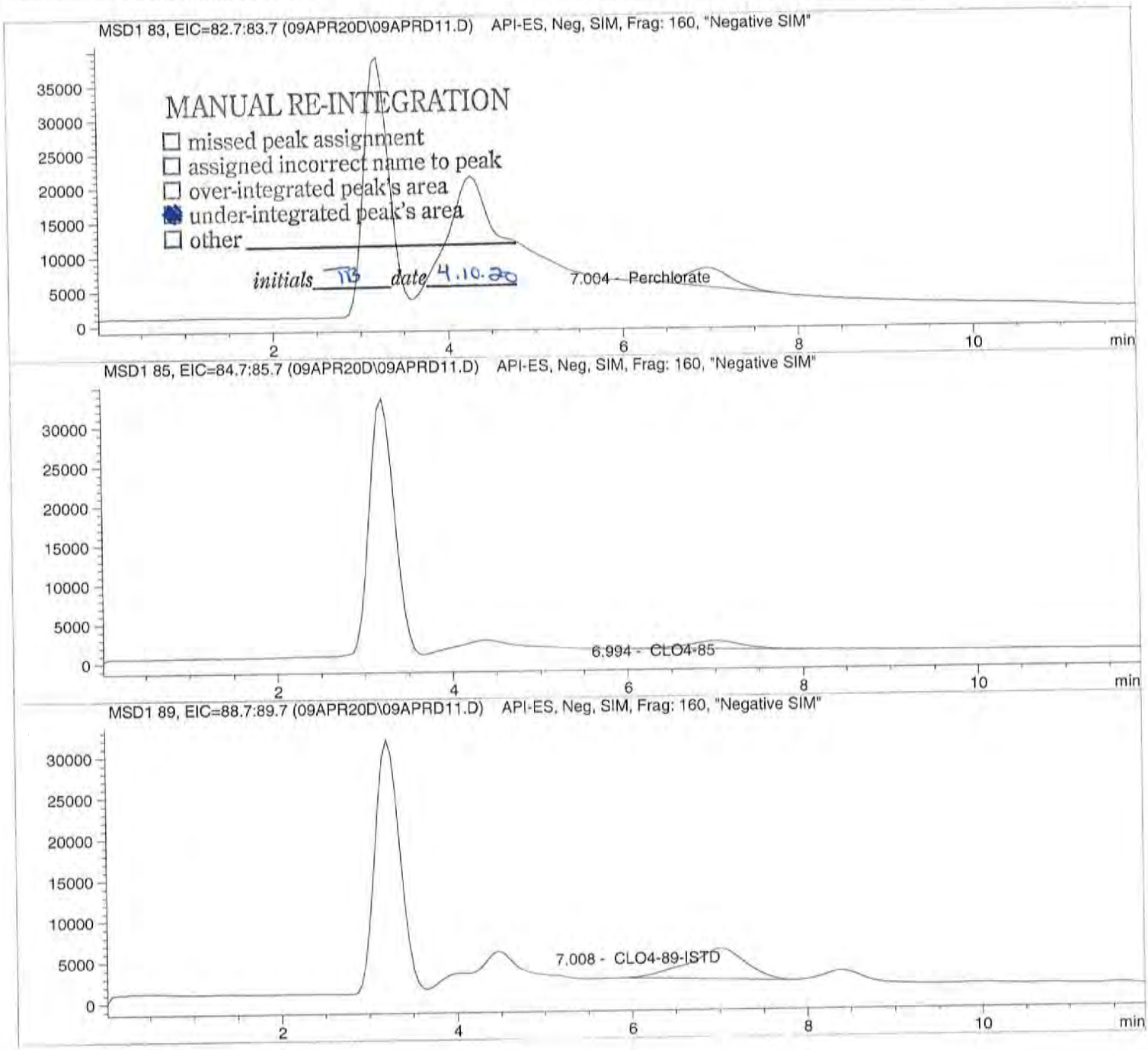
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD11.D Sample Name: 2009235007 MSD

Injection Date:	4/09/2020 11:02:39	Seq Line:	11
Sample Name:	2009235007 MSD	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD11.D Sample Name: 2009235007 MSD

Injection Date:	4/09/2020 11:02:39	Seq Line:	11
Sample Name:	2009235007 MSD	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.004	MM	97788.4	2.1190	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.994	PBA	42982.8	2.9860	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.008	PB	168588.4	5.0000	CLO4-89-ISTD

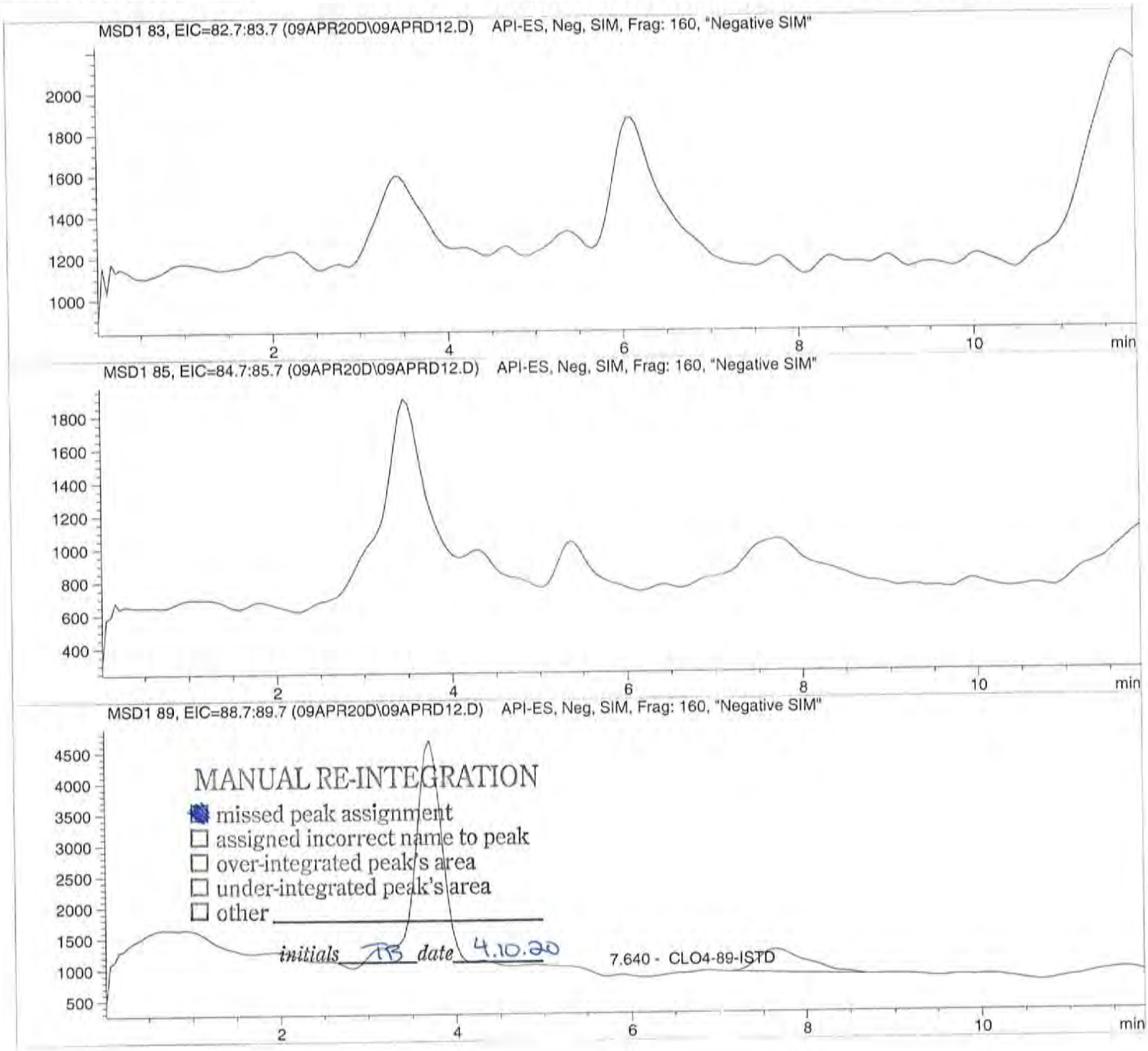
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD12.D Sample Name: 2009423001

Injection Date:	4/09/2020 11:16:34	Seq Line:	12
Sample Name:	2009423001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD12.D Sample Name: 2009423001

Injection Date:	4/09/2020 11:16:34	Seq Line:	12
Sample Name:	2009423001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.640	MM	14678.6	5.0000	CLO4-89-ISTD

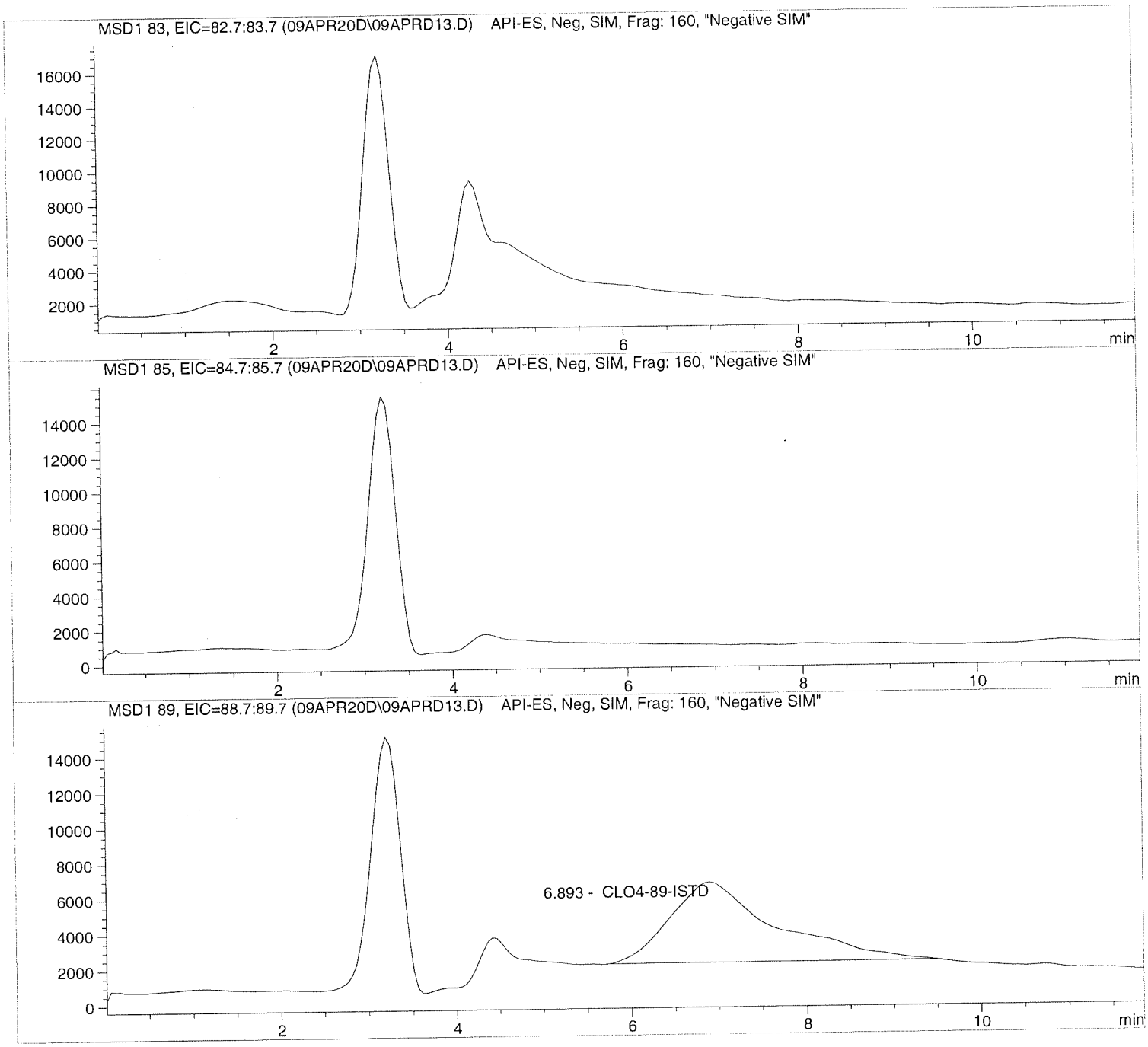
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD13.D Sample Name: 2009423002

Injection Date:	4/09/2020 11:30:32	Seq Line:	13
Sample Name:	2009423002	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD13.D Sample Name: 2009423002

Injection Date:	4/09/2020 11:30:32	Seq Line:	13
Sample Name:	2009423002	Location:	Vial 83
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.893	PBA	375009.7	5.0000	CLO4-89-ISTD

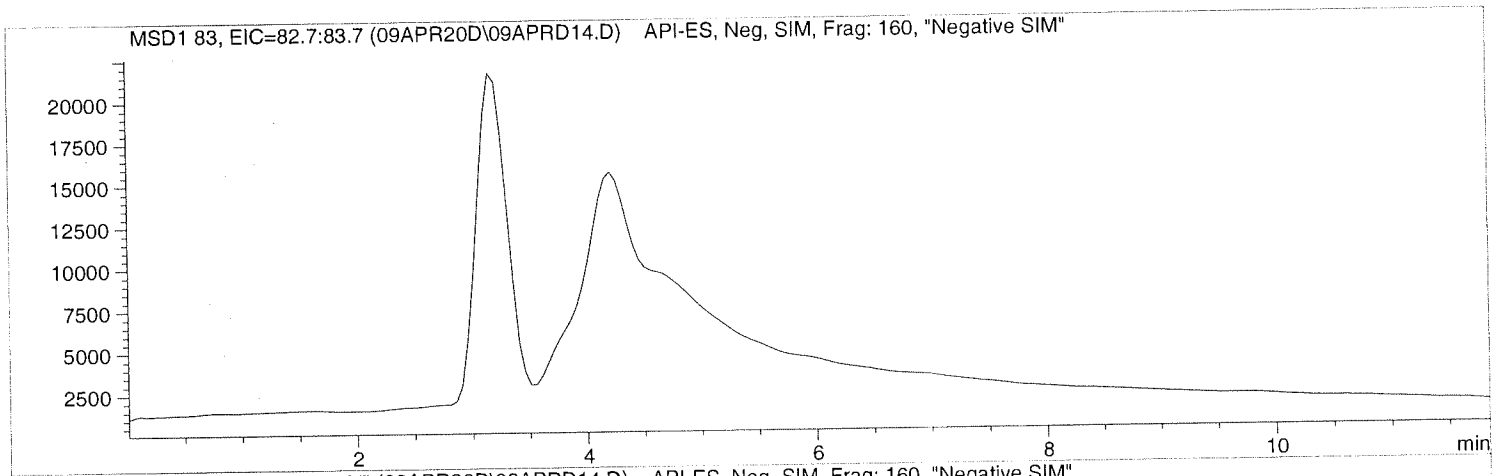
*** End of Report ***

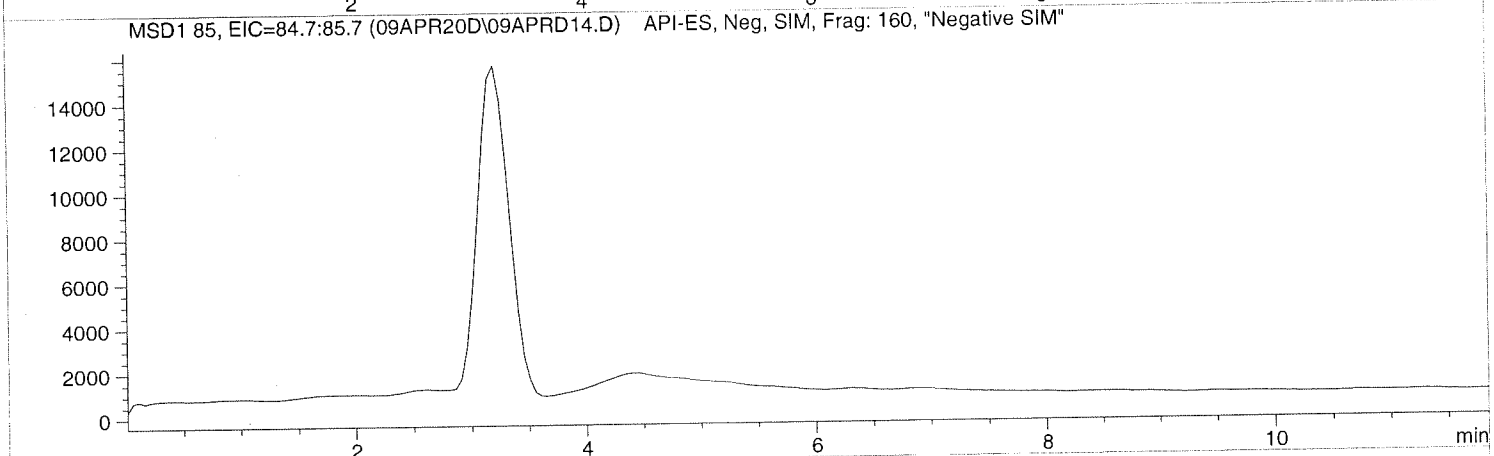
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD14.D Sample Name: 2009423003

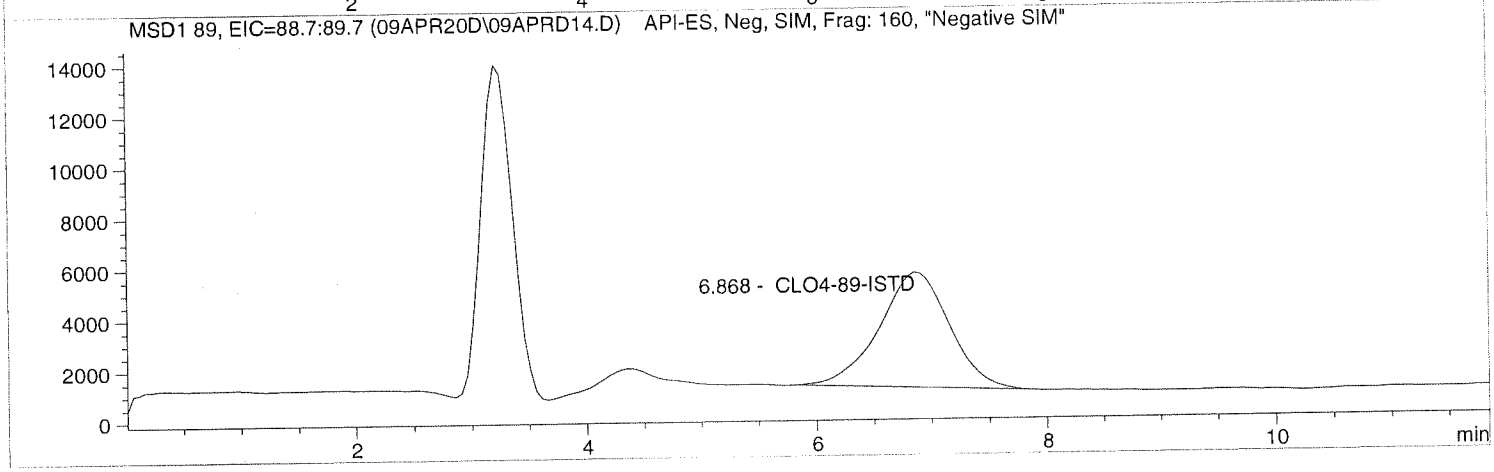
Injection Date:	4/09/2020 11:44:28	Seq Line:	14
Sample Name:	2009423003	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD14.D Sample Name: 2009423003

Injection Date:	4/09/2020 11:44:28	Seq Line:	14
Sample Name:	2009423003	Location:	Vial 84
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.868	BBA	191278.4	5.0000	CLO4-89-ISTD

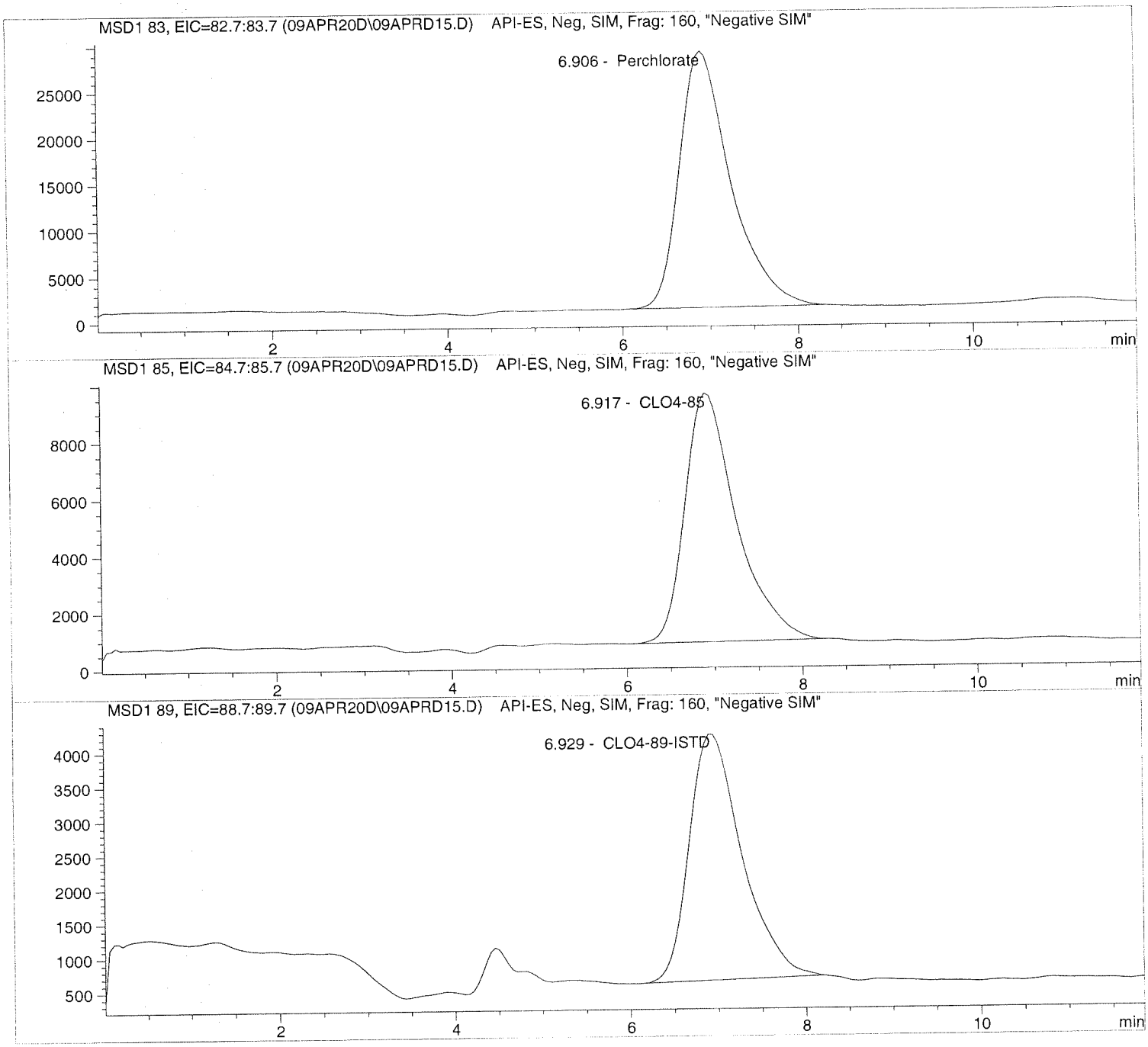
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD15.D Sample Name: 702143 CCV@25

Injection Date:	4/09/2020 11:58:26	Seq Line:	15
Sample Name:	702143 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD15.D Sample Name: 702143 CCV@25

Injection Date:	4/09/2020 11:58:26	Seq Line:	15
Sample Name:	702143 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.906	PBA	1121911.0	25.5407	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.917	PBA	356121.1	26.4976	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.929	PBA	149758.6	5.0000	CLO4-89-ISTD

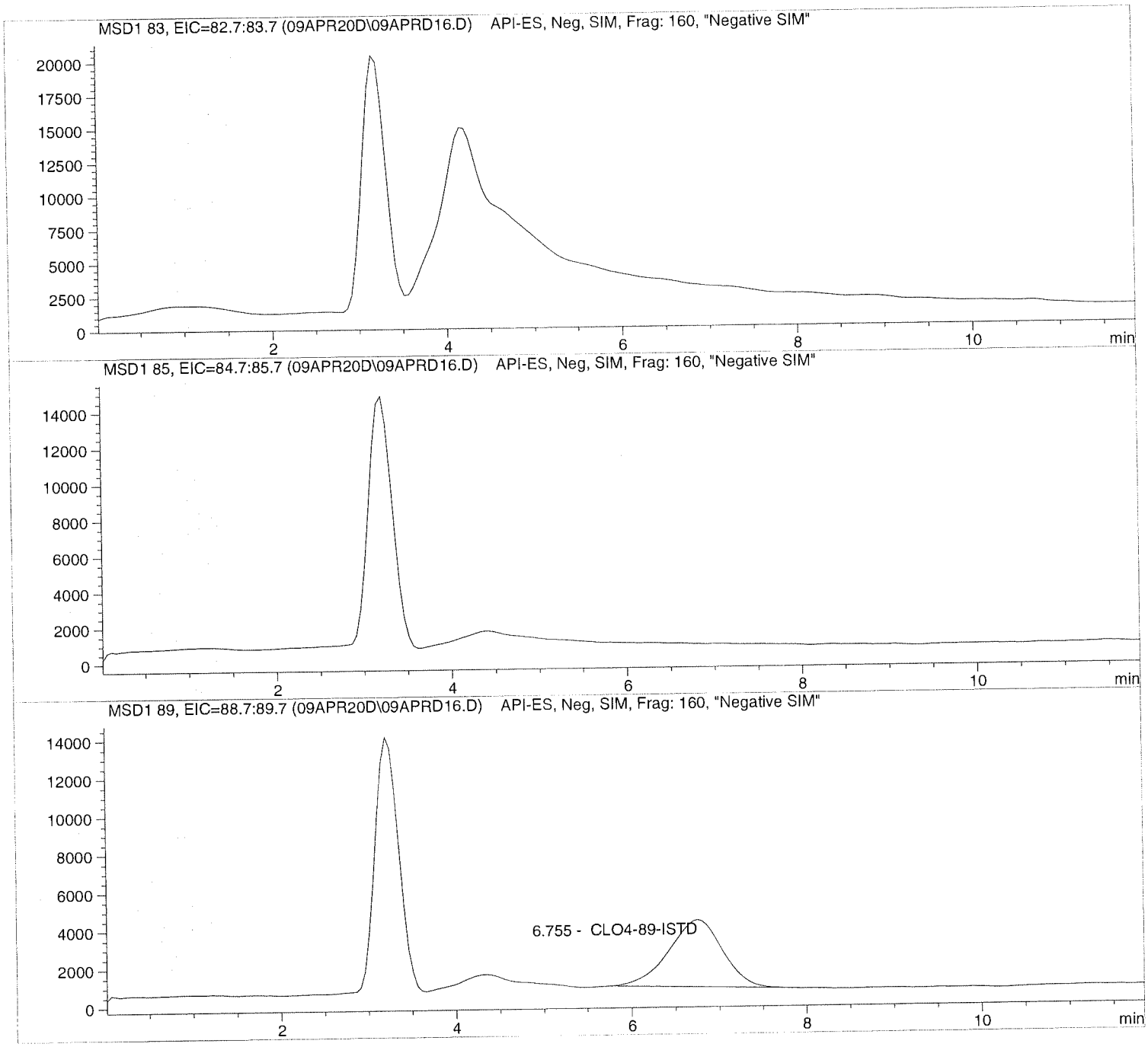
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD16.D Sample Name: 2009423004

Injection Date:	4/09/2020 12:12:25	Seq Line:	16
Sample Name:	2009423004	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD16.D Sample Name: 2009423004

Injection Date:	4/09/2020 12:12:25	Seq Line:	16
Sample Name:	2009423004	Location:	Vial 85
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.755	PBA	150790.4	5.0000	CLO4-89-ISTD

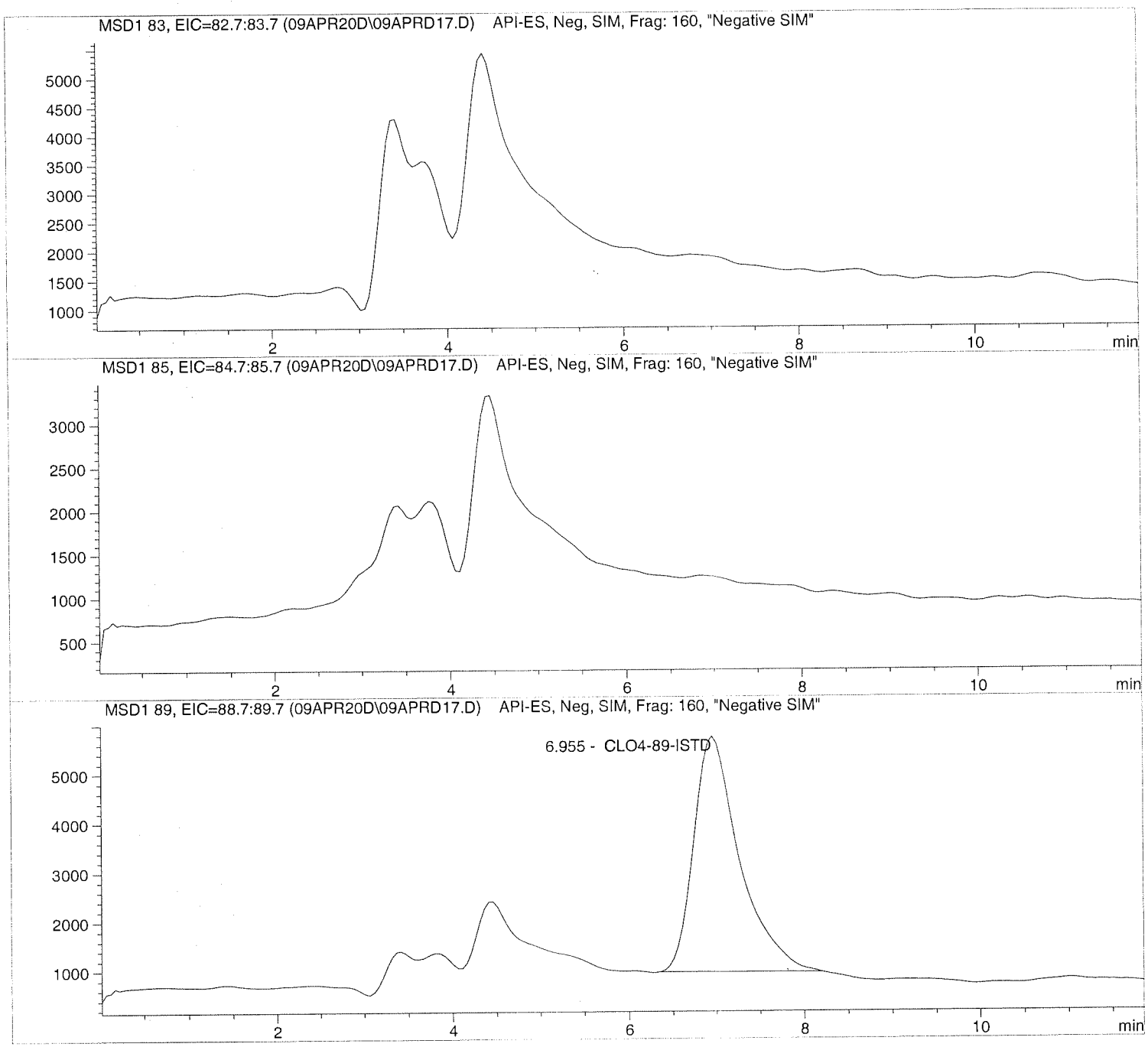
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD17.D Sample Name: 2009423005

Injection Date:	4/09/2020 12:26:21	Seq Line:	17
Sample Name:	2009423005	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD17.D Sample Name: 2009423005

Injection Date:	4/09/2020 12:26:21	Seq Line:	17
Sample Name:	2009423005	Location:	Vial 86
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.955	PBA	173885.3	5.0000	CLO4-89-ISTD

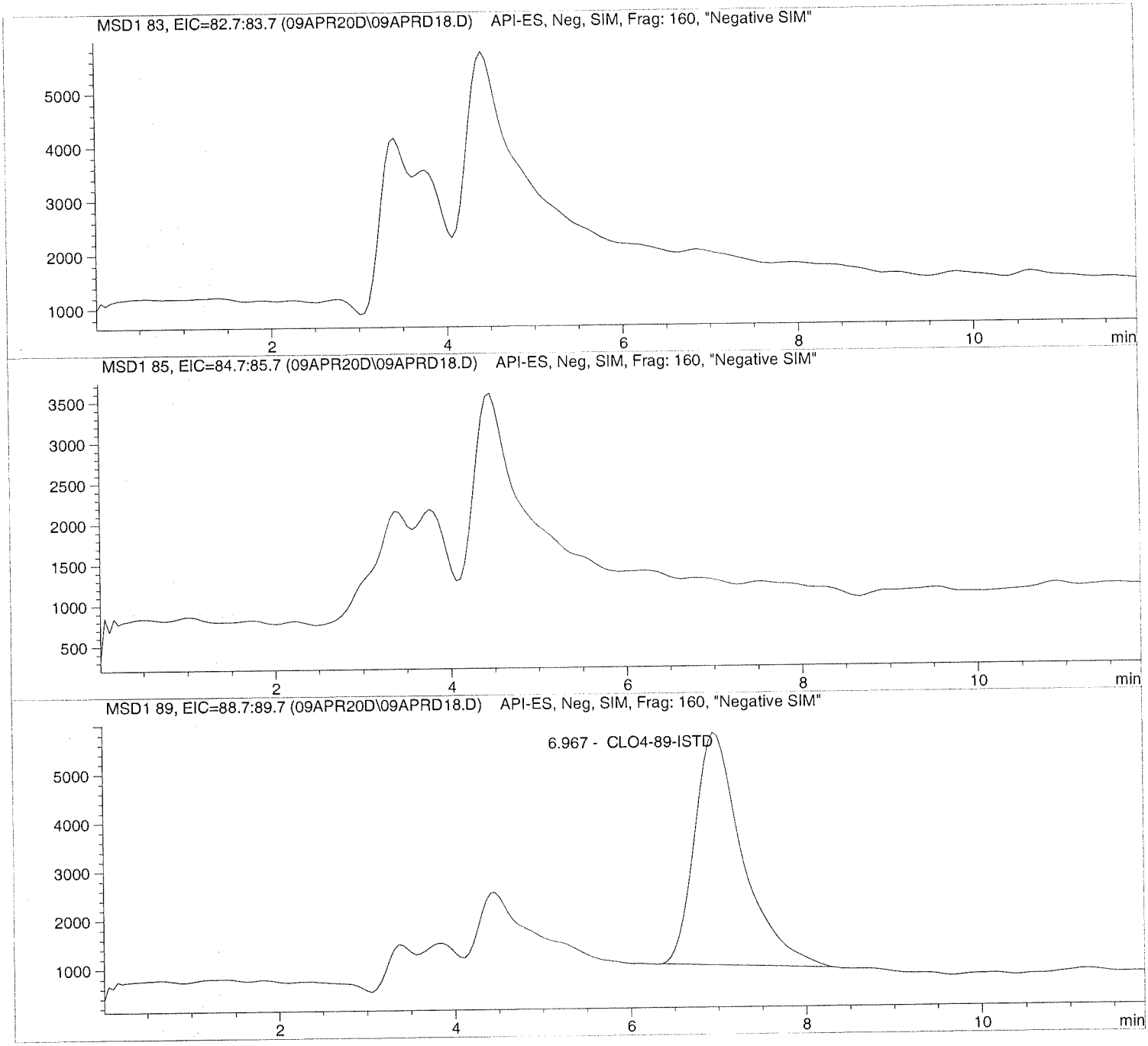
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD18.D Sample Name: 2009423006

Injection Date:	4/09/2020 12:40:17	Seq Line:	18
Sample Name:	2009423006	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD18.D Sample Name: 2009423006

Injection Date:	4/09/2020 12:40:17	Seq Line:	18
Sample Name:	2009423006	Location:	Vial 87
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.967	PBA	180345.8	5.0000	CLO4-89-ISTD

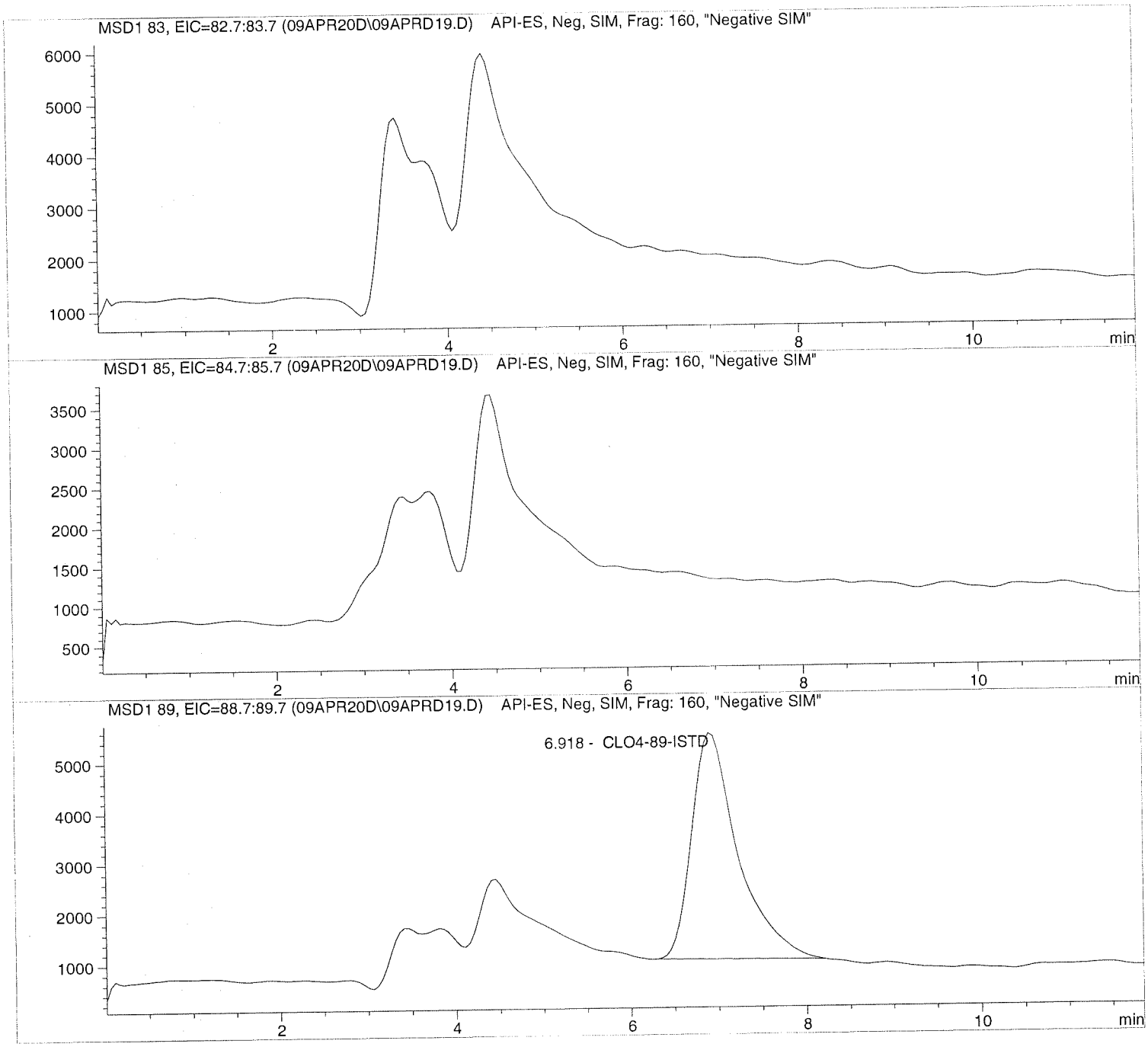
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD19.D Sample Name: 2009423007

Injection Date:	4/09/2020 12:54:14	Seq Line:	19
Sample Name:	2009423007	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD19.D Sample Name: 2009423007

Injection Date:	4/09/2020 12:54:14	Seq Line:	19
Sample Name:	2009423007	Location:	Vial 88
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.918	PBA	163117.0	5.0000	CLO4-89-ISTD

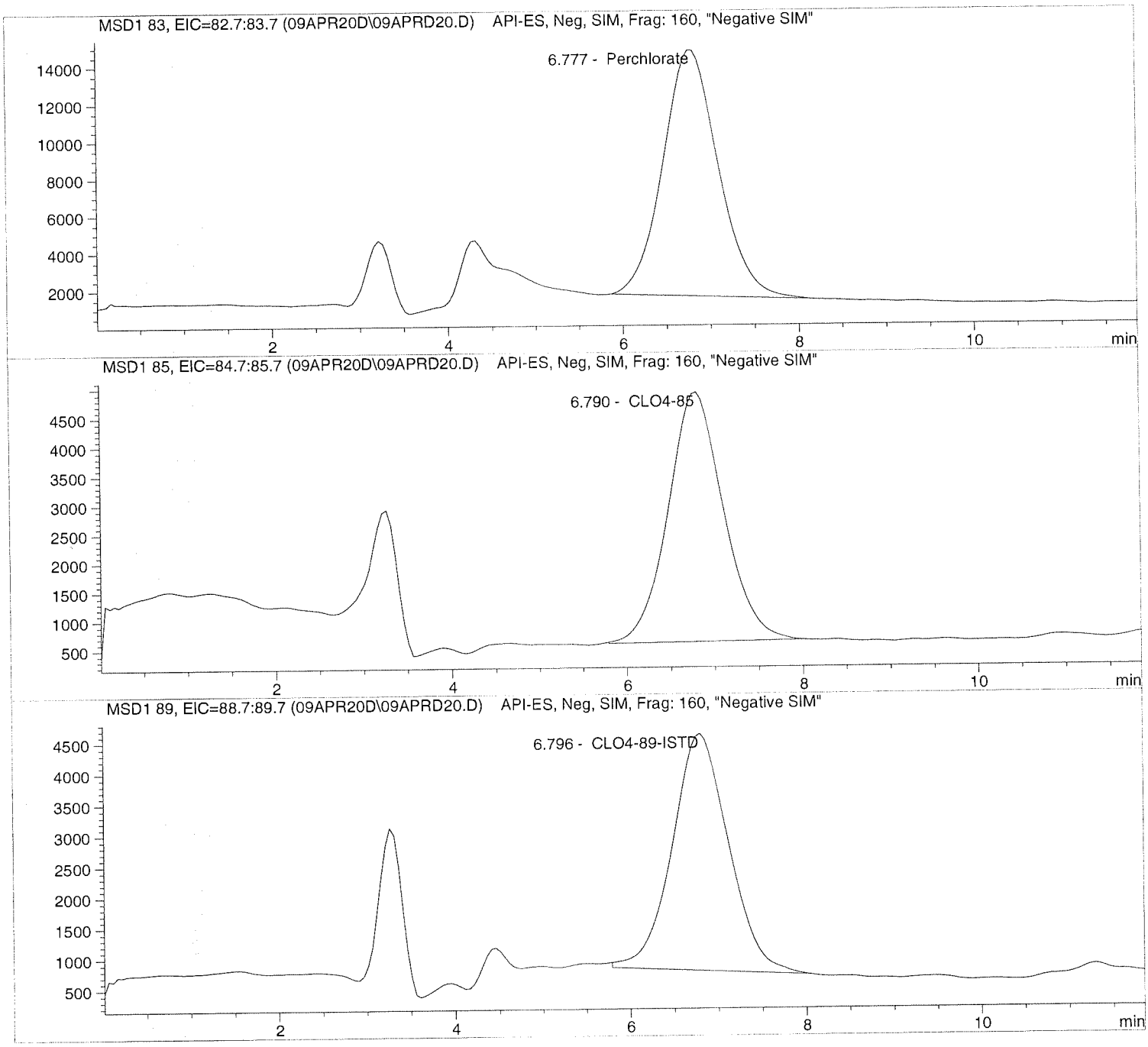
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD20.D Sample Name: 2009235003 10X

Injection Date:	4/09/2020 13:08:14	Seq Line:	20
Sample Name:	2009235003 10X	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD20.D Sample Name: 2009235003 10X

Injection Date:	4/09/2020 13:08:14	Seq Line:	20
Sample Name:	2009235003 10X	Location:	Vial 89
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.777	PBA	575573.8	121.2572	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.790	BBA	188018.0	128.6830	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.796	BBA	170987.4	50.0000	CLO4-89-ISTD

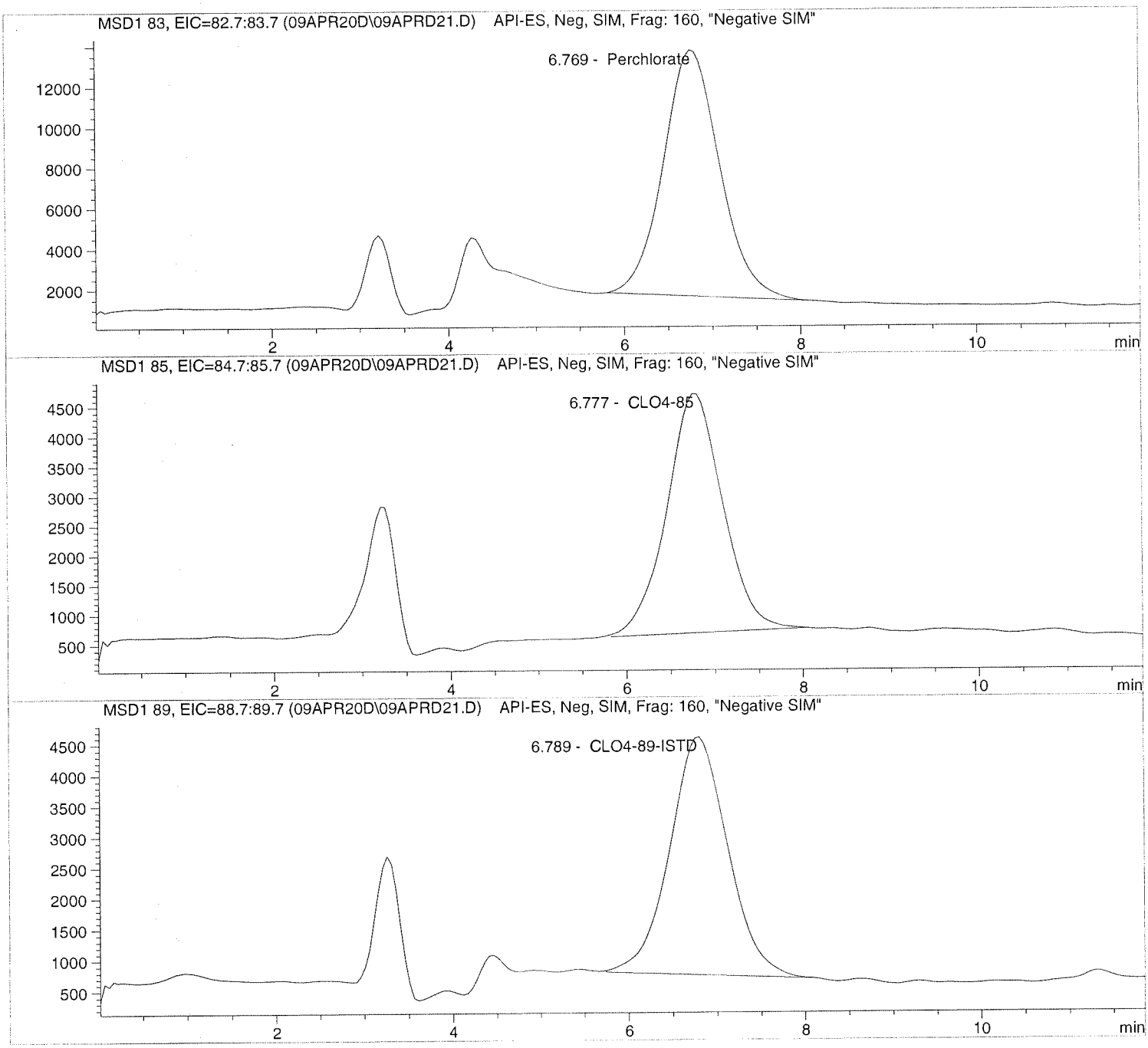
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD21.D Sample Name: 2009235004 10X

Injection Date:	4/09/2020 13:22:24	Seq Line:	21
Sample Name:	2009235004 10X	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD21.D Sample Name: 2009235004 10X

Injection Date:	4/09/2020 13:22:24	Seq Line:	21
Sample Name:	2009235004 10X	Location:	Vial 90
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.769	PBA	537023.4	110.2892	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.777	PBA	177384.6	118.2319	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.789	BBA	176150.6	50.0000	CLO4-89-ISTD

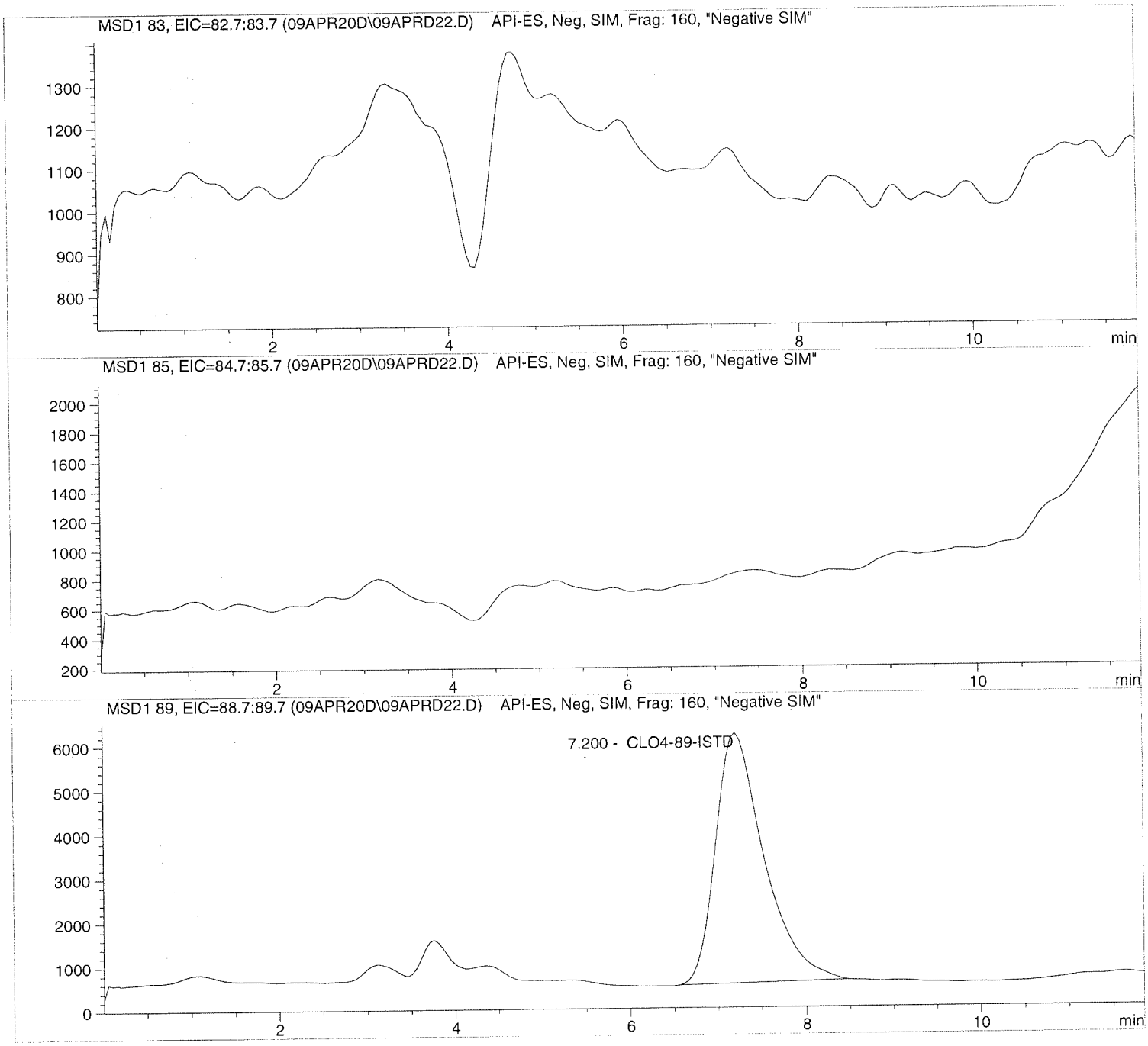
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD22.D Sample Name: 2009235005 10X

Injection Date:	4/09/2020 13:36:26	Seq Line:	22
Sample Name:	2009235005 10X	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD22.D Sample Name: 2009235005 10X

Injection Date:	4/09/2020 13:36:26	Seq Line:	22
Sample Name:	2009235005 10X	Location:	Vial 91
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.200	PBA	219200.0	50.0000	CLO4-89-ISTD

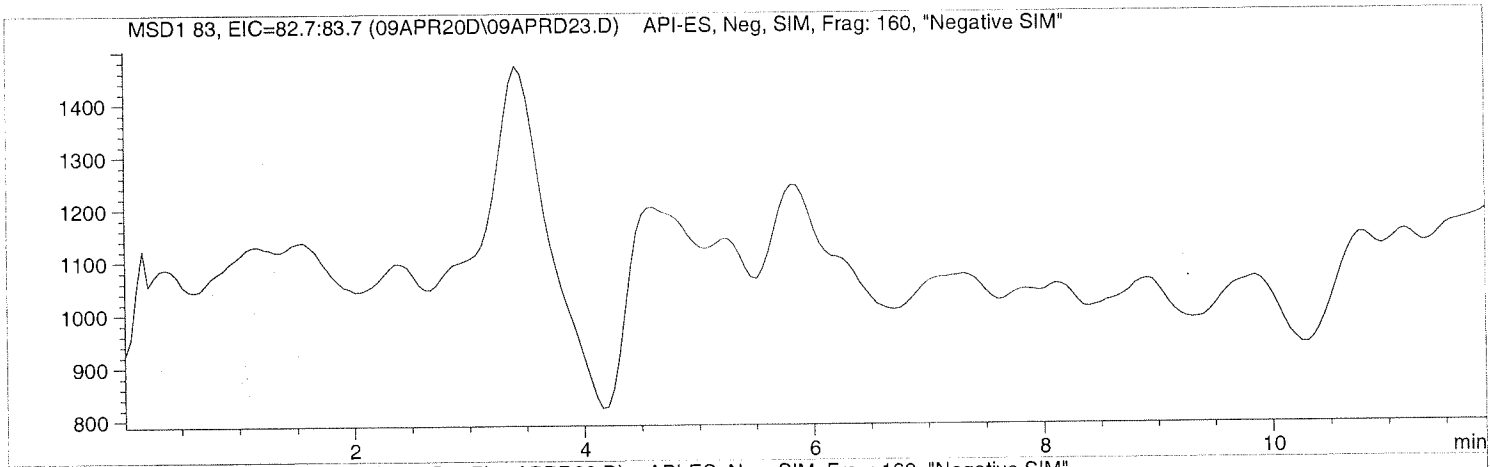
*** End of Report ***

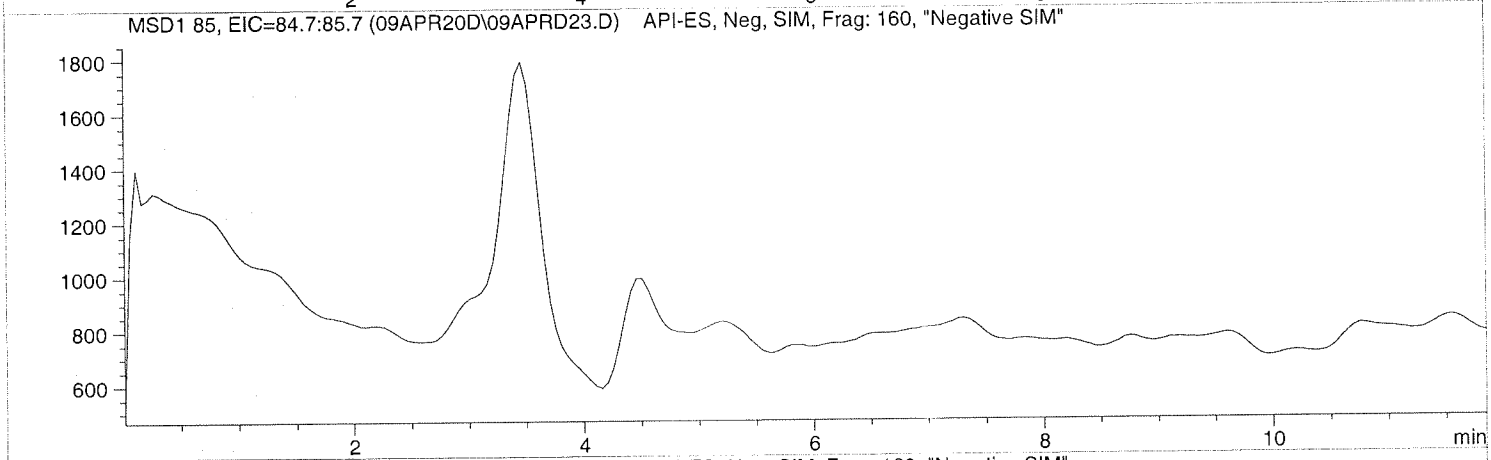
Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD23.D Sample Name: 2009423001 10X

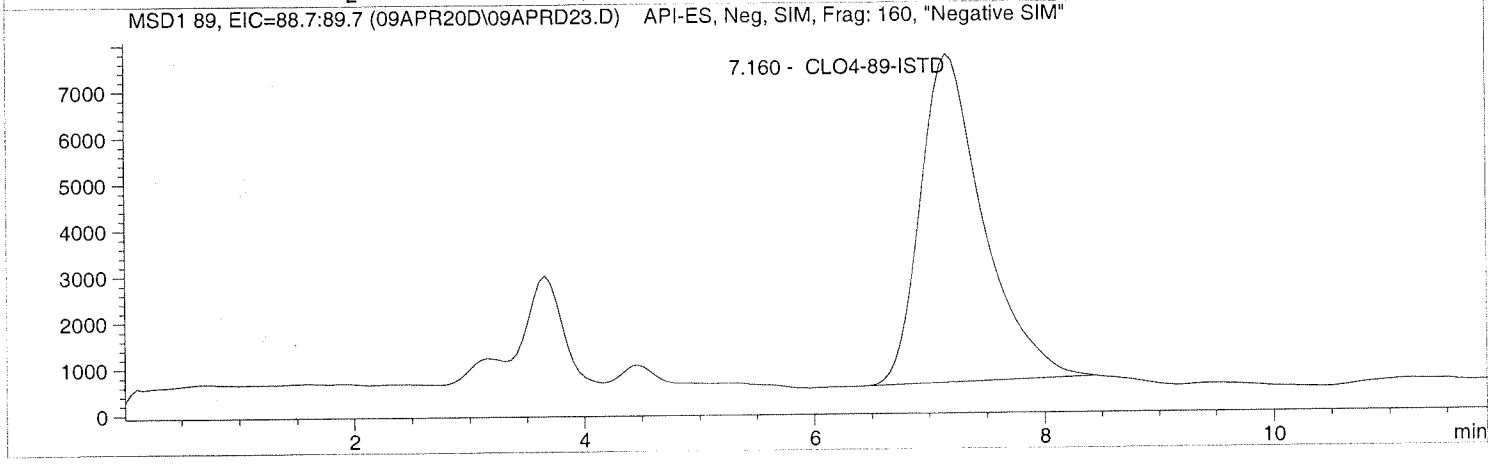
Injection Date:	4/09/2020 13:50:22	Seq Line:	23
Sample Name:	2009423001 10X	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD23.D Sample Name: 2009423001 10X

Injection Date:	4/09/2020 13:50:22	Seq Line:	23
Sample Name:	2009423001 10X	Location:	Vial 92
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.160	PBA	267378.6	50.0000	CLO4-89-ISTD

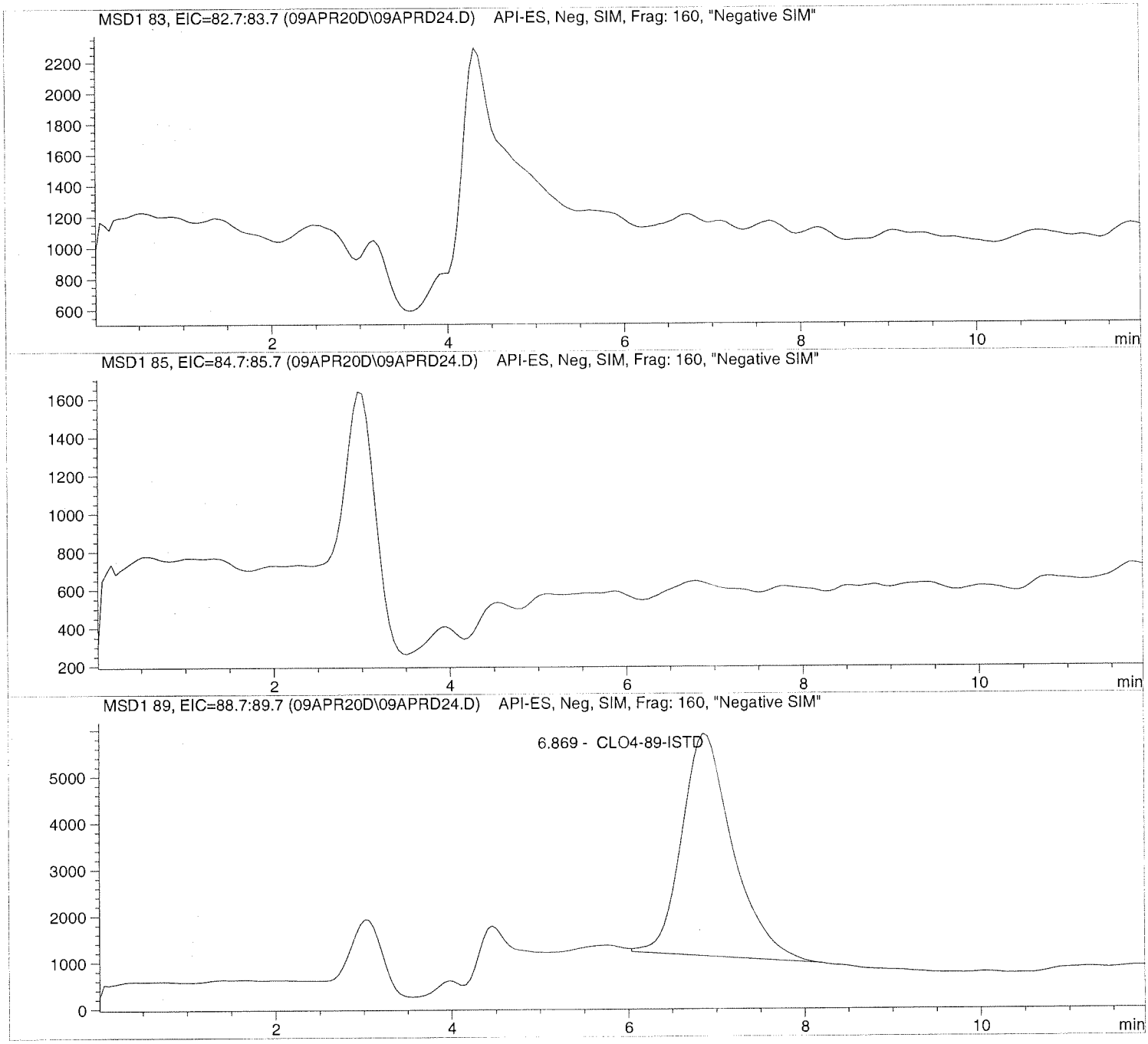
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD24.D Sample Name: 2009423002 10X

Injection Date:	4/09/2020 14:04:21	Seq Line:	24
Sample Name:	2009423002 10X	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD24.D Sample Name: 2009423002 10X

Injection Date:	4/09/2020 14:04:21	Seq Line:	24
Sample Name:	2009423002 10X	Location:	Vial 93
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.869	BBA	191502.8	50.0000	CLO4-89-ISTD

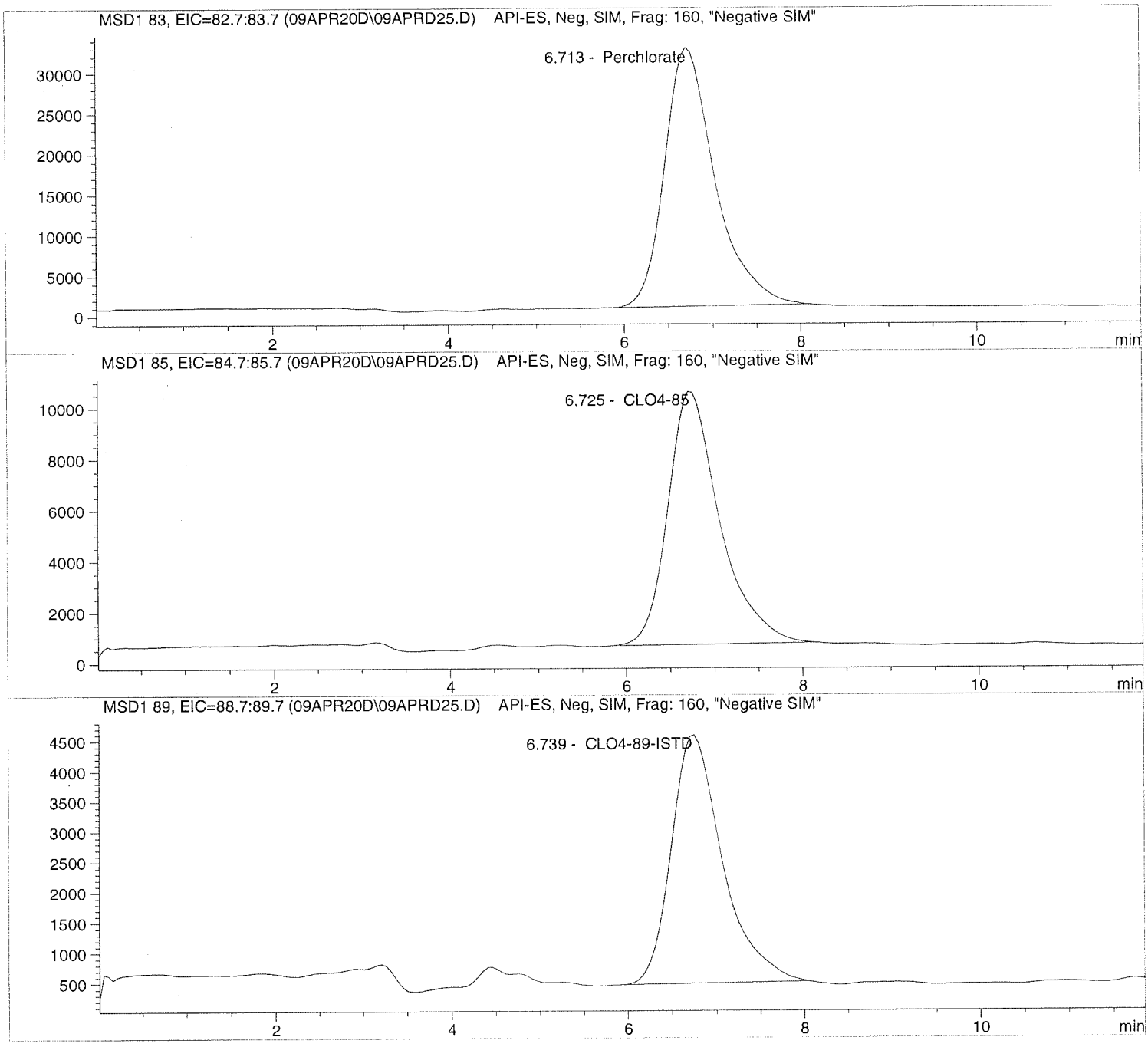
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD25.D Sample Name: 702144 CCV@25

Injection Date:	4/09/2020 14:22:37	Seq Line:	25
Sample Name:	702144 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD25.D Sample Name: 702144 CCV@25

Injection Date:	4/09/2020 14:22:37	Seq Line:	25
Sample Name:	702144 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.713	PBA	1264876.2	26.0625	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.725	PBA	403639.5	27.1729	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.739	PBA	165106.5	5.0000	CLO4-89-ISTD

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2020\APR\10APR20D.S

Sequence Table:

Method and Injection Info Part:

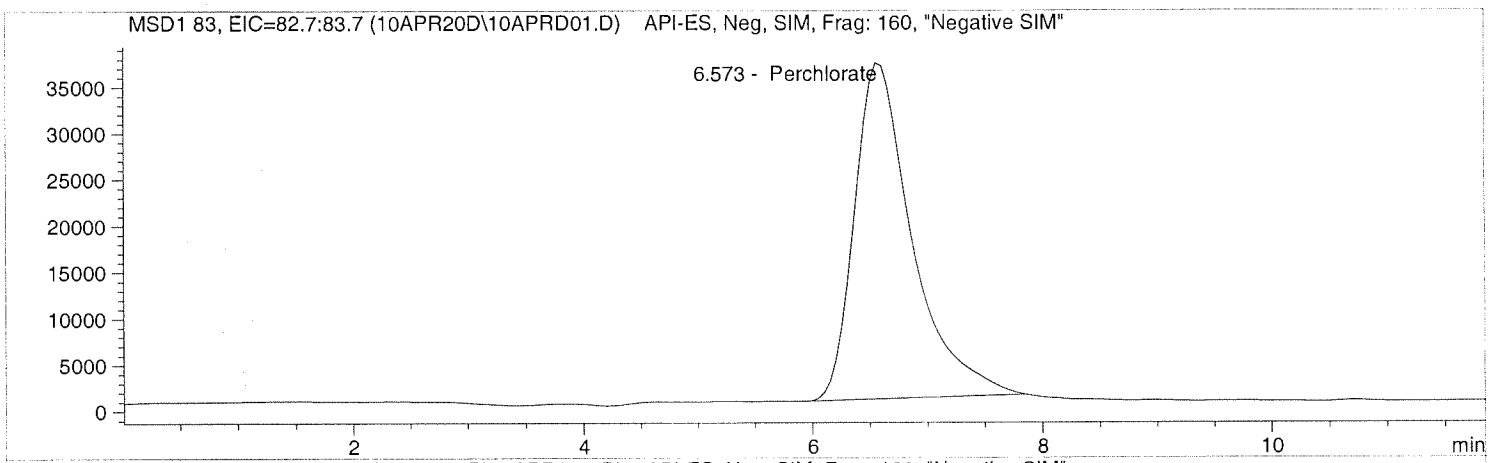
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	702250 CCV@25	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	2009423001 10X	CLO4-AQN	1	Sample		
3	Vial 71	702251 CCV@25	CLO4-AQN	1	Ctrl Samp		

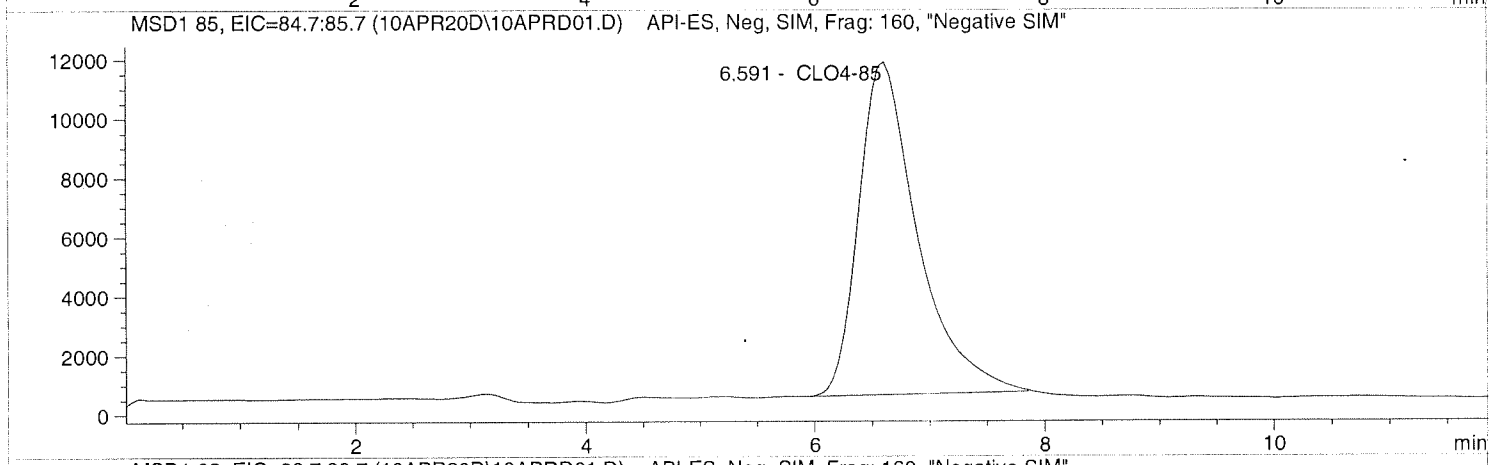
Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD01.D Sample Name: 702250 CCV@25

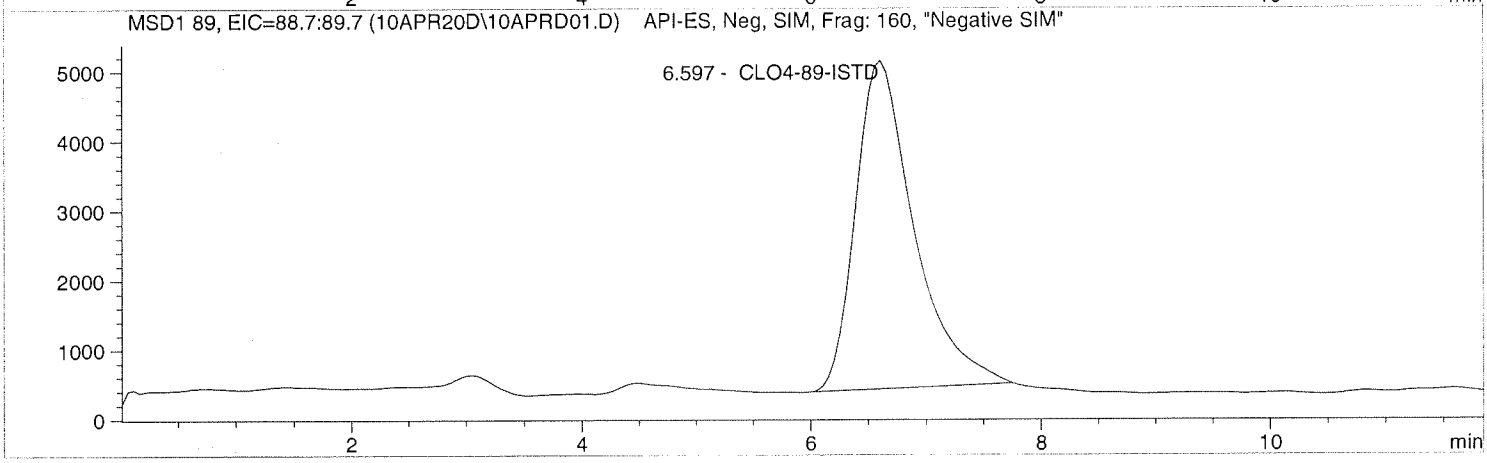
Injection Date:	4/10/2020 13:15:10	Seq Line:	1
Sample Name:	702250 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis







Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD01.D Sample Name: 702250 CCV@25

Injection Date:	4/10/2020 13:15:10	Seq Line:	1
Sample Name:	702250 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.573	PBA	1262927.5	25.8638	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.591	PBA	399574.9	26.7552	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.597	PBA	166254.5	5.0000	CLO4-89-ISTD

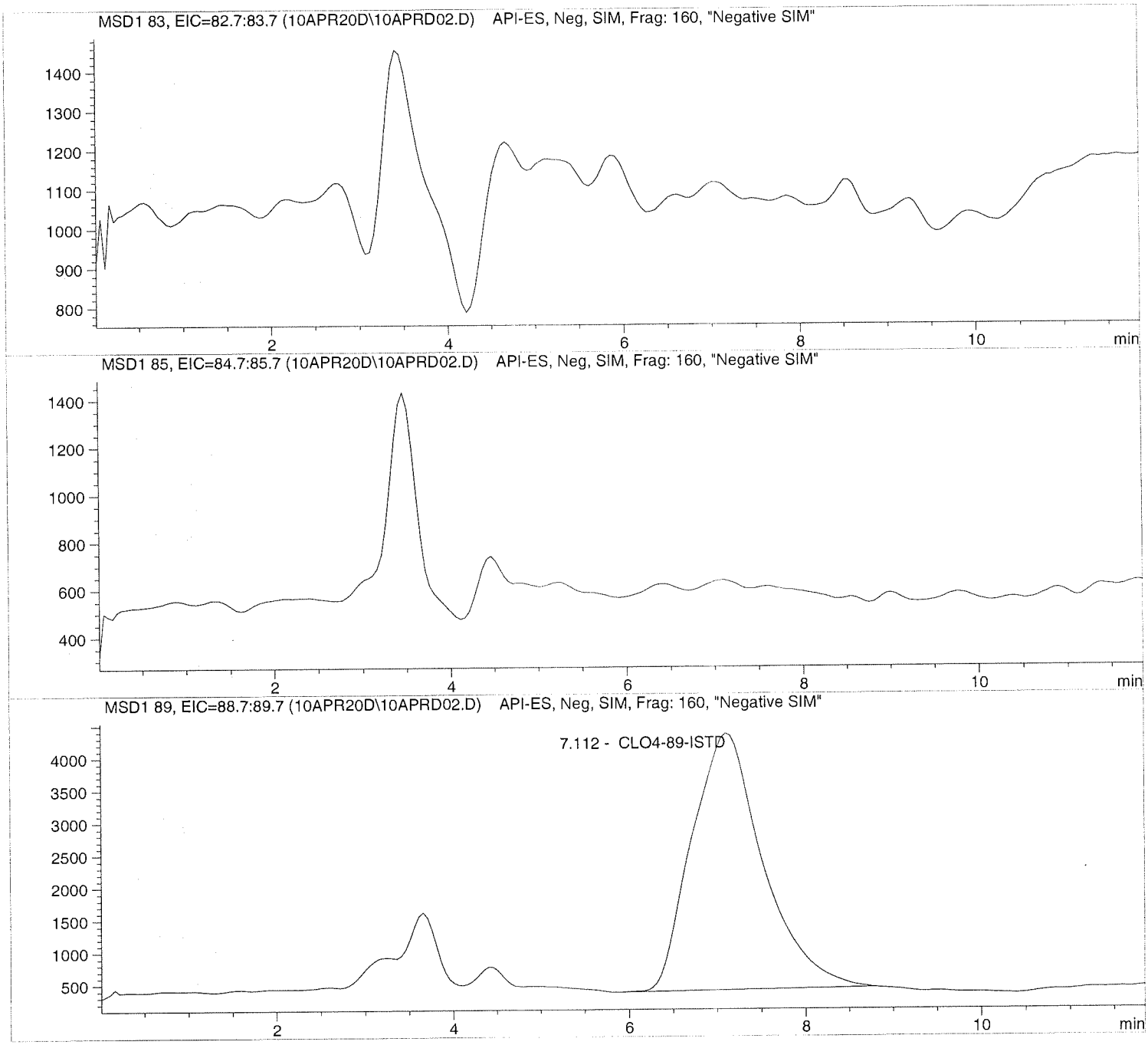
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD02.D Sample Name: 2009423001 10X

Injection Date:	4/10/2020 13:30:01	Seq Line:	2
Sample Name:	2009423001 10X	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD02.D Sample Name: 2009423001 10X

Injection Date:	4/10/2020 13:30:01	Seq Line:	2
Sample Name:	2009423001 10X	Location:	Vial 72
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	10.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.112	PBA	221088.0	50.0000	CLO4-89-ISTD

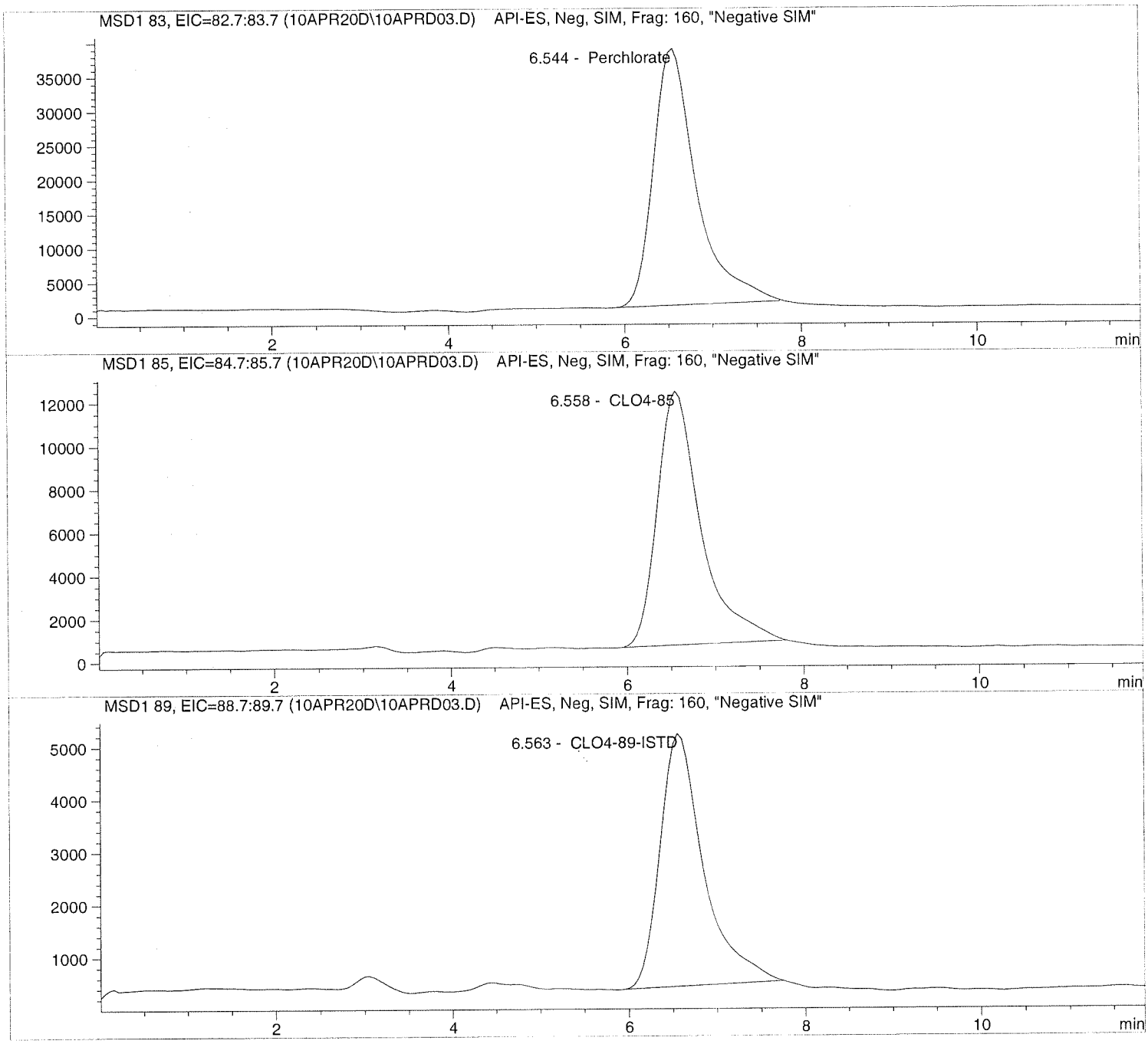
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD03.D Sample Name: 702251 CCV@25

Injection Date:	4/10/2020 13:44:41	Seq Line:	3
Sample Name:	702251 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\10APR20D\10APRD03.D Sample Name: 702251 CCV@25

Injection Date:	4/10/2020 13:44:41	Seq Line:	3
Sample Name:	702251 CCV@25	Location:	Vial 71
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.544	PBA	1273561.2	26.2700	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.558	PBA	404372.1	27.2656	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.563	PBA	164786.6	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

Initial Calibration

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

Calibration Table

Perchlorate

Calib. Data Modified : 9/23/2019 12:20:59 PM

Calculate : Internal Standard
Based on : Peak Area

Rel. Reference Window : 20.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 20.000 %
Abs. Non-ref. Window : 0.000 min
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : No recalibration if peaks missing

Curve Type : Quadratic (some peaks differ, see below)
Origin : Ignored (some peaks differ, see below)
Weight : Linear (Amnt) (some peaks differ, see below)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount	Name
1	5.00000	CLO4-89-ISTD

Signal 1: MSD1 83, EIC=82.7:83.7
Signal 2: MSD1 85, EIC=84.7:85.7
Signal 3: MSD1 89, EIC=88.7:89.7

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
7.750	1	3	1.00000	5.39218e4	1.85454e-5		1	Perchlorate
		4	2.00000	1.32825e5	1.50574e-5			
		5	5.00000	2.76271e5	1.80982e-5			
		6	10.00000	5.61298e5	1.78159e-5			
		7	25.00000	1.51820e6	1.64669e-5			
		8	50.00000	3.31156e6	1.50986e-5			
		9	75.00000	5.23914e6	1.43153e-5			
7.767	3	3	5.00000	2.14568e5	2.33026e-5	+I1		CLO4-89-ISTD
		4	5.00000	2.04758e5	2.44190e-5			
		5	5.00000	2.13407e5	2.34294e-5			
		6	5.00000	2.09246e5	2.38953e-5			
		7	5.00000	2.07403e5	2.41077e-5			
		8	5.00000	2.02929e5	2.46391e-5			
		9	5.00000	1.97933e5	2.52611e-5			
7.778	2	3	1.00000	1.70436e4	5.86732e-5		1	CLO4-85
		4	2.00000	4.20754e4	4.75337e-5			
		5	5.00000	9.24707e4	5.40712e-5			
		6	10.00000	1.68622e5	5.93041e-5			
		7	25.00000	4.63724e5	5.39114e-5			
		8	50.00000	9.95933e5	5.02042e-5			

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

RetTime [min]	Sig	Lvl	Amount	Area	Amt/Area	Ref	Grp	Name
		9	75.00000	1.58066e6	4.74484e-5			

More compound-specific settings:

Compound: Perchlorate
- Time Window : From 3.581 min To 11.899 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Compound: CLO4-89-ISTD
- Time Window : From 3.581 min To 11.896 min
- Curve Type : Linear
- Origin : Included
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 1
  - Level 5 : 1
  - Level 6 : 1
  - Level 7 : 1
  - Level 8 : 1
  - Level 9 : 1

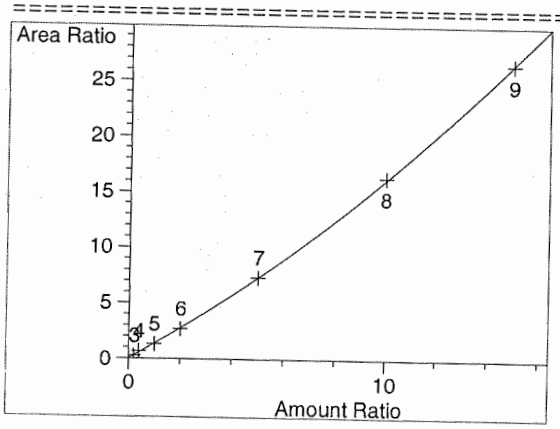
Compound: CLO4-85
- Time Window : From 3.601 min To 11.913 min
- Curve Type : Quadratic
- Origin : Ignored
- Calibration Level Weights:/
  - Level 3 : 1
  - Level 4 : 0.5
  - Level 5 : 0.2
  - Level 6 : 0.1
  - Level 7 : 0.04
  - Level 8 : 0.02
  - Level 9 : 0.013333

Peak Sum Table

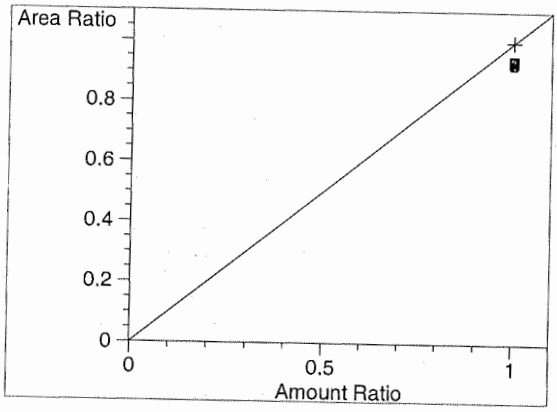
No Entries in table

Method C:\HPCHEM\1\METHODS\CLO4-DP3.M

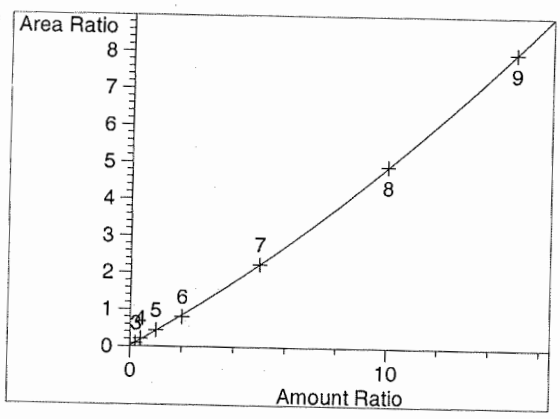
Calibration Curves



Perchlorate at exp. RT: 7.750
MSD1 83, EIC=82.7:83.7
Correlation: 0.99975
Residual Std. Dev.: 0.10284
Formula: $y = ax^2 + bx + c$
a: 3.10463e-2
b: 1.30369
c: 2.19496e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333



CLO4-89-ISTD at exp. RT: 7.767
MSD1 89, EIC=88.7:89.7
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: $y = mx + b$
m: 1.00000
b: 0.00000
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1
Level 8 : 1
Level 9 : 1



CLO4-85 at exp. RT: 7.778
MSD1 85, EIC=84.7:85.7
Correlation: 0.99969
Residual Std. Dev.: 0.02601
Formula: $y = ax^2 + bx + c$
a: 8.85207e-3
b: 3.99283e-1
c: 1.33505e-2
x: Amount Ratio
y: Area Ratio
Calibration Level Weights:
Level 3 : 1
Level 4 : 0.5
Level 5 : 0.2
Level 6 : 0.1
Level 7 : 0.04
Level 8 : 0.02
Level 9 : 0.013333

Batch Report: C:\HPCHEM\1\DATA\20SEP19I\20SEP19D.B

Batch Review Method:
C:\HPCHEM\1\METHODS\CLO4-DP3.M

['#' ==> Run has not been reprocessed with Batch Review Method
'*' ==> Run has been saved with batch file]

#	Sample	Location	Inj	SampleType	Run	Perchlorate Area	Perchlorat RT	Perchlorate Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	5.39218e4	7.750	8.75982e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	1.32825e5	7.797	2.37682
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.76271e5	7.770	4.77237
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	5.61298e5	7.785	9.75097
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	1.51820e6	7.741	25.01082
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	3.31156e6	7.775	50.40300
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	5.23914e6	7.736	74.79107
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	5.74879e5	7.756	10.11855

#	Sample	Location	Inj	SampleType	Run	CLO4-89-ISTD Area	CLO4-89-IS RT	CLO4-89-ISTD Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	2.14568e5	7.767	5.00000
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	2.04758e5	7.816	5.00000
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	2.13407e5	7.793	5.00000
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	2.09246e5	7.798	5.00000
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	2.07403e5	7.763	5.00000
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	2.02929e5	7.800	5.00000
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.97933e5	7.765	5.00000
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	2.06243e5	7.776	5.00000

#	Sample	Location	Inj	SampleType	Run	CLO4-85 Area	CLO4-85 RT	CLO4-85 Amount
#*	CLO4@ 1.0ug/L	Vial 73	1	Control	3	1.70436e4	7.778	8.24488e-1
#*	CLO4@ 2.0ug/L	Vial 74	1	Control	4	4.20754e4	7.805	2.38090
#*	CLO4@ 5.0ug/L	Vial 75	1	Control	5	9.24707e4	7.787	5.14166
#*	CLO4@ 10.ug/L	Vial 76	1	Control	6	1.68622e5	7.781	9.52209
#*	CLO4@ 25.ug/L	Vial 77	1	Control	7	4.63724e5	7.760	25.04916
#*	CLO4@ 50.ug/L	Vial 78	1	Control	8	9.95933e5	7.793	50.14223
#*	CLO4@ 75.ug/L	Vial 79	1	Control	9	1.58066e6	7.758	74.93659
#*	ICAL Verf@10ug/L	Vial 80	1	Control	11	1.71000e5	7.760	9.79043

*** End of Report ***

Sequence: C:\HPCHEM\1\SEQUENCE\CLO4\2019\SEP\20SEP19I.S

Sequence Table:

Method and Injection Info Part:

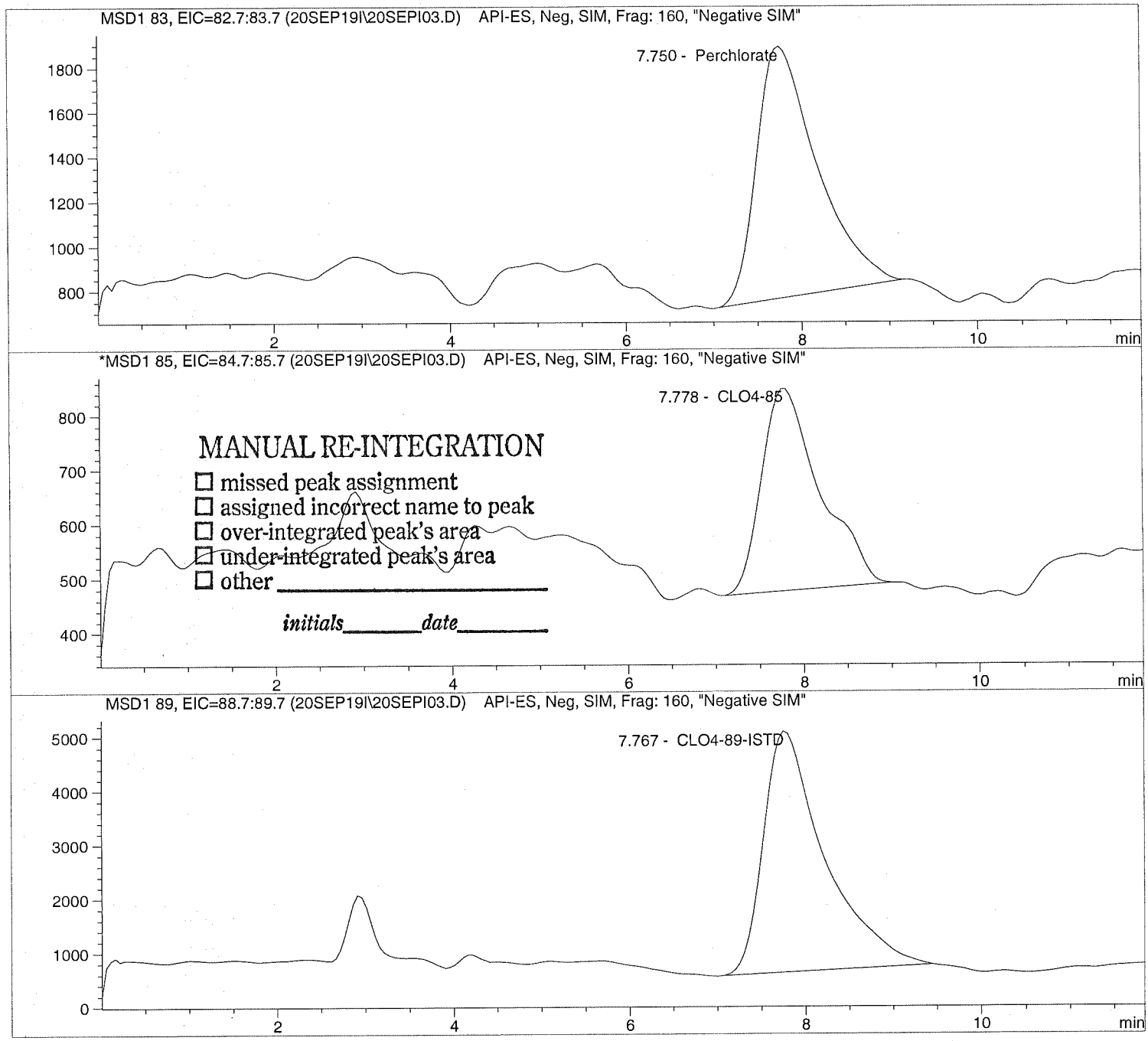
Line	Location	SampleName	Method	Inj	SampleType	InjVolume	DataFile
1	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
2	Vial 72	CLO4@ 0.5ug/L	CLO4-AQN	1	Ctrl Samp		
3	Vial 73	CLO4@ 1.0ug/L	CLO4-AQN	1	Ctrl Samp		
4	Vial 74	CLO4@ 2.0ug/L	CLO4-AQN	1	Ctrl Samp		
5	Vial 75	CLO4@ 5.0ug/L	CLO4-AQN	1	Ctrl Samp		
6	Vial 76	CLO4@ 10.ug/L	CLO4-AQN	1	Ctrl Samp		
7	Vial 77	CLO4@ 25.ug/L	CLO4-AQN	1	Ctrl Samp		
8	Vial 78	CLO4@ 50.ug/L	CLO4-AQN	1	Ctrl Samp		
9	Vial 79	CLO4@ 75.ug/L	CLO4-AQN	1	Ctrl Samp		
10	Vial 71	CLO4@ 0.2ug/L	CLO4-AQN	1	Ctrl Samp		
11	Vial 80	ICAL Verf@10ug/L	CLO4-AQN	1	Ctrl Samp		

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.778	MM	17043.6	0.8245	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

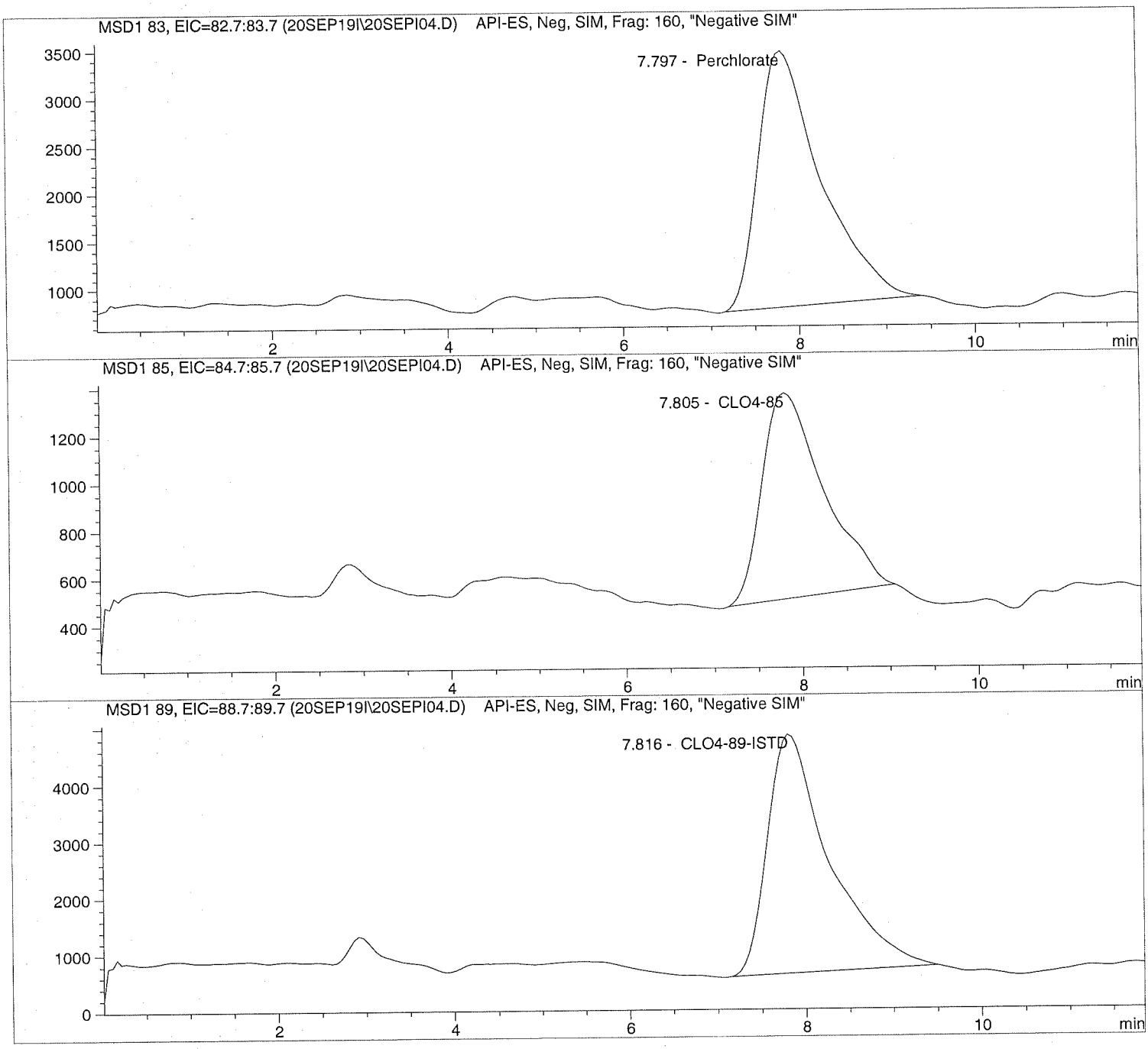
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI04.D Sample Name: CLO4@ 2.0ug/L

Injection Date:	9/20/2019 09:37:58	Seq Line:	4
Sample Name:	CLO4@ 2.0ug/L	Location:	Vial 74
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method:	CLO4-AQN.M
Analysis Method:	C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed:	9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	2.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.797	PBA	132825.2	2.3768	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.805	PBA	42075.4	2.3809	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.816	PBA	204758.3	5.0000	CLO4-89-ISTD

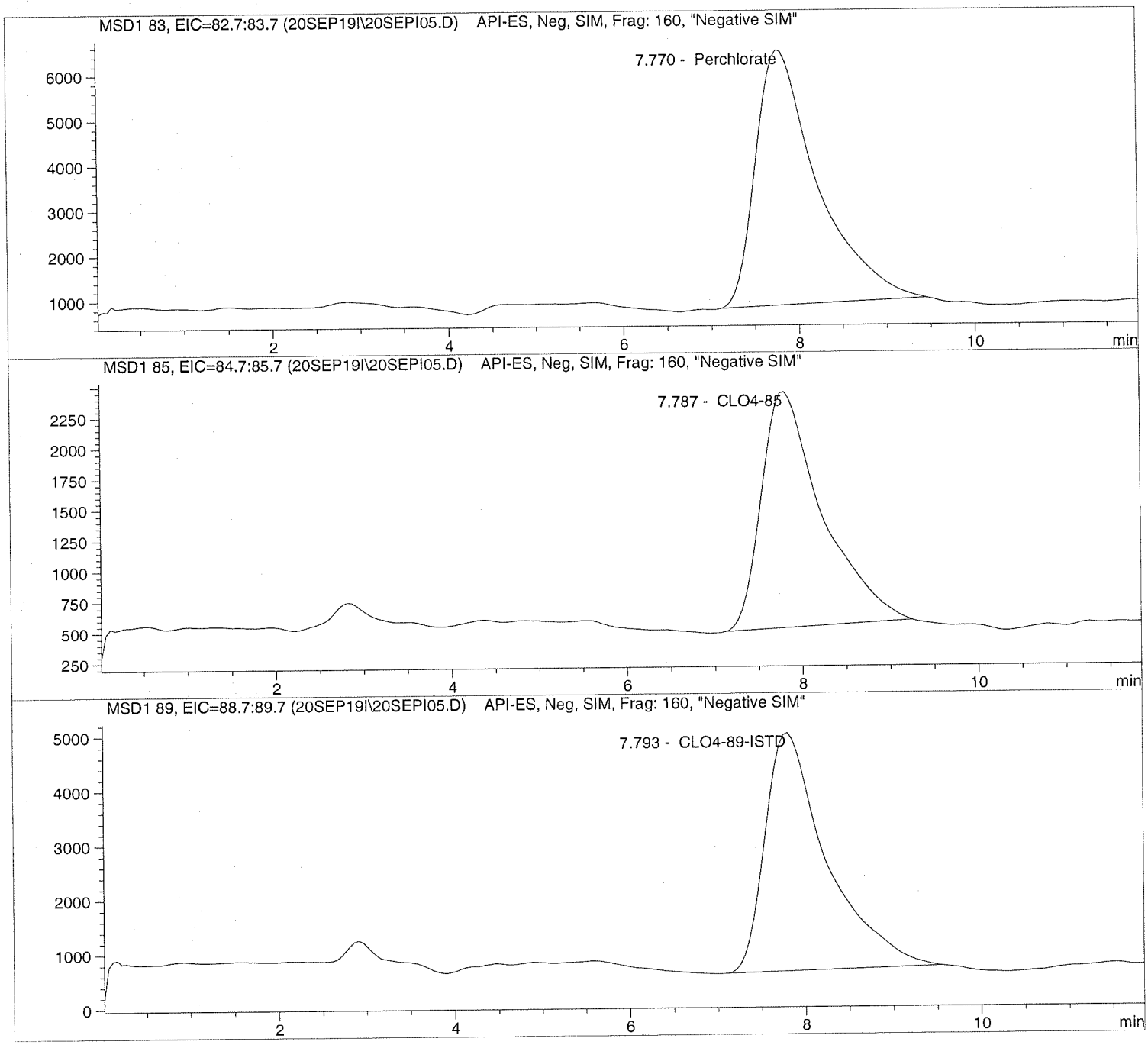
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI05.D Sample Name: CLO4@ 5.0ug/L

Injection Date:	9/20/2019 09:51:49	Seq Line:	5
Sample Name:	CLO4@ 5.0ug/L	Location:	Vial 75
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	5.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.770	PBA	276270.7	4.7724	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.787	PBA	92470.7	5.1417	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	213407.0	5.0000	CLO4-89-ISTD

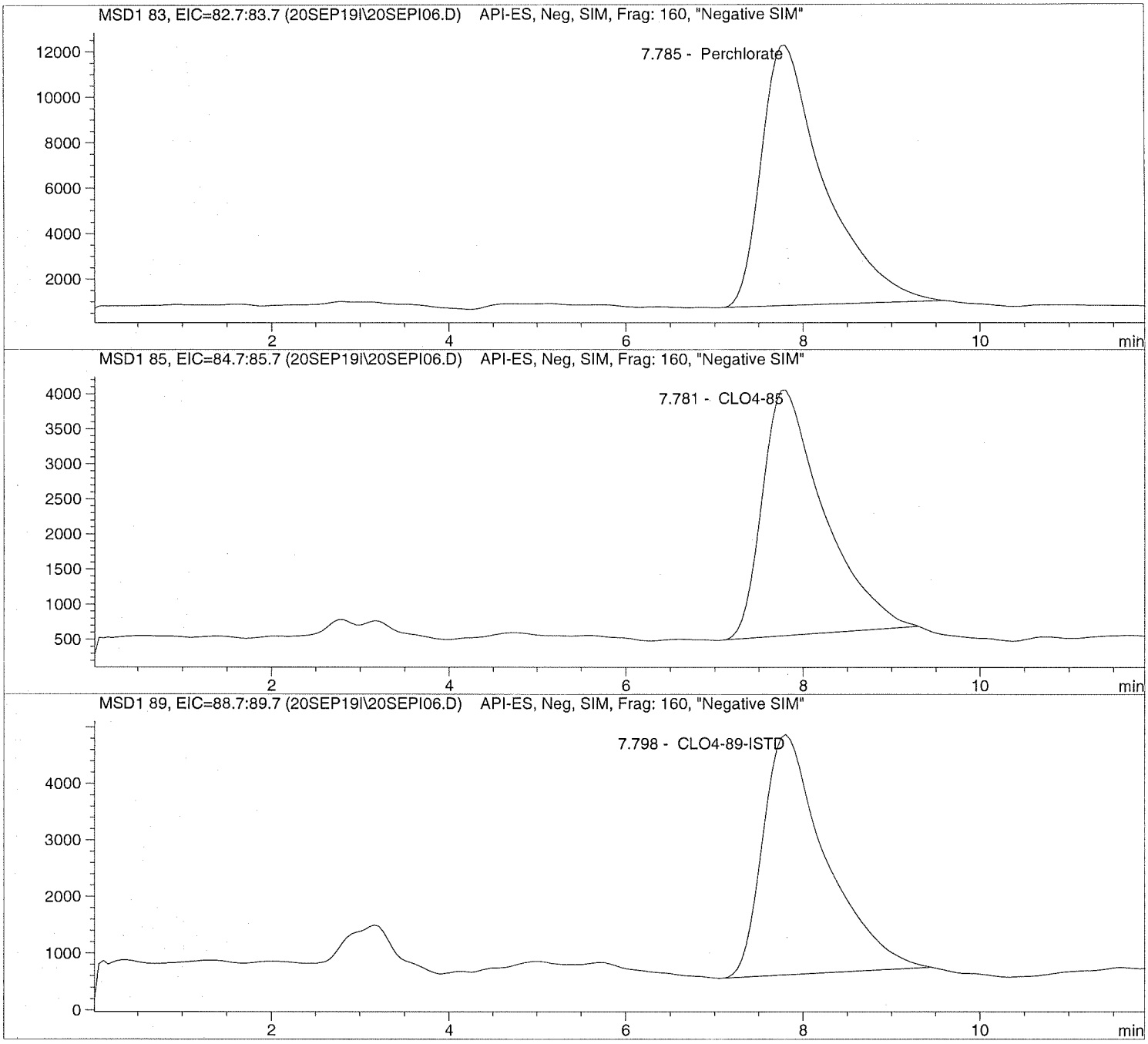
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI06.D Sample Name: CLO4@ 10.ug/L

Injection Date:	9/20/2019 10:05:36	Seq Line:	6
Sample Name:	CLO4@ 10.ug/L	Location:	Vial 76
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.785	PBA	561297.7	9.7510	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.781	PBA	168622.4	9.5221	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.798	PBA	209246.3	5.0000	CLO4-89-ISTD

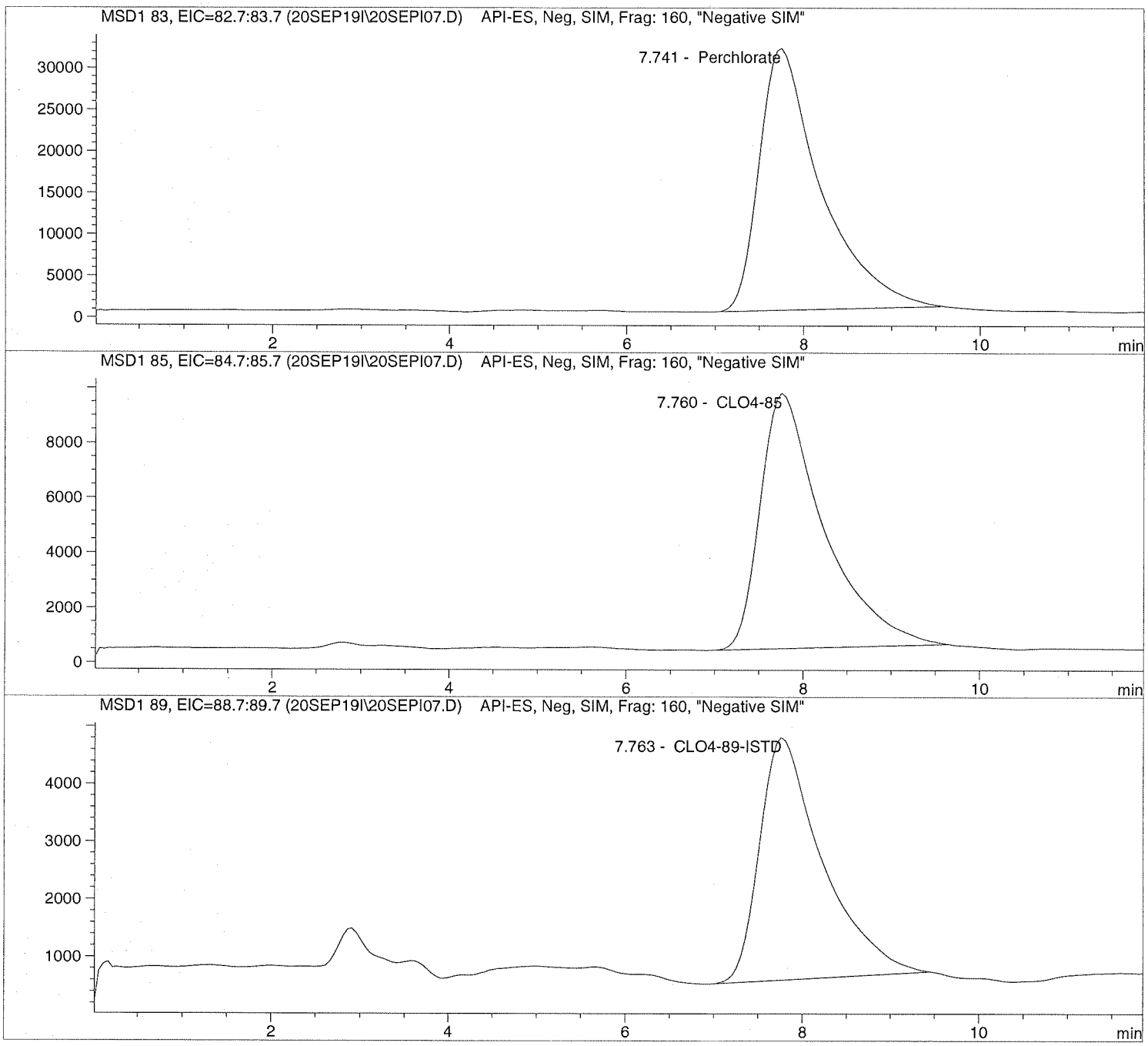
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI07.D Sample Name: CLO4@ 25.ug/L

Injection Date:	9/20/2019 10:19:23	Seq Line:	7
Sample Name:	CLO4@ 25.ug/L	Location:	Vial 77
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	25.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.741	PBA	1518197.9	25.0108	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	463724.0	25.0492	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.763	PBA	207402.8	5.0000	CLO4-89-ISTD

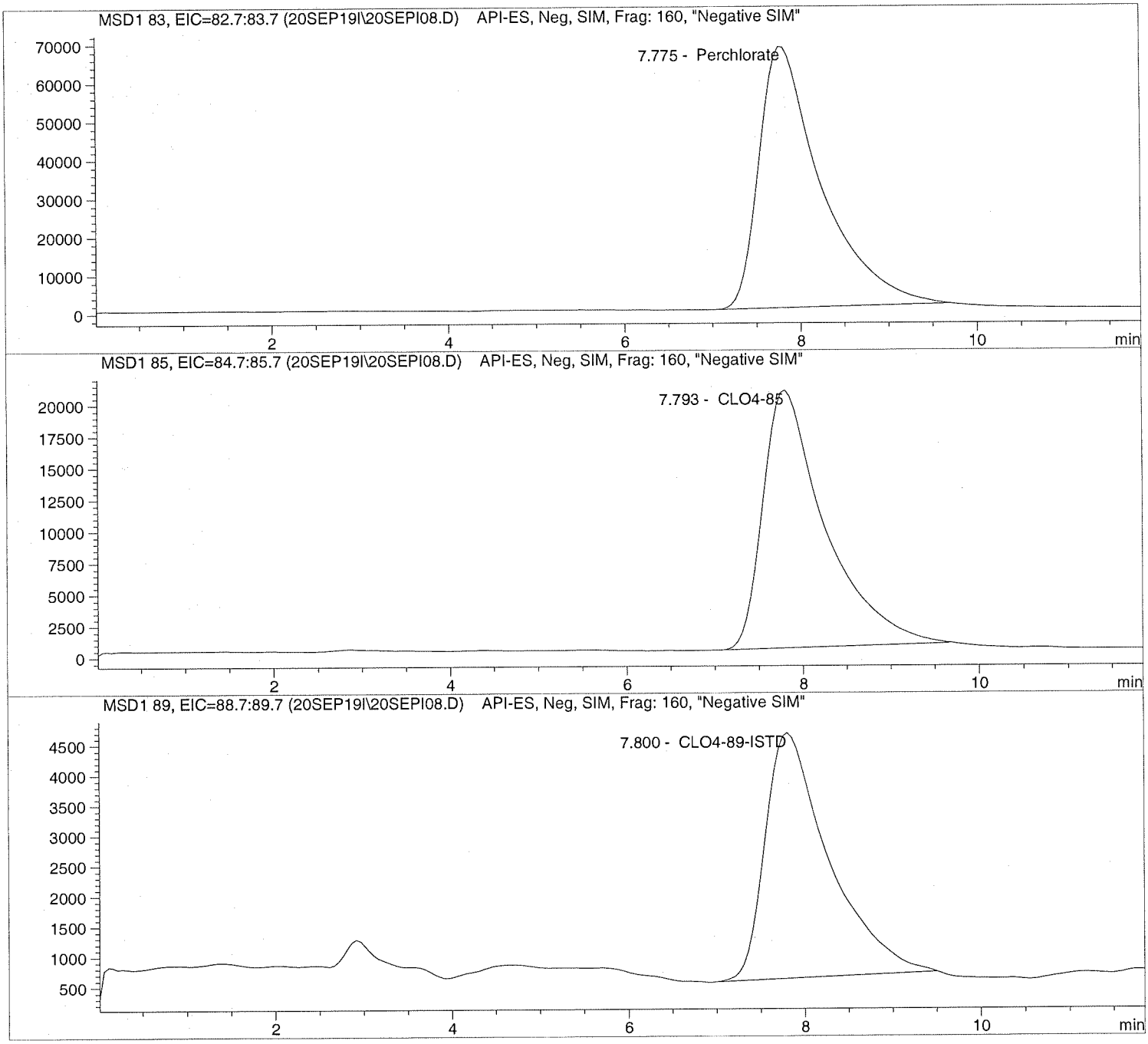
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI08.D Sample Name: CLO4@ 50.ug/L

Injection Date:	9/20/2019 10:33:18	Seq Line:	8
Sample Name:	CLO4@ 50.ug/L	Location:	Vial 78
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	50.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.775	PBA	3311559.2	50.4030	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.793	PBA	995933.0	50.1422	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.800	PBA	202929.2	5.0000	CLO4-89-ISTD

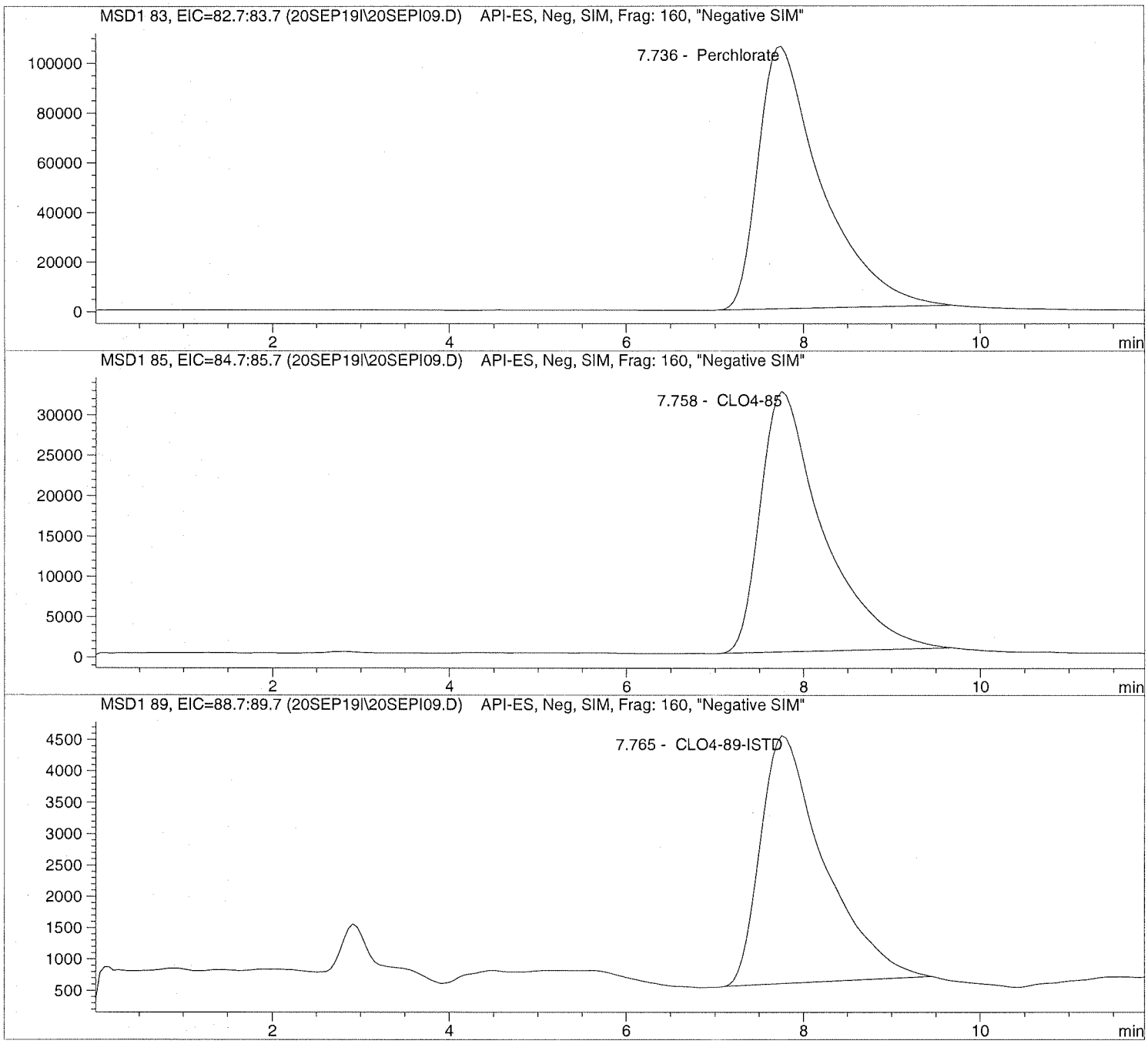
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI09.D Sample Name: CLO4@ 75.ug/L

Injection Date:	9/20/2019 10:47:05	Seq Line:	9
Sample Name:	CLO4@ 75.ug/L	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	75.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.736	PBA	5239145.0	74.7911	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.758	PBA	1580664.2	74.9366	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.765	PBA	197932.5	5.0000	CLO4-89-ISTD

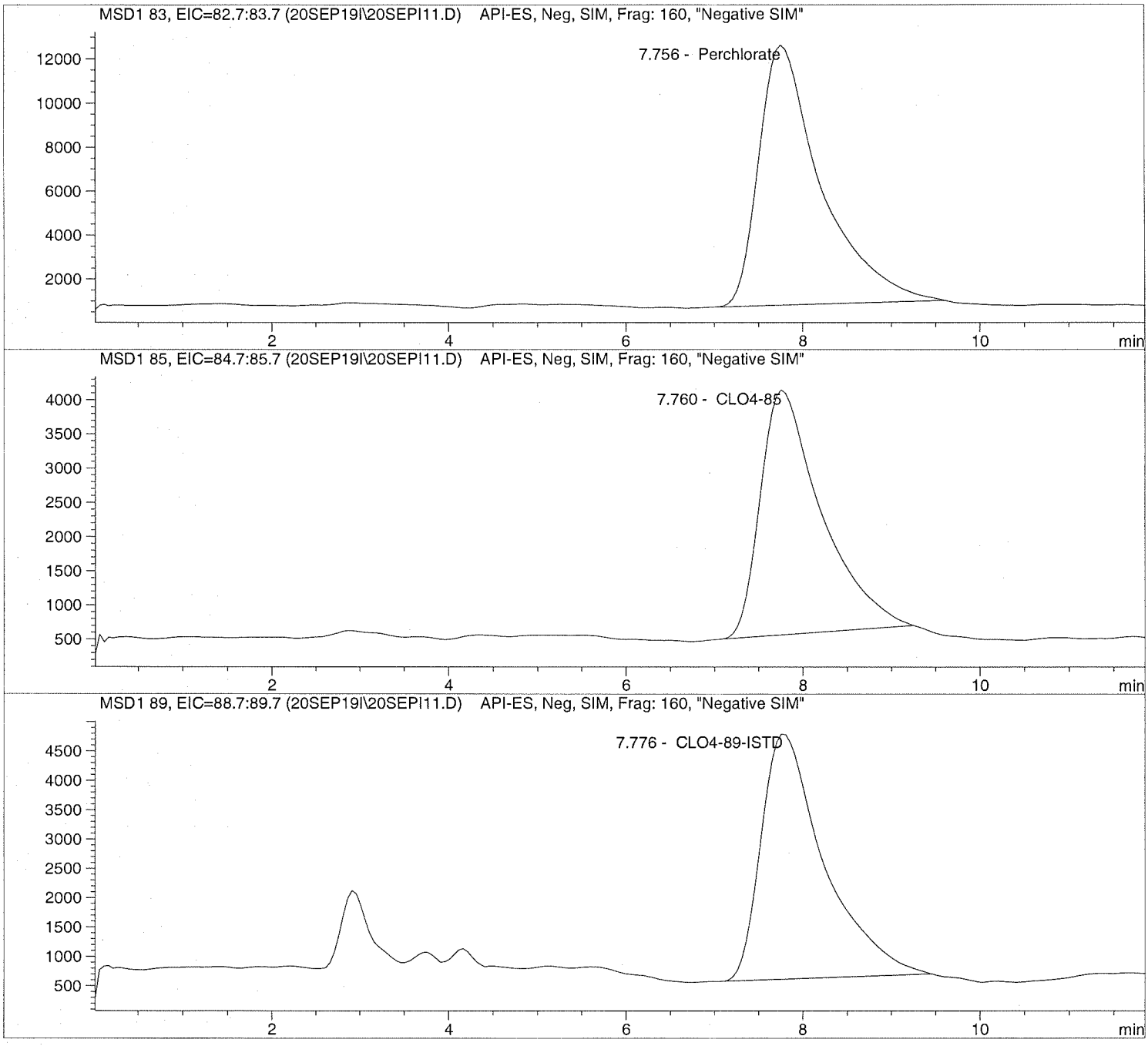
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI11.D Sample Name: ICAL Verf@10ug/L

Injection Date:	9/20/2019 11:14:45	Seq Line:	11
Sample Name:	ICAL Verf@10ug/L	Location:	Vial 80
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:21:47

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	10.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.756	PBA	574879.4	10.1185	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.760	PBA	171000.4	9.7904	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.776	PBA	206243.3	5.0000	CLO4-89-ISTD

*** End of Report ***

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Raw Data

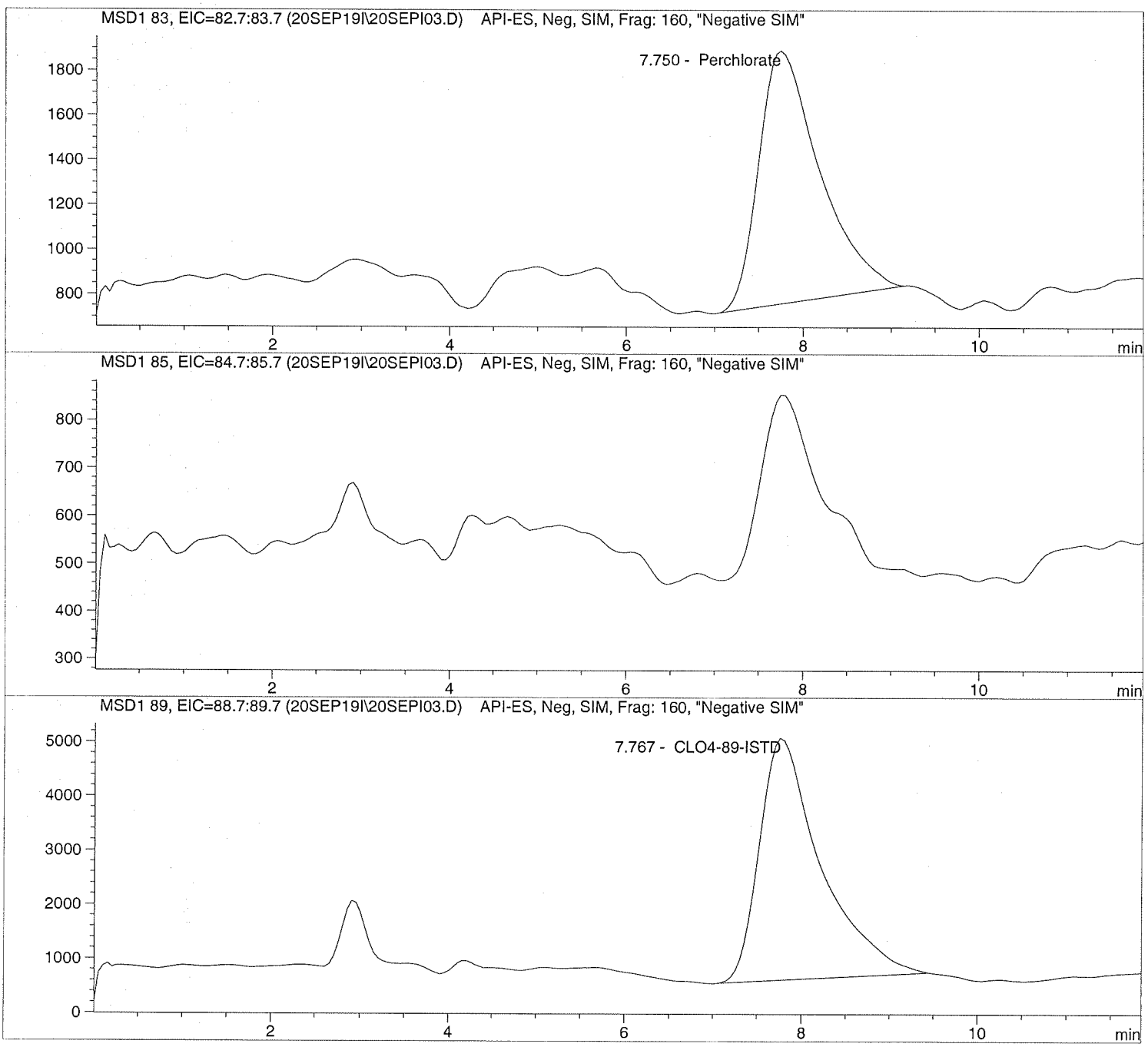
Unmodified

Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\20SEP19I\20SEPI03.D Sample Name: CLO4@ 1.0ug/L

Injection Date:	9/20/2019 09:24:05	Seq Line:	3
Sample Name:	CLO4@ 1.0ug/L	Location:	Vial 73
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	30 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 9/23/2019 12:27:11

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	1.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.750	PBA	53921.8	0.8760	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.767	PBA	214568.1	5.0000	CLO4-89-ISTD

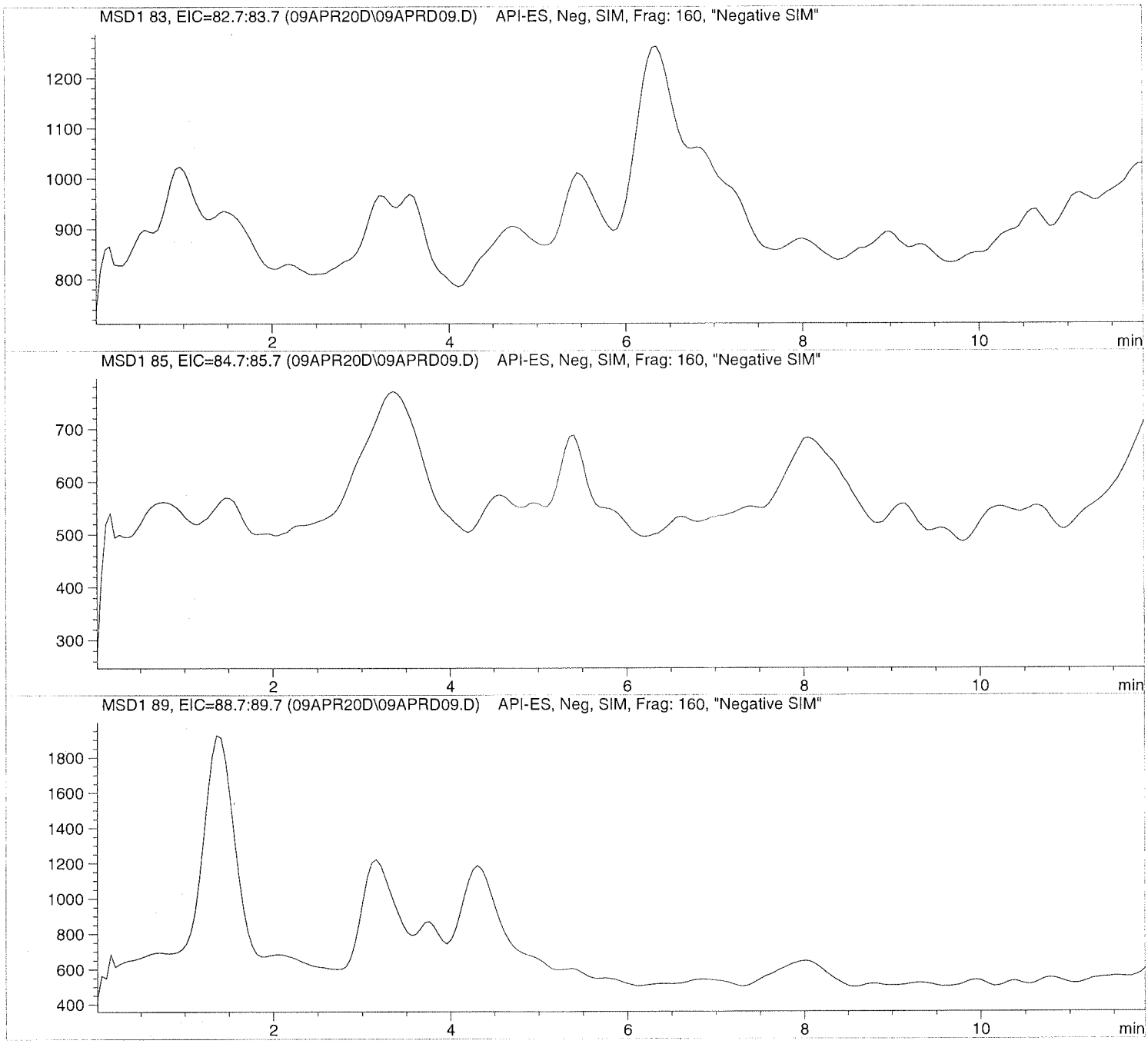
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD09.D Sample Name: 2009235005

Injection Date:	4/09/2020 10:34:44	Seq Line:	9
Sample Name:	2009235005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD09.D Sample Name: 2009235005

Injection Date:	4/09/2020 10:34:44	Seq Line:	9
Sample Name:	2009235005	Location:	Vial 79
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-89-ISTD

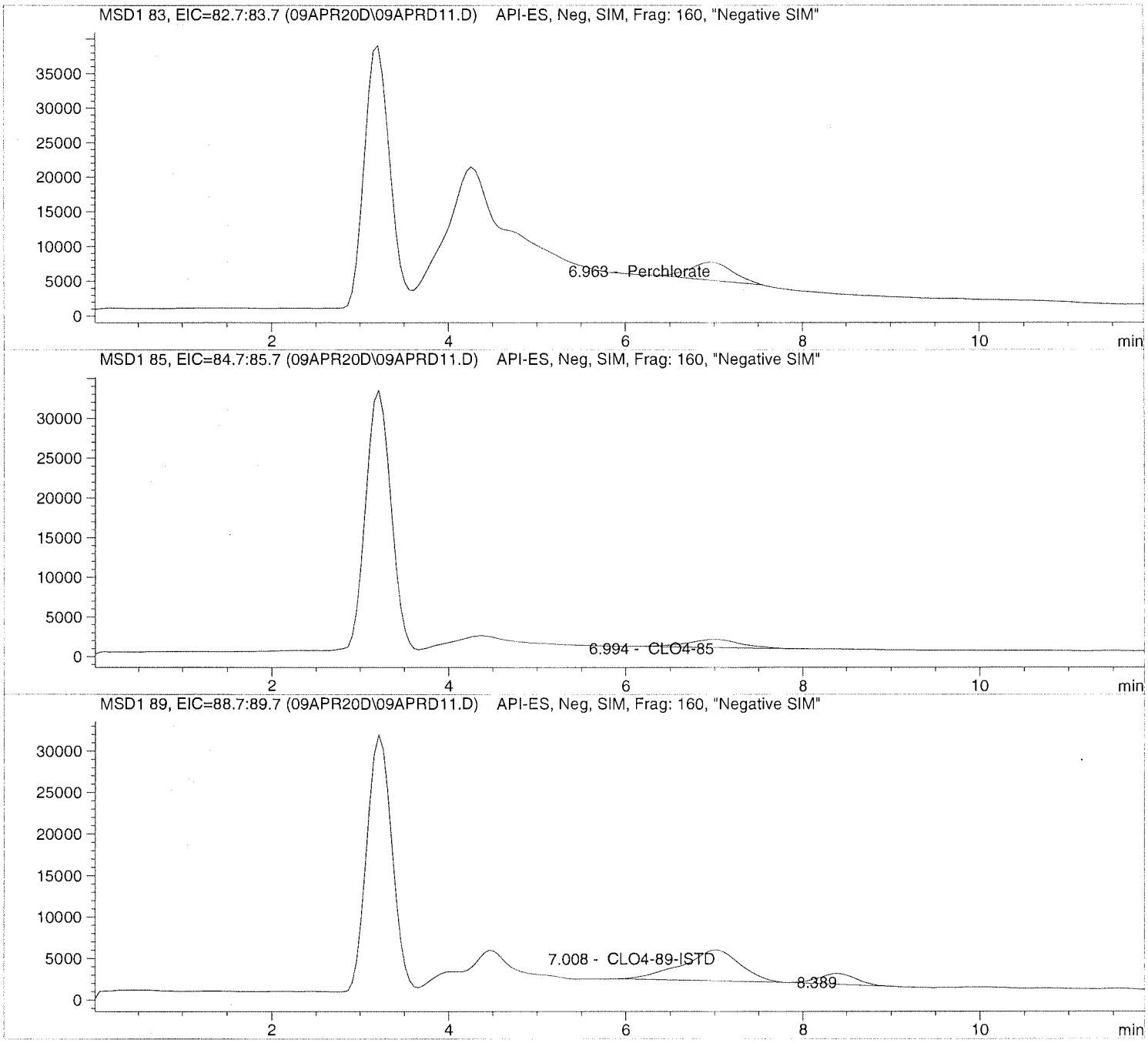
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD11.D Sample Name: 2009235007 MSD

Injection Date:	4/09/2020 11:02:39	Seq Line:	11
Sample Name:	2009235007 MSD	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD11.D Sample Name: 2009235007 MSD

Injection Date:	4/09/2020 11:02:39	Seq Line:	11
Sample Name:	2009235007 MSD	Location:	Vial 81
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.963	PBA	87377.1	1.8866	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.994	PBA	42982.8	2.9860	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
7.008	PB	168588.4	5.0000	CLO4-89-ISTD
8.389	VBA	38495.4	0.0000	

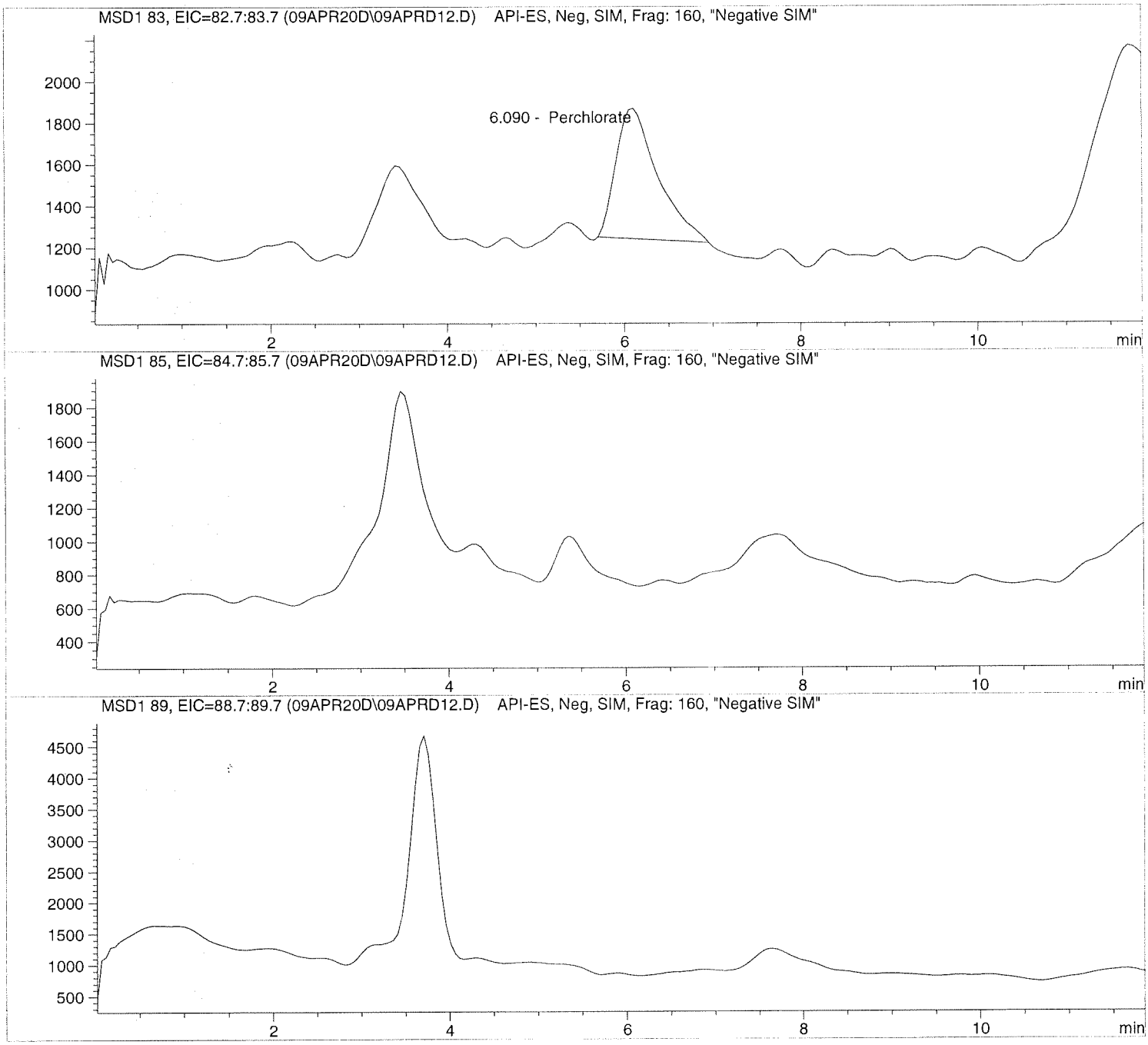
*** End of Report ***

Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD12.D Sample Name: 2009423001

Injection Date:	4/09/2020 11:16:34	Seq Line:	12
Sample Name:	2009423001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis



Data file: C:\HPCHEM\1\DATA\09APR20D\09APRD12.D Sample Name: 2009423001

Injection Date:	4/09/2020 11:16:34	Seq Line:	12
Sample Name:	2009423001	Location:	Vial 82
Acq Operator:	TNB	Inj. No.:	1
		Inj. Vol.:	40 µl

Acq. Method: CLO4-AQN.M
Analysis Method: C:\HPCHEM\1\METHODS\CLO4-DP3.M
Last Changed: 2/17/2020 15:42:52

Perchlorate analysis

Sample Information

Sorted By:	Signal
Calib. Data Modified:	Mon, 23. Sep. 2019,00:20:59 pm
Multiplier:	1.000000
Dilution:	1.000000
Sample Amount:	0.000

LCMS Results

Signal1: MSD1 83, EIC=82.7:83.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
6.090	PBA	20400.1	0.0000	Perchlorate

Signal2: MSD1 85, EIC=84.7:85.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-85

Signal3: MSD1 89, EIC=88.7:89.7

RT [min]	Type	Area	Amount [ug/sample]	Compound Name
0.000		0.0	0.0000	CLO4-89-ISTD

*** End of Report ***

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Phone: (865) 573-8188
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Client: Susan Huang
APTIM
4005 Port Chicago Hwy
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Phone: 925-288-2099

Fax:

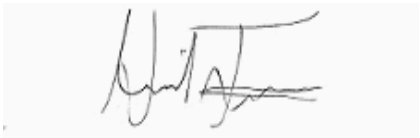
Identifier: 052RG **Date Rec:** 07/15/2020 **Report Date:** 07/24/2020

Client Project #: 501032 **Client Project Name:** LHAAP 16

Purchase Order #: 204818

Analysis Requested: CENSUS, Miscellaneous

Reviewed By:



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MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: LHAAP 16

MI Project Number: **052RG**
Date Received: 07/15/2020

Sample Information

Client Sample ID:		**16WW16-200714**	**16WW35-200714**	**16WW36-200714**	**16WW55-200714**	**16IW10-200714**
Sample Date:		07/14/2020	07/14/2020	07/14/2020	07/14/2020	07/14/2020
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		HT	HT	HT	HT	HT
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**2.30E+00**	**3.66E+01**	**8.92E+02**	**3.80E+00**	**6.11E+03**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
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CENSUS

Client: **APTIM**
Project: LHAAP 16

MI Project Number: **052RG**
Date Received: 07/15/2020

Sample Information

Client Sample ID:		**16WW56-200715**	**16WW22-200715**	**16WW41-200715**	**16WW29-200715**	**16WW48-200715**
Sample Date:		07/15/2020	07/15/2020	07/15/2020	07/15/2020	07/15/2020
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		HT	HT	HT	HT	HT
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**2.74E+01**	**4.00E+00**	**1.50E-01 (J)**	**7.50E+00**	**5.00E-01 (J)**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: LHAAP 16

MI Project Number: **052RG**
Date Received: 07/15/2020

Sample Information

Client Sample ID:		**16EW01-200716**	**16EW05-200716**	**16EW02-200716**	**16IW09-200716**	**16IW20-200721**
Sample Date:		07/16/2020	07/16/2020	07/16/2020	07/16/2020	07/21/2020
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		HT	HT	HT	HT	HT
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**2.00E-01 (J)**	**5.04E+03**	**5.90E+00**	**5.10E+00 (J)**	**1.10E+00**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: LHAAP 16

MI Project Number: **052RG**
Date Received: 07/15/2020

Sample Information

Client Sample ID:		**16WW25-20072 1**	**16WW26-20072 1**
Sample Date:		07/21/2020	07/21/2020
Units:		cells/mL	cells/mL
Analyst/Reviewer:		HT	HT
Dechlorinating Bacteria			
Dehalococcoides	*DHC*	**1.90E+00**	**5.40E+00**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **7/15/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	07/15/2020	07/24/2020	1 °C	101%	non-detect	non-detect

Samples Received **7/16/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	07/16/2020	07/24/2020	1 °C	102%	non-detect	non-detect

Samples Received **7/17/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	07/17/2020	07/24/2020	1 °C	101%	non-detect	non-detect

Samples Received **7/22/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	07/22/2020	07/24/2020	2 °C	103%	non-detect	non-detect

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: Susan Huang
APTIM
4005 Port Chicago Hwy
Concord, CA 94520

Phone: 925-288-2099

Fax:

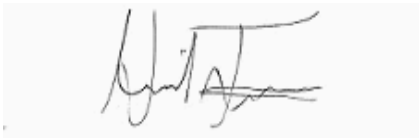
Identifier: 061RH **Date Rec:** 08/18/2020 **Report Date:** 08/21/2020

Client Project #: 501032 **Client Project Name:** LHAAP 16

Purchase Order #: 204818

Test results provided for: CENSUS, Miscellaneous

Reviewed By:



NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Results relate only to the items tested and the sample(s) as received by the laboratory.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
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CENSUS

Client: **APTIM**
Project: LHAAP 16

MI Project Number: **061RH**
Date Received: 08/18/2020

Sample Information

Client Sample ID:		**16WW58-20081 7**	**16WW57-20081 7**
Sample Date:		08/17/2020	08/17/2020
Units:		cells/mL	cells/mL
Analyst/Reviewer:		HT/HT	HT/HT
Dechlorinating Bacteria			
Dehalococcoides	*DHC*	**1.10E+00**	**1.30E+00**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **8/18/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	08/18/2020	08/21/2020	1 °C	105%	non-detect	non-detect

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Concord, CA 94520

Phone: 925-288-2099

Fax:

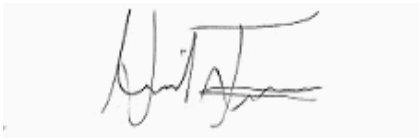
Identifier: 119RG **Date Rec:** 07/29/2020 **Report Date:** 08/05/2020

Client Project #: 501032 **Client Project Name:** LHAAP 16

Purchase Order #: 204818

Analysis Requested: CENSUS, Miscellaneous

Reviewed By:



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Results relate only to the items tested and the sample(s) as received by the laboratory.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
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CENSUS

Client: **APTIM**
Project: LHAAP 16

MI Project Number: **119RG**
Date Received: 07/29/2020

Sample Information

Client Sample ID:	**16IW03-200728**
Sample Date:	07/28/2020
Units:	cells/mL
Analyst/Reviewer:	HT/HT

Dechlorinating Bacteria

Dehalococcoides	*DHC*	**8.17E+02**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **7/29/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	07/29/2020	08/05/2020	0 °C	101%	non-detect	non-detect

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

August 11, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20070625**

Laboratory Results for: **Longhorn Army Ammunition Plant 16 July 2020**

Dear Susan Huang,

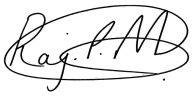
ALS Environmental received 10 sample(s) on Jul 15, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070625

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20070625-01	16WW16-200714	Groundwater		14-Jul-2020 07:10	15-Jul-2020 09:05	☐
HS20070625-02	16WW35-200714	Groundwater		14-Jul-2020 08:05	15-Jul-2020 09:05	☐
HS20070625-03	16WW36-200714	Groundwater		14-Jul-2020 08:55	15-Jul-2020 09:05	☐
HS20070625-04	16WW55-200714	Groundwater		14-Jul-2020 09:45	15-Jul-2020 09:05	☐
HS20070625-05	16IW10-200714	Groundwater		14-Jul-2020 10:35	15-Jul-2020 09:05	☐
HS20070625-06	16RW09-200714	Groundwater		14-Jul-2020 11:35	15-Jul-2020 09:05	☐
HS20070625-07	16RW07-200714	Groundwater		14-Jul-2020 12:25	15-Jul-2020 09:05	☐
HS20070625-08	16RW07-200714-FD	Groundwater		14-Jul-2020 12:25	15-Jul-2020 09:05	☐
HS20070625-09	16RW06-200714	Groundwater		14-Jul-2020 13:15	15-Jul-2020 09:05	☐
HS20070625-10	Trip Blank	Water	CG-060320 -159	14-Jul-2020 00:00	15-Jul-2020 09:05	☐

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070625

Work Order Comments

- The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final report attached.

  Analysis of Perchlorate was performed by ALS Houston TX, High Resolution. Laboratory. Final report attached.

GC Semivolatiles by Method RSK-175

Batch ID: R365193

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R365236

Sample ID: 16RW06-200714 (HS20070625-09MS)

- MS/MSD failed QC limits for some compounds.

Sample ID: 16RW07-200714 (HS20070625-07)

- Sample HS20070625-07 failed surrogate Toluene-d8 recovery. Compounds reported are not associated with this surrogate.

Sample ID: 16WW16-200714 (HS20070625-01)

- Sample HS20070625-01 failed surrogate Toluene-d8 recovery. Compounds reported are not associated with this surrogate..

Batch ID: R365280

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R365202

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R365194

Sample ID: 16WW35-200714 (HS20070625-02)

- Sample ran at 10X due to high concentration of Sulfate

Sample ID: 16WW36-200714 (HS20070625-03)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: 16WW55-200714 (HS20070625-04MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Sulfate)

- The recovery of the Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) associated with this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS/MSD may be due to sample matrix interference. (Nitrogen, Nitrate (As N))

Batch ID: R365322

Sample ID: HS20070674-01MS

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070625

CASE NARRATIVE

WetChemistry by Method SW9056

Batch ID: R365322

- MS and MSD are for an unrelated sample (Sulfate)

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: 16WW16-200714 Lab ID:HS20070625-01
Collection Date: 14-Jul-2020 07:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	25	U	7.5	25	25	UG/L	25	16-Jul-2020 20:22
1,1-Dichloroethene	**50**		**5.0**	**12**	**25**	**UG/L**	25	16-Jul-2020 20:22
1,2-Dichloroethane	**32**		**5.0**	**12**	**25**	**UG/L**	25	16-Jul-2020 20:22
cis-1,2-Dichloroethene	**16,000**		**100**	**250**	**500**	**UG/L**	500	16-Jul-2020 20:46
Methylene chloride	25	U	10	25	50	UG/L	25	16-Jul-2020 20:22
Trichloroethene	**28,000**		**100**	**250**	**500**	**UG/L**	500	16-Jul-2020 20:46
Vinyl chloride	**430**		**5.0**	**12**	**25**	**UG/L**	25	16-Jul-2020 20:22
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*25*	*16-Jul-2020 20:22*
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*500*	*16-Jul-2020 20:46*
Surr: 4-Bromofluorobenzene	*98.9*			**0**	*85-114*	*%REC*	*25*	*16-Jul-2020 20:22*
Surr: 4-Bromofluorobenzene	*99.3*			**0**	*85-114*	*%REC*	*500*	*16-Jul-2020 20:46*
Surr: Dibromofluoromethane	*99.4*			**0**	*80-119*	*%REC*	*25*	*16-Jul-2020 20:22*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*500*	*16-Jul-2020 20:46*
Surr: Toluene-d8	*92.9*			**0**	*89-112*	*%REC*	*25*	*16-Jul-2020 20:22*
Surr: Toluene-d8	*87.7*	*S*		**0**	*89-112*	*%REC*	*500*	*16-Jul-2020 20:46*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.00533**		**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	16-Jul-2020 13:47
Ethene	**0.0104**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	16-Jul-2020 13:47
Methane	**0.997**		**0.0107**	**0.100**	**0.0500**	**mg/L**	100	16-Jul-2020 14:01
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**400**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	16-Jul-2020 22:08
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**5.82**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	15-Jul-2020 15:42
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	15-Jul-2020 15:42
Sulfate	**521**		**4.00**	**10.0**	**10.0**	**mg/L**	20	16-Jul-2020 09:13
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Aug-2020 09:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: 16WW35-200714 Lab ID:HS20070625-02
Collection Date: 14-Jul-2020 08:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	10	U	3.0	10	10	UG/L	10	16-Jul-2020 18:46
1,1-Dichloroethene	**81**		**2.0**	**5.0**	**10**	**UG/L**	10	16-Jul-2020 18:46
1,2-Dichloroethane	5.0	U	2.0	5.0	10	UG/L	10	16-Jul-2020 18:46
cis-1,2-Dichloroethene	**1,700**		**2.0**	**5.0**	**10**	**UG/L**	10	16-Jul-2020 18:46
Methylene chloride	10	U	4.0	10	20	UG/L	10	16-Jul-2020 18:46
Trichloroethene	**9,500**		**20**	**50**	**100**	**UG/L**	100	16-Jul-2020 19:10
Vinyl chloride	**93**		**2.0**	**5.0**	**10**	**UG/L**	10	16-Jul-2020 18:46
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*81-118*	*%REC*	*10*	*16-Jul-2020 18:46*
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*81-118*	*%REC*	*100*	*16-Jul-2020 19:10*
Surr: 4-Bromofluorobenzene	*112*			**0**	*85-114*	*%REC*	*10*	*16-Jul-2020 18:46*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*85-114*	*%REC*	*100*	*16-Jul-2020 19:10*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*100*	*16-Jul-2020 19:10*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*10*	*16-Jul-2020 18:46*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*10*	*16-Jul-2020 18:46*
Surr: Toluene-d8	*96.7*			**0**	*89-112*	*%REC*	*100*	*16-Jul-2020 19:10*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000824**	J	**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	16-Jul-2020 14:48
Ethene	**0.00931**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	16-Jul-2020 14:48
Methane	**0.114**		**0.000535**	**0.00500**	**0.00250**	**mg/L**	5	16-Jul-2020 15:04
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**1,180**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	16-Jul-2020 22:18
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	1.00	U	0.300	1.00	1.00	mg/L	10	15-Jul-2020 14:30
Nitrogen, Nitrate (As N)	1.00	U	0.300	1.00	1.00	mg/L	10	15-Jul-2020 14:30
Sulfate	**9,850**		**40.0**	**100**	**100**	**mg/L**	200	16-Jul-2020 09:31
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Aug-2020 09:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: 16WW36-200714 Lab ID:HS20070625-03
Collection Date: 14-Jul-2020 08:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	25	U	7.5	25	25	UG/L	25	16-Jul-2020 21:10
1,1-Dichloroethene	**290**		**5.0**	**12**	**25**	**UG/L**	25	16-Jul-2020 21:10
1,2-Dichloroethane	**20**	J	**5.0**	**12**	**25**	**UG/L**	25	16-Jul-2020 21:10
cis-1,2-Dichloroethene	**29,000**		**100**	**250**	**500**	**UG/L**	500	16-Jul-2020 21:34
Methylene chloride	25	U	10	25	50	UG/L	25	16-Jul-2020 21:10
Trichloroethene	**25,000**		**100**	**250**	**500**	**UG/L**	500	16-Jul-2020 21:34
Vinyl chloride	**320**		**5.0**	**12**	**25**	**UG/L**	25	16-Jul-2020 21:10
Surr: 1,2-Dichloroethane-d4	*105*			**0**	*81-118*	*%REC*	*25*	*16-Jul-2020 21:10*
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*81-118*	*%REC*	*500*	*16-Jul-2020 21:34*
Surr: 4-Bromofluorobenzene	*98.6*			**0**	*85-114*	*%REC*	*500*	*16-Jul-2020 21:34*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*25*	*16-Jul-2020 21:10*
Surr: Dibromofluoromethane	*110*			**0**	*80-119*	*%REC*	*25*	*16-Jul-2020 21:10*
Surr: Dibromofluoromethane	*105*			**0**	*80-119*	*%REC*	*500*	*16-Jul-2020 21:34*
Surr: Toluene-d8	*89.8*			**0**	*89-112*	*%REC*	*25*	*16-Jul-2020 21:10*
Surr: Toluene-d8	*91.7*			**0**	*89-112*	*%REC*	*500*	*16-Jul-2020 21:34*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.00338**		**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	16-Jul-2020 15:27
Ethene	**0.0261**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	16-Jul-2020 15:27
Methane	**0.944**		**0.00535**	**0.0500**	**0.0250**	**mg/L**	50	16-Jul-2020 15:39
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**580**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	16-Jul-2020 22:25
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**2.85**		**0.150**	**0.500**	**0.500**	**mg/L**	5	16-Jul-2020 05:18
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	16-Jul-2020 05:18
Sulfate	**3,330**		**20.0**	**50.0**	**50.0**	**mg/L**	100	16-Jul-2020 10:26
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Aug-2020 09:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: 16WW55-200714 Lab ID:HS20070625-04
Collection Date: 14-Jul-2020 09:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	10	U	3.0	10	10	UG/L	10	16-Jul-2020 19:34
1,1-Dichloroethene	**12**		**2.0**	**5.0**	**10**	**UG/L**	10	16-Jul-2020 19:34
1,2-Dichloroethane	**6.9**	J	**2.0**	**5.0**	**10**	**UG/L**	10	16-Jul-2020 19:34
cis-1,2-Dichloroethene	**440**		**2.0**	**5.0**	**10**	**UG/L**	10	16-Jul-2020 19:34
Methylene chloride	10	U	4.0	10	20	UG/L	10	16-Jul-2020 19:34
Trichloroethene	**4,500**		**20**	**50**	**100**	**UG/L**	100	16-Jul-2020 19:58
Vinyl chloride	**32**		**2.0**	**5.0**	**10**	**UG/L**	10	16-Jul-2020 19:34
Surr: 1,2-Dichloroethane-d4	*107*			**0**	*81-118*	*%REC*	*10*	*16-Jul-2020 19:34*
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*81-118*	*%REC*	*100*	*16-Jul-2020 19:58*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*10*	*16-Jul-2020 19:34*
Surr: 4-Bromofluorobenzene	*99.2*			**0**	*85-114*	*%REC*	*100*	*16-Jul-2020 19:58*
Surr: Dibromofluoromethane	*107*			**0**	*80-119*	*%REC*	*10*	*16-Jul-2020 19:34*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*100*	*16-Jul-2020 19:58*
Surr: Toluene-d8	*93.8*			**0**	*89-112*	*%REC*	*10*	*16-Jul-2020 19:34*
Surr: Toluene-d8	*95.5*			**0**	*89-112*	*%REC*	*100*	*16-Jul-2020 19:58*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000682**	J	**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	16-Jul-2020 15:52
Ethene	**0.00276**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	16-Jul-2020 15:52
Methane	**0.0822**		**0.000428**	**0.00400**	**0.00200**	**mg/L**	4	16-Jul-2020 16:02
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**358**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	16-Jul-2020 22:45
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**5.53**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	15-Jul-2020 16:01
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	15-Jul-2020 16:01
Sulfate	**982**		**10.0**	**25.0**	**25.0**	**mg/L**	50	17-Jul-2020 03:06
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Aug-2020 09:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: 16IW10-200714 Lab ID:HS20070625-05
Collection Date: 14-Jul-2020 10:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	16-Jul-2020 15:11
1,1-Dichloroethene	**1.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	16-Jul-2020 15:11
1,2-Dichloroethane	**0.96**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	16-Jul-2020 15:11
cis-1,2-Dichloroethene	**110**		**0.20**	**0.50**	**1.0**	**UG/L**	1	16-Jul-2020 15:11
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	16-Jul-2020 15:11
Trichloroethene	**190**		**0.20**	**0.50**	**1.0**	**UG/L**	1	16-Jul-2020 15:11
Vinyl chloride	**8.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	16-Jul-2020 15:11
Surr: 1,2-Dichloroethane-d4	*96.1*			**0**	*81-118*	*%REC*	*1*	*16-Jul-2020 15:11*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*16-Jul-2020 15:11*
Surr: Dibromofluoromethane	*95.4*			**0**	*80-119*	*%REC*	*1*	*16-Jul-2020 15:11*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*16-Jul-2020 15:11*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.00751**		**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	16-Jul-2020 16:11
Ethene	**0.0667**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	16-Jul-2020 16:11
Methane	**4.65**		**0.0214**	**0.200**	**0.100**	**mg/L**	200	16-Jul-2020 16:19
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**1,760**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	16-Jul-2020 22:38
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**119**		**0.600**	**2.00**	**2.00**	**mg/L**	20	17-Jul-2020 03:24
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	15-Jul-2020 14:12
Sulfate	**4.43**		**0.200**	**0.500**	**0.500**	**mg/L**	1	15-Jul-2020 14:12
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Aug-2020 09:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: 16RW09-200714 Lab ID:HS20070625-06
Collection Date: 14-Jul-2020 11:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	16-Jul-2020 15:35
1,1-Dichloroethene	**9.9**		**1.0**	**2.5**	**5.0**	**UG/L**	5	16-Jul-2020 15:35
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	16-Jul-2020 15:35
cis-1,2-Dichloroethene	**45**		**1.0**	**2.5**	**5.0**	**UG/L**	5	16-Jul-2020 15:35
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	16-Jul-2020 15:35
Trichloroethene	**1,300**		**5.0**	**12**	**25**	**UG/L**	25	17-Jul-2020 17:08
Vinyl chloride	**52**		**1.0**	**2.5**	**5.0**	**UG/L**	5	16-Jul-2020 15:35
Surr: 1,2-Dichloroethane-d4	*97.8*			**0**	*81-118*	*%REC*	*5*	*16-Jul-2020 15:35*
Surr: 1,2-Dichloroethane-d4	*81.6*			**0**	*81-118*	*%REC*	*25*	*17-Jul-2020 17:08*
Surr: 4-Bromofluorobenzene	*97.0*			**0**	*85-114*	*%REC*	*5*	*16-Jul-2020 15:35*
Surr: 4-Bromofluorobenzene	*92.7*			**0**	*85-114*	*%REC*	*25*	*17-Jul-2020 17:08*
Surr: Dibromofluoromethane	*90.1*			**0**	*80-119*	*%REC*	*5*	*16-Jul-2020 15:35*
Surr: Dibromofluoromethane	*83.2*			**0**	*80-119*	*%REC*	*25*	*17-Jul-2020 17:08*
Surr: Toluene-d8	*92.2*			**0**	*89-112*	*%REC*	*5*	*16-Jul-2020 15:35*
Surr: Toluene-d8	*90.8*			**0**	*89-112*	*%REC*	*25*	*17-Jul-2020 17:08*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**6.98**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	16-Jul-2020 04:41
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Aug-2020 09:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: 16RW07-200714 Lab ID:HS20070625-07
Collection Date: 14-Jul-2020 12:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	16-Jul-2020 17:10
1,1-Dichloroethene	**13**		**1.0**	**2.5**	**5.0**	**UG/L**	5	16-Jul-2020 17:10
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	16-Jul-2020 17:10
cis-1,2-Dichloroethene	**110**		**1.0**	**2.5**	**5.0**	**UG/L**	5	16-Jul-2020 17:10
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	16-Jul-2020 17:10
Trichloroethene	**2,100**		**10**	**25**	**50**	**UG/L**	50	16-Jul-2020 17:34
Vinyl chloride	**89**		**1.0**	**2.5**	**5.0**	**UG/L**	5	16-Jul-2020 17:10
Surr: 1,2-Dichloroethane-d4	*100*			**0**	*81-118*	*%REC*	*5*	*16-Jul-2020 17:10*
Surr: 1,2-Dichloroethane-d4	*97.0*			**0**	*81-118*	*%REC*	*50*	*16-Jul-2020 17:34*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*5*	*16-Jul-2020 17:10*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*50*	*16-Jul-2020 17:34*
Surr: Dibromofluoromethane	*99.8*			**0**	*80-119*	*%REC*	*5*	*16-Jul-2020 17:10*
Surr: Dibromofluoromethane	*98.1*			**0**	*80-119*	*%REC*	*50*	*16-Jul-2020 17:34*
Surr: Toluene-d8	*96.0*			**0**	*89-112*	*%REC*	*5*	*16-Jul-2020 17:10*
Surr: Toluene-d8	*117*	*S*		**0**	*89-112*	*%REC*	*50*	*16-Jul-2020 17:34*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: 16RW07-200714-FD Lab ID:HS20070625-08
Collection Date: 14-Jul-2020 12:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	16-Jul-2020 17:58
1,1-Dichloroethene	**15**		**1.0**	**2.5**	**5.0**	**UG/L**	5	16-Jul-2020 17:58
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	16-Jul-2020 17:58
cis-1,2-Dichloroethene	**100**		**1.0**	**2.5**	**5.0**	**UG/L**	5	16-Jul-2020 17:58
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	16-Jul-2020 17:58
Trichloroethene	**2,300**		**10**	**25**	**50**	**UG/L**	50	16-Jul-2020 18:22
Vinyl chloride	**95**		**1.0**	**2.5**	**5.0**	**UG/L**	5	16-Jul-2020 17:58
Surr: 1,2-Dichloroethane-d4	*98.0*			**0**	*81-118*	*%REC*	*5*	*16-Jul-2020 17:58*
Surr: 1,2-Dichloroethane-d4	*98.7*			**0**	*81-118*	*%REC*	*50*	*16-Jul-2020 18:22*
Surr: 4-Bromofluorobenzene	*98.7*			**0**	*85-114*	*%REC*	*5*	*16-Jul-2020 17:58*
Surr: 4-Bromofluorobenzene	*110*			**0**	*85-114*	*%REC*	*50*	*16-Jul-2020 18:22*
Surr: Dibromofluoromethane	*99.0*			**0**	*80-119*	*%REC*	*50*	*16-Jul-2020 18:22*
Surr: Dibromofluoromethane	*97.8*			**0**	*80-119*	*%REC*	*5*	*16-Jul-2020 17:58*
Surr: Toluene-d8	*95.1*			**0**	*89-112*	*%REC*	*5*	*16-Jul-2020 17:58*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*50*	*16-Jul-2020 18:22*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: 16RW06-200714 Lab ID:HS20070625-09
Collection Date: 14-Jul-2020 13:15 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	16-Jul-2020 14:47
1,1-Dichloroethene	**1.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	16-Jul-2020 14:47
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	16-Jul-2020 14:47
cis-1,2-Dichloroethene	**2.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	16-Jul-2020 14:47
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	16-Jul-2020 14:47
Trichloroethene	**77**		**0.20**	**0.50**	**1.0**	**UG/L**	1	16-Jul-2020 14:47
Vinyl chloride	**1.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	16-Jul-2020 14:47
Surr: 1,2-Dichloroethane-d4	*96.1*			**0**	*81-118*	*%REC*	*1*	*16-Jul-2020 14:47*
Surr: 4-Bromofluorobenzene	*108*			**0**	*85-114*	*%REC*	*1*	*16-Jul-2020 14:47*
Surr: Dibromofluoromethane	*97.7*			**0**	*80-119*	*%REC*	*1*	*16-Jul-2020 14:47*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*16-Jul-2020 14:47*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070625
Sample ID: Trip Blank Lab ID:HS20070625-10
Collection Date: 14-Jul-2020 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	16-Jul-2020 14:23
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	16-Jul-2020 14:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	16-Jul-2020 14:23
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	16-Jul-2020 14:23
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	16-Jul-2020 14:23
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	16-Jul-2020 14:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	16-Jul-2020 14:23
Surr: 1,2-Dichloroethane-d4	*94.8*			**0**	*81-118*	*%REC*	*1*	*16-Jul-2020 14:23*
Surr: 4-Bromofluorobenzene	*111*			**0**	*85-114*	*%REC*	*1*	*16-Jul-2020 14:23*
Surr: Dibromofluoromethane	*96.4*			**0**	*80-119*	*%REC*	*1*	*16-Jul-2020 14:23*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*16-Jul-2020 14:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365193 (1)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS20070625-01	16WW16-200714	14 Jul 2020 07:10			16 Jul 2020 14:01	100
HS20070625-01	16WW16-200714	14 Jul 2020 07:10			16 Jul 2020 13:47	1
HS20070625-02	16WW35-200714	14 Jul 2020 08:05			16 Jul 2020 15:04	5
HS20070625-02	16WW35-200714	14 Jul 2020 08:05			16 Jul 2020 14:48	1
HS20070625-03	16WW36-200714	14 Jul 2020 08:55			16 Jul 2020 15:39	50
HS20070625-03	16WW36-200714	14 Jul 2020 08:55			16 Jul 2020 15:27	1
HS20070625-04	16WW55-200714	14 Jul 2020 09:45			16 Jul 2020 16:02	4
HS20070625-04	16WW55-200714	14 Jul 2020 09:45			16 Jul 2020 15:52	1
HS20070625-05	16IW10-200714	14 Jul 2020 10:35			16 Jul 2020 16:19	200
HS20070625-05	16IW10-200714	14 Jul 2020 10:35			16 Jul 2020 16:11	1
Batch ID: R365194 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070625-01	16WW16-200714	14 Jul 2020 07:10			16 Jul 2020 09:13	20
HS20070625-01	16WW16-200714	14 Jul 2020 07:10			15 Jul 2020 15:42	1
HS20070625-02	16WW35-200714	14 Jul 2020 08:05			16 Jul 2020 09:31	200
HS20070625-02	16WW35-200714	14 Jul 2020 08:05			15 Jul 2020 14:30	10
HS20070625-03	16WW36-200714	14 Jul 2020 08:55			16 Jul 2020 10:26	100
HS20070625-03	16WW36-200714	14 Jul 2020 08:55			16 Jul 2020 05:18	5
HS20070625-04	16WW55-200714	14 Jul 2020 09:45			15 Jul 2020 16:01	1
HS20070625-05	16IW10-200714	14 Jul 2020 10:35			15 Jul 2020 14:12	1
HS20070625-06	16RW09-200714	14 Jul 2020 11:35			16 Jul 2020 04:41	1
Batch ID: R365202 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS20070625-01	16WW16-200714	14 Jul 2020 07:10			16 Jul 2020 22:08	1
HS20070625-02	16WW35-200714	14 Jul 2020 08:05			16 Jul 2020 22:18	1
HS20070625-03	16WW36-200714	14 Jul 2020 08:55			16 Jul 2020 22:25	1
HS20070625-04	16WW55-200714	14 Jul 2020 09:45			16 Jul 2020 22:45	1
HS20070625-05	16IW10-200714	14 Jul 2020 10:35			16 Jul 2020 22:38	1
Batch ID: R365236 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20070625-10	Trip Blank	14 Jul 2020 00:00			16 Jul 2020 14:23	1

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020 **DATES REPORT**
WorkOrder: HS20070625

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365236 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20070625-01	16WW16-200714	14 Jul 2020 07:10			16 Jul 2020 20:46	500
HS20070625-01	16WW16-200714	14 Jul 2020 07:10			16 Jul 2020 20:22	25
HS20070625-02	16WW35-200714	14 Jul 2020 08:05			16 Jul 2020 19:10	100
HS20070625-02	16WW35-200714	14 Jul 2020 08:05			16 Jul 2020 18:46	10
HS20070625-03	16WW36-200714	14 Jul 2020 08:55			16 Jul 2020 21:34	500
HS20070625-03	16WW36-200714	14 Jul 2020 08:55			16 Jul 2020 21:10	25
HS20070625-04	16WW55-200714	14 Jul 2020 09:45			16 Jul 2020 19:58	100
HS20070625-04	16WW55-200714	14 Jul 2020 09:45			16 Jul 2020 19:34	10
HS20070625-05	16IW10-200714	14 Jul 2020 10:35			16 Jul 2020 15:11	1
HS20070625-06	16RW09-200714	14 Jul 2020 11:35			16 Jul 2020 15:35	5
HS20070625-07	16RW07-200714	14 Jul 2020 12:25			16 Jul 2020 17:34	50
HS20070625-07	16RW07-200714	14 Jul 2020 12:25			16 Jul 2020 17:10	5
HS20070625-08	16RW07-200714-FD	14 Jul 2020 12:25			16 Jul 2020 18:22	50
HS20070625-08	16RW07-200714-FD	14 Jul 2020 12:25			16 Jul 2020 17:58	5
HS20070625-09	16RW06-200714	14 Jul 2020 13:15			16 Jul 2020 14:47	1
Batch ID: R365280 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20070625-06	16RW09-200714	14 Jul 2020 11:35			17 Jul 2020 17:08	25
Batch ID: R365322 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070625-04	16WW55-200714	14 Jul 2020 09:45			17 Jul 2020 03:06	50
HS20070625-05	16IW10-200714	14 Jul 2020 10:35			17 Jul 2020 03:24	20
Batch ID: R365837 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20070625-01	16WW16-200714	14 Jul 2020 07:10			29 Jul 2020 12:01	1
HS20070625-02	16WW35-200714	14 Jul 2020 08:05			29 Jul 2020 12:01	1
HS20070625-03	16WW36-200714	14 Jul 2020 08:55			29 Jul 2020 12:01	1
HS20070625-04	16WW55-200714	14 Jul 2020 09:45			29 Jul 2020 12:01	1
HS20070625-05	16IW10-200714	14 Jul 2020 10:35			29 Jul 2020 12:01	1
HS20070625-06	16RW09-200714	14 Jul 2020 11:35			29 Jul 2020 12:01	1
HS20070625-07	16RW07-200714	14 Jul 2020 12:25			29 Jul 2020 12:01	1
HS20070625-08	16RW07-200714-FD	14 Jul 2020 12:25			29 Jul 2020 12:01	1
HS20070625-09	16RW06-200714	14 Jul 2020 13:15			29 Jul 2020 12:01	1
Batch ID: R366513 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20070625-01	16WW16-200714	14 Jul 2020 07:10			11 Aug 2020 09:29	1
HS20070625-02	16WW35-200714	14 Jul 2020 08:05			11 Aug 2020 09:29	1
HS20070625-03	16WW36-200714	14 Jul 2020 08:55			11 Aug 2020 09:29	1
HS20070625-04	16WW55-200714	14 Jul 2020 09:45			11 Aug 2020 09:29	1
HS20070625-05	16IW10-200714	14 Jul 2020 10:35			11 Aug 2020 09:29	1
HS20070625-06	16RW09-200714	14 Jul 2020 11:35			11 Aug 2020 09:29	1

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

QC BATCH REPORT

Batch ID: R365193 (1) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-200716** Units: **mg/L** Analysis Date: **16-Jul-2020 10:34**
Client ID: Run ID: **FID-4_365193** SeqNo: **5664488** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000250	0.00100								U
Ethene	0.00100	0.00100								U
Methane	0.00100	0.000500								U

LCS Sample ID: **LCS-200716** Units: **mg/L** Analysis Date: **16-Jul-2020 10:18**
Client ID: Run ID: **FID-4_365193** SeqNo: **5664486** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0179	0.00100	0.01804	0	99.0	75 - 125				
Ethene	0.0180	0.00100	0.0168	0	107	75 - 125				
Methane	0.0106	0.000500	0.009647	0	110	75 - 125				

LCSD Sample ID: **LCSD-200716** Units: **mg/L** Analysis Date: **16-Jul-2020 10:26**
Client ID: Run ID: **FID-4_365193** SeqNo: **5664487** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0170	0.00100	0.01804	0	93.9	75 - 125	0.01787	5.26	30	
Ethene	0.0165	0.00100	0.0168	0	98.5	75 - 125	0.01797	8.29	30	
Methane	0.00979	0.000500	0.009647	0	102	75 - 125	0.01061	8.02	30	

DUP Sample ID: **HS20070616-04DUP** Units: **mg/L** Analysis Date: **16-Jul-2020 12:16**
Client ID: Run ID: **FID-4_365193** SeqNo: **5664496** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000352	0.00100					0.0003530	0	30	J
Ethene	0.00150	0.00100					0.001301	14.3	30	
Methane	0.0225	0.000500					0.02235	0.723	30	

The following samples were analyzed in this batch: HS20070625-01 HS20070625-02 HS20070625-03 HS20070625-04 HS20070625-05

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

QC BATCH REPORT

Batch ID: R365236 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200716** Units: **UG/L** Analysis Date: **16-Jul-2020 13:11**
Client ID: Run ID: **VOA6_365236** SeqNo: **5665253** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.38*	*1.0*	*50*	*0*	*86.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.13*	*1.0*	*50*	*0*	*96.3*	*85 - 114*				
Surr: Dibromofluoromethane	*44.09*	*1.0*	*50*	*0*	*88.2*	*80 - 119*				
Surr: Toluene-d8	*48.96*	*1.0*	*50*	*0*	*97.9*	*89 - 112*				

LCS Sample ID: **VLCSW-200716** Units: **UG/L** Analysis Date: **16-Jul-2020 12:23**
Client ID: Run ID: **VOA6_365236** SeqNo: **5665252** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.95	1.0	20	0	99.8	80 - 119				
1,1-Dichloroethene	16.8	1.0	20	0	84.0	71 - 131				
1,2-Dichloroethane	20.63	1.0	20	0	103	73 - 128				
cis-1,2-Dichloroethene	20.28	1.0	20	0	101	78 - 123				
Methylene chloride	18.17	2.0	20	0	90.9	74 - 124				
Trichloroethene	19.85	1.0	20	0	99.2	79 - 123				
Vinyl chloride	16.41	1.0	20	0	82.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.34*	*1.0*	*50*	*0*	*98.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.34*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*49.45*	*1.0*	*50*	*0*	*98.9*	*80 - 119*				
Surr: Toluene-d8	*49.82*	*1.0*	*50*	*0*	*99.6*	*89 - 112*				

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

QC BATCH REPORT

Batch ID: R365236 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20070625-09MS** Units: **UG/L** Analysis Date: **16-Jul-2020 15:59**
Client ID: **16RW06-200714** Run ID: **VOA6_365236** SeqNo: **5665260** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	21.57	1.0	20	0	108	80 - 119				
1,1-Dichloroethene	20.11	1.0	20	1.045	95.3	71 - 131				
1,2-Dichloroethane	20.49	1.0	20	0	102	73 - 128				
cis-1,2-Dichloroethene	23.68	1.0	20	2.4	106	78 - 123				
Methylene chloride	20.67	2.0	20	0	103	74 - 124				
Trichloroethene	119.9	1.0	20	76.92	215	79 - 123				S
Vinyl chloride	23.51	1.0	20	1.239	111	58 - 137				
Surr: 1,2-Dichloroethane-d4	*36.61*	*1.0*	*50*	*0*	*73.2*	*81 - 118*				S
Surr: 4-Bromofluorobenzene	*48.6*	*1.0*	*50*	*0*	*97.2*	*85 - 114*				
Surr: Dibromofluoromethane	*45.1*	*1.0*	*50*	*0*	*90.2*	*80 - 119*				
Surr: Toluene-d8	*50.68*	*1.0*	*50*	*0*	*101*	*89 - 112*				

MSD Sample ID: **HS20070625-09MSD** Units: **UG/L** Analysis Date: **16-Jul-2020 16:23**
Client ID: **16RW06-200714** Run ID: **VOA6_365236** SeqNo: **5665261** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.23	1.0	20	0	101	80 - 119	21.57	6.42	20	
1,1-Dichloroethene	21.21	1.0	20	1.045	101	71 - 131	20.11	5.29	20	
1,2-Dichloroethane	20.89	1.0	20	0	104	73 - 128	20.49	1.92	20	
cis-1,2-Dichloroethene	20.49	1.0	20	2.4	90.4	78 - 123	23.68	14.4	20	
Methylene chloride	17.29	2.0	20	0	86.4	74 - 124	20.67	17.8	20	
Trichloroethene	117.6	1.0	20	76.92	203	79 - 123	119.9	1.98	20	S
Vinyl chloride	25.03	1.0	20	1.239	119	58 - 137	23.51	6.25	20	
Surr: 1,2-Dichloroethane-d4	*41.65*	*1.0*	*50*	*0*	*83.3*	*81 - 118*	*36.61*	*12.9*	*20*	
Surr: 4-Bromofluorobenzene	*49.02*	*1.0*	*50*	*0*	*98.0*	*85 - 114*	*48.6*	*0.85*	*20*	
Surr: Dibromofluoromethane	*43.03*	*1.0*	*50*	*0*	*86.1*	*80 - 119*	*45.1*	*4.7*	*20*	
Surr: Toluene-d8	*41.33*	*1.0*	*50*	*0*	*82.7*	*89 - 112*	*50.68*	*20.3*	*20*	SR

The following samples were analyzed in this batch:

HS20070625-01	HS20070625-02	HS20070625-03	HS20070625-04
HS20070625-05	HS20070625-06	HS20070625-07	HS20070625-08
HS20070625-09	HS20070625-10		

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

QC BATCH REPORT

Batch ID: R365280 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200717** Units: **UG/L** Analysis Date: **17-Jul-2020 12:45**
Client ID: Run ID: **VOA6_365280** SeqNo: **5666190** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.63*	*1.0*	*50*	*0*	*87.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.92*	*1.0*	*50*	*0*	*114*	*85 - 114*				
Surr: Dibromofluoromethane	*44.05*	*1.0*	*50*	*0*	*88.1*	*80 - 119*				
Surr: Toluene-d8	*46.12*	*1.0*	*50*	*0*	*92.2*	*89 - 112*				

LCS Sample ID: **VLCSW-200717** Units: **UG/L** Analysis Date: **17-Jul-2020 11:57**
Client ID: Run ID: **VOA6_365280** SeqNo: **5666189** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	20.5	1.0	20	0	102	79 - 123				
Surr: 1,2-Dichloroethane-d4	*47.95*	*1.0*	*50*	*0*	*95.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.09*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*49.69*	*1.0*	*50*	*0*	*99.4*	*80 - 119*				
Surr: Toluene-d8	*49.06*	*1.0*	*50*	*0*	*98.1*	*89 - 112*				

MS Sample ID: **HS20070674-01MS** Units: **UG/L** Analysis Date: **17-Jul-2020 16:20**
Client ID: Run ID: **VOA6_365280** SeqNo: **5666199** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	32.58	1.0	20	9.324	116	79 - 123				
Surr: 1,2-Dichloroethane-d4	*47.03*	*1.0*	*50*	*0*	*94.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*54.76*	*1.0*	*50*	*0*	*110*	*85 - 114*				
Surr: Dibromofluoromethane	*48.3*	*1.0*	*50*	*0*	*96.6*	*80 - 119*				
Surr: Toluene-d8	*52.63*	*1.0*	*50*	*0*	*105*	*89 - 112*				

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

QC BATCH REPORT

Batch ID: R365280 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070674-01MSD** Units: **UG/L** Analysis Date: **17-Jul-2020 16:44**
Client ID: Run ID: **VOA6_365280** SeqNo: **5666200** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Trichloroethene	31.87	1.0	20	9.324	113	79 - 123	32.58	2.2	20	
Surr: 1,2-Dichloroethane-d4	*48.79*	*1.0*	*50*	*0*	*97.6*	*81 - 118*	*47.03*	*3.66*	*20*	
Surr: 4-Bromofluorobenzene	*53.69*	*1.0*	*50*	*0*	*107*	*85 - 114*	*54.76*	*1.97*	*20*	
Surr: Dibromofluoromethane	*48.94*	*1.0*	*50*	*0*	*97.9*	*80 - 119*	*48.3*	*1.32*	*20*	
Surr: Toluene-d8	*51.64*	*1.0*	*50*	*0*	*103*	*89 - 112*	*52.63*	*1.89*	*20*	

The following samples were analyzed in this batch: HS20070625-06

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

QC BATCH REPORT

Batch ID: R365194 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-071520** Units: **mg/L** Analysis Date: **15-Jul-2020 23:34**
Client ID: Run ID: **ICS-Integrion_365194** SeqNo: **5664528** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.2267	0.500								J

LCS Sample ID: **LCS-071520** Units: **mg/L** Analysis Date: **15-Jul-2020 23:52**
Client ID: Run ID: **ICS-Integrion_365194** SeqNo: **5664529** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.329	0.100	4	0	108	80 - 120				
Nitrogen, Nitrate (As N)	3.941	0.100	4	0	98.5	80 - 120				
Sulfate	19.54	0.500	20	0	97.7	80 - 120				

MS Sample ID: **HS20070625-04MS** Units: **mg/L** Analysis Date: **15-Jul-2020 19:20**
Client ID: **16WW55-200714** Run ID: **ICS-Integrion_365194** SeqNo: **5664559** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	7.6	0.100	2	5.529	104	80 - 120				
Nitrogen, Nitrate (As N)	3.293	0.100	2	0	165	80 - 120				S
Sulfate	915.8	0.500	10	931.5	-157	80 - 120				SEO

MSD Sample ID: **HS20070625-04MSD** Units: **mg/L** Analysis Date: **15-Jul-2020 19:38**
Client ID: **16WW55-200714** Run ID: **ICS-Integrion_365194** SeqNo: **5664587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	7.743	0.100	2	5.529	111	80 - 120	7.6	1.86	20	
Nitrogen, Nitrate (As N)	3.332	0.100	2	0	167	80 - 120	3.293	1.18	20	S
Sulfate	942.6	0.500	10	931.5	111	80 - 120	915.8	2.88	20	EO

The following samples were analyzed in this batch: HS20070625-01 HS20070625-02 HS20070625-03 HS20070625-04 HS20070625-05 HS20070625-06

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

QC BATCH REPORT

Batch ID: R365202 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW2-200716** Units: **mg/L** Analysis Date: **16-Jul-2020 20:57**
Client ID: Run ID: **ManTech01_365202** SeqNo: **5664791** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **LCS2-200716** Units: **mg/L** Analysis Date: **16-Jul-2020 21:06**
Client ID: Run ID: **ManTech01_365202** SeqNo: **5664792** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1036	5.00	1000	0	104	85 - 115				

LCSD Sample ID: **LCSD2-200716** Units: **mg/L** Analysis Date: **16-Jul-2020 21:15**
Client ID: Run ID: **ManTech01_365202** SeqNo: **5664793** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1035	5.00	1000	0	104	85 - 115	1036	0.0541	20	

DUP Sample ID: **HS20070637-01DUP** Units: **mg/L** Analysis Date: **16-Jul-2020 21:44**
Client ID: Run ID: **ManTech01_365202** SeqNo: **5664797** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	179.2	5.00					179.1	0.067	20	

The following samples were analyzed in this batch: HS20070625-01 HS20070625-02 HS20070625-03 HS20070625-04 HS20070625-05

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

QC BATCH REPORT

Batch ID: R365322 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-071620** Units: **mg/L** Analysis Date: **17-Jul-2020 23:20**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Sulfate	0.2163	0.500								J

LCS Sample ID: **LCS-071620** Units: **mg/L** Analysis Date: **17-Jul-2020 23:38**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.398	0.100	4	0	110	80 - 120				
Sulfate	19.55	0.500	20	0	97.7	80 - 120				

MS Sample ID: **HS20070674-01MS** Units: **mg/L** Analysis Date: **16-Jul-2020 21:40**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666946** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	7.228	0.100	2	5.197	102	80 - 120				
Sulfate	140.3	0.500	10	136.2	40.4	80 - 120				SEO

MS Sample ID: **HS20070313-01MS** Units: **mg/L** Analysis Date: **17-Jul-2020 05:31**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5667080** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	23.97	1.00	20	2.829	106	80 - 120				
Sulfate	195.6	5.00	100	101	94.6	80 - 120				

MSD Sample ID: **HS20070674-01MSD** Units: **mg/L** Analysis Date: **16-Jul-2020 21:58**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666947** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	7.292	0.100	2	5.197	105	80 - 120	7.228	0.893	20	
Sulfate	142.2	0.500	10	136.2	59.2	80 - 120	140.3	1.33	20	SEO

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070625

QC BATCH REPORT

Batch ID: R365322 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS20070313-01MSD** Units: **mg/L** Analysis Date: **17-Jul-2020 05:49**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5667081** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	23.89	1.00	20	2.829	105	80 - 120	23.97	0.33	20	
Sulfate	196.7	5.00	100	101	95.7	80 - 120	195.6	0.539	20	

The following samples were analyzed in this batch: HS20070625-04 HS20070625-05

ALS Houston, US Date: 11-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: **HS20070625**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
Maryland	343, 2019-2020	30-Sep-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 11-Aug-20

Sample Receipt Checklist

Work Order ID: HS20070625 **Date/Time Received:** **15-Jul-2020 09:05**

Client Name: CBI-Houston **Received by:** **Paresh M. Giga**

Completed By: */S/ Paresh M. Giga* (eSignature) 15-Jul-2020 12:34 (Date/Time) **Reviewed by:** (eSignature) (Date/Time)

Matrices: **GW/Water** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.9C U/C	IR25	
Cooler(s)/Kit(s):	44986		
Date/Time sample(s) sent to storage:	7/15/202012:50		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 16 JULY 2020_ALS**

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Perchlorate by SW6850	Metals (arsenic, chromium, manganese, nickel, thallium) by SW6020				Remarks (Preservatives, etc.)	Lab I.D.#
16WW16-200714	WG	7/14/20/0710		10	X	X	X	X	X	X						
16WW35-200714	WG	7/14/20/0805		10	X	X	X	X	X	X						
16WW36-200714	WG	7/14/20/0855		10	X	X	X	X	X	X						
16WW55-200714	WG	7/14/20/0945		10	X	X	X	X	X	X						
16IW10-200714	WG	7/14/20/1035		10	X	X	X	X	X	X						
16RW09-200714	WG	7/14/20/1135		7	X	X			X	X						
16RW07-200714	WG	7/14/20/1225		4	X					X						
16RW07-200714-FD	WG	7/14/20/1225		4	X					X						

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	7/14/20	1430		7/15/20	09:05						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

HS20070625

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant 16 July 2020



(Word) S:\1-ccs\Forms\Chain of Custody - BiWeekly

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: RJ Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No.: 501032

Job: **LHAAP 16 JULY 2020_ALS**

Prepared By: Scott Beesinger

P.O. Number:

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Perchlorate by SW6850	Metals (arsenic, chromium, manganese, nickel, thallium) by SW6020				Remarks (Preservatives, etc.)	Lab I.D.#
16RW06-200714	WG	7/14/20/1315		4	X					X						
TRIP BLANK	W	7/14/20		2	X											

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	7/14/20	1430		7/15/20							

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

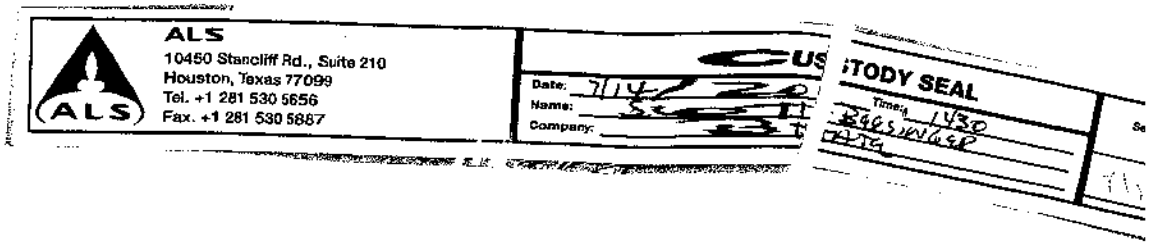
Remarks:

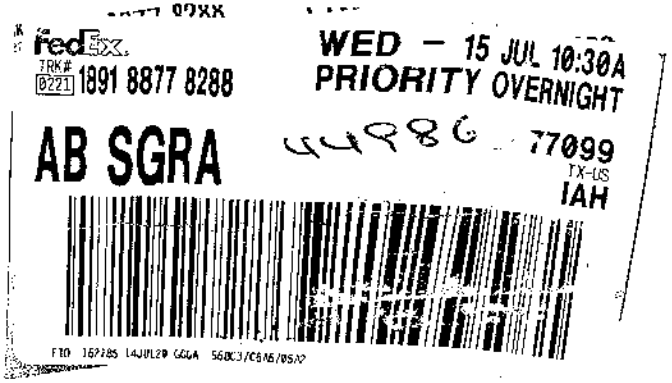
HS20070625

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant 16 July 2020



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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
Date:
Name:
Company:
TODY SEAL
Time:


fedEx.
TRK#
0221 1891 8877 8288
WED – 15 JUL 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH

July 29, 2020 Service Request No:E2000641

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

Laboratory Results for: HS20070625

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 15, 2020
For your reference, these analyses have been assigned our service request number **E2000641.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	ALS Houston	**Service Request No.:**	E2000641
Project:	HS20070625	**Date Received:**	07/15/20
Sample Matrix:	W		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Nine samples were received for analysis at ALS Environmental in Houston on 07/15/20.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2000303: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD for this extraction batch. The LCS & LCSD recoveries are within QC limits.

Sample E2000641-003/005/009 were ran at a 10x DF due to high matric interference at a 1x, resulting in failing internal standard criteria.

DOD Certification is held for the method/matrix/analytes provided in this report.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: ALS Environmental - US **Service Request:**E2000641
Project: HS20070625

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2000641-001	16WW16-200714	7/14/2020	0710
E2000641-002	16WW35-200714	7/14/2020	0805
E2000641-003	16WW36-200714	7/14/2020	0855
E2000641-004	16WW55-200714	7/14/2020	0945
E2000641-005	16IW10-200714	7/14/2020	1035
E2000641-006	16RW09-200714	7/14/2020	1135
E2000641-007	16RW07-200714	7/14/2020	1225
E2000641-008	16RW07-200714-FD	7/14/2020	1225
E2000641-009	16RW06-200714	7/14/2020	1315

Service Request Summary

Folder #: **E2000641**
Client Name: ALS Environmental - US
Project Name: HS20070625
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/15/20
Internal Due Date: 7/29/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS20070625
EDD: No EDD Specified

9 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
Location: EHRMS-WIC 5C
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2000641-001	16WW16-200714	Ground Water	07/14/20 0710	**IV**
E2000641-002	16WW35-200714	Ground Water	07/14/20 0805	**IV**
E2000641-003	16WW36-200714	Ground Water	07/14/20 0855	**IV**
E2000641-004	16WW55-200714	Ground Water	07/14/20 0945	**IV**
E2000641-005	16IW10-200714	Ground Water	07/14/20 1035	**IV**
E2000641-006	16RW09-200714	Ground Water	07/14/20 1135	**IV**
E2000641-007	16RW07-200714	Ground Water	07/14/20 1225	**IV**
E2000641-008	16RW07-200714-FD	Ground Water	07/14/20 1225	**IV**
E2000641-009	16RW06-200714	Ground Water	07/14/20 1315	**IV**

Service Request Summary

Folder #: **E2000641**
Client Name: ALS Environmental - US
Project Name: HS20070625
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/15/20
Internal Due Date: 7/29/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS20070625
EDD: No EDD Specified

9 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
Location: EHRMS-WIC 5C
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	9	Level II due 7/29,level IV 8/5

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	Internal standard not within the specified limits. See case narrative.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.
M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.

Data Qualifiers

Lab Standard

S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

10450 Stancliff Rd, Houston, TX 77099 | 281-530-5656 | www.alsglobal.com

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01 2020	11/30/2021
Arkansas Department of Environmental Quality	20-030-0	3/26/2021
Department of Defense	A2LA 2897.01	11/30/2021
Hawaii Department of Health	2020	4/30/2021
Illinois Environmental Protection Agency	2000322020-4	5/9/2021
Kansas Department of Health and Environment	E-10352	7/31/2020
Louisiana Department of Health and Hospitals	LA028-2020	12/31/2020
Maine Department of Health and Human Services	2020016	6/5/2022
Minnesota Department of Health	1785988	12/31/2020
Nebraska Department of Health and Human Services	NE-OS-25-13 (2020)	4/30/2021
Nevada Department of Concervation and Natural Resources	TX026932019-1	7/31/2020
New Hampshire Environmental Laboratory Accreditation Program	209420	4/24/2021
New York Department of Health	11707	3/31/2021
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Tennessee Department of Environment and Concervation	04016-2020	4/30/2021
Texas Commision on Environmental Quality	T104704231-20-26	4/30/2021
United States Department of Agriculture	P330-19-00299	10/10/2022
Utah Department of Health Environmental Laboratory Certification	TX026932019-9	7/31/2020
Washington Department of Health	C819	11/14/2020

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14289**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

E2000641 **5**
ALS Laboratory Group
HS20070625

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20070625
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20070625-01**	**16WW16-200714**	**Groundwater**	**14 Jul 2020 07:10**
	SUB_Perch-6850			29 Jul 2020
2.	**HS20070625-02**	**16WW35-200714**	**Groundwater**	**14 Jul 2020 08:05**
	SUB_Perch-6850			29 Jul 2020
3.	**HS20070625-03**	**16WW36-200714**	**Groundwater**	**14 Jul 2020 08:55**
	SUB_Perch-6850			29 Jul 2020
4.	**HS20070625-04**	**16WW55-200714**	**Groundwater**	**14 Jul 2020 09:45**
	SUB_Perch-6850			29 Jul 2020
5.	**HS20070625-05**	**16IW10-200714**	**Groundwater**	**14 Jul 2020 10:35**
	SUB_Perch-6850			29 Jul 2020
6.	**HS20070625-06**	**16RW09-200714**	**Groundwater**	**14 Jul 2020 11:35**
	SUB_Perch-6850			29 Jul 2020
7.	**HS20070625-07**	**16RW07-200714**	**Groundwater**	**14 Jul 2020 12:25**
	SUB_Perch-6850			29 Jul 2020
8.	**HS20070625-08**	**16RW07-200714-FD**	**Groundwater**	**14 Jul 2020 12:25**
	SUB_Perch-6850			29 Jul 2020
9.	**HS20070625-09**	**16RW06-200714**	**Groundwater**	**14 Jul 2020 13:15**

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 14289**

LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
ANALYSIS REQUESTED			DUE DATE
SUB_Perch-6850			29 Jul 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. Murphy Date/Time: 7/15/20 12:45

Received By: CH Date/Time: 7/15/20 12:45

Cooler ID(s): Temperature(s):

ALS Environmental

Cooler Receipt Form

Project Chemist CH

Client/Project ALS-H1 Thermometer ID SM04/1231

Date/Time Received: 7/15/20 Initials: CH Date/Time Logged in: 7/15/20 Initials CH

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ✓ ALS Courier ○ Client

2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other

3. Were custody seals on coolers? ○ Yes ✓ No If yes, how many and where?

Were they intact? ○ Yes ○ No ✓ N/A

Were they signed and dated? ○ Yes ○ No ✓ N/A

4. Packing Material: ○ Inserts ✓ Baggies ○ Bubble Wrap ○ Gel Packs ✓ Wet Ice ○ Sleeves ○ Other

5. Foreign or Regulated Soil? ○ Yes ○ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
–		7/15/20	1245	CH	3.8	☒
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No

7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No

8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No

9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No

10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: E2000641 5

ALS Laboratory Group HS20070625

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SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 361872 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 7/20/20 10:45

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000641-001	16WW16-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
2	E2000641-002	16WW35-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2000641-003	16WW36-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2000641-004	16WW55-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2000641-005	16IW10-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2000641-006	16RW09-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
7	E2000641-007	16RW07-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
8	E2000641-008	16RW07-200714-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
9	E2000641-009	16RW06-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
10	E2000648-001	16WW56-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
11	E2000648-002	16WW22-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
12	E2000648-003	16WW41-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
13	E2000648-004	16WW21-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
14	E2000648-005	16WW39-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2000648-006	16WW30-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2000648-007	16WW29-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
17	E2000648-008	16WW48-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
18	EQ2000303-01	MB		6850/ClO4 DOD			Liquid	10mL	
19	EQ2000303-02	LCS		6850/ClO4 DOD			Liquid	10mL	
20	EQ2000303-03	DLCS		6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4 Inventory ID 202037 Logbook Ref: Sodium Perchlorate Expires On: 05/22/2021

E2000641-001	100.00µL	E2000641-002	100.00µL	E2000641-003	100.00µL	E2000641-004	100.00µL	E2000641-005	100.00µL	E2000641-006	100.00µL
E2000641-007	100.00µL	E2000641-008	100.00µL	E2000641-009	100.00µL	E2000648-001	100.00µL	E2000648-002	100.00µL	E2000648-003	100.00µL
E2000648-004	100.00µL	E2000648-005	100.00µL	E2000648-006	100.00µL	E2000648-007	100.00µL	E2000648-008	100.00µL	EQ2000303-01	100.00µL
EQ2000303-02	100.00µL	EQ2000303-03	100.00µL								

Name: Perchlorate Intermediate Stock1 Inventory ID 209764 Logbook Ref: Perchlorate Int. Stock1 51820 Expires On: 11/18/2020

EQ2000303-02	1.00µL	EQ2000303-03	1.00µL

Preparation Information Benchsheet

Prep Run#: 361872 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 7/20/20 10:45

Preparation Steps

Step: Preparation
Started: 7/20/20 10:45
Finished: 7/20/20 14:00
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston HRMS
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www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	7/14/20 0710
Sample Matrix:	Ground Water	**Date Received:**	7/15/20
Sample Name:	16WW16-200714	**Units:**	µg/L
Lab Code:	E2000641-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**442**		2.00	1.00	0.500	20	7/20/20	7/24/20 17:04	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	7/14/20 0805
Sample Matrix:	Ground Water	**Date Received:**	7/15/20
Sample Name:	16WW35-200714	**Units:**	µg/L
Lab Code:	E2000641-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**451**		2.00	1.00	0.500	20	7/20/20	7/24/20 17:12	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	7/14/20 0855
Sample Matrix:	Ground Water	**Date Received:**	7/15/20
Sample Name:	16WW36-200714	**Units:**	µg/L
Lab Code:	E2000641-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/20/20	7/24/20 17:20	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	7/14/20 0945
Sample Matrix:	Ground Water	**Date Received:**	7/15/20
Sample Name:	16WW55-200714	**Units:**	µg/L
Lab Code:	E2000641-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**263**		2.00	1.00	0.500	20	7/20/20	7/24/20 17:28	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	7/14/20 1035
Sample Matrix:	Ground Water	**Date Received:**	7/15/20
Sample Name:	16IW10-200714	**Units:**	µg/L
Lab Code:	E2000641-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/20/20	7/24/20 17:36	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	7/14/20 1135
Sample Matrix:	Ground Water	**Date Received:**	7/15/20
Sample Name:	16RW09-200714	**Units:**	µg/L
Lab Code:	E2000641-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.491**	J	1.00	0.500	0.250	10	7/20/20	7/24/20 17:43	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	7/14/20 1225
Sample Matrix:	Ground Water	**Date Received:**	7/15/20
Sample Name:	16RW07-200714	**Units:**	µg/L
Lab Code:	E2000641-007	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**2.45**		1.00	0.500	0.250	10	7/20/20	7/24/20 17:51	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	7/14/20 1225
Sample Matrix:	Ground Water	**Date Received:**	7/15/20
Sample Name:	16RW07-200714-FD	**Units:**	µg/L
Lab Code:	E2000641-008	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**2.33**		1.00	0.500	0.250	10	7/20/20	7/24/20 18:07	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	7/14/20 1315
Sample Matrix:	Ground Water	**Date Received:**	7/15/20
Sample Name:	16RW06-200714	**Units:**	µg/L
Lab Code:	E2000641-009	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/20/20	7/24/20 18:15	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2000303-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	7/20/20	7/24/20 16:40	361872	688371	

Accuracy & Precision

ALS Environmental - Houston HRMS
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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070625
Sample Matrix: Ground Water

Service Request: E2000641
Date Analyzed: 7/24/20

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 361872

	Lab Control Sample EQ2000303-02			Duplicate Lab Control Sample EQ2000303-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.116	0.100	116	0.118	0.100	118	84 - 119	2	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000303-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.116**		0.100	0.0500	0.0250	1	7/20/20	7/24/20 16:48	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000303-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.118**		0.100	0.0500	0.0250	1	7/20/20	7/24/20 16:56	361872	688371	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
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20200724

1st Review: Kneir
2nd Review: Hvan

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: **EC2000016**

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200724_005	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200724_006	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200724_007	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200724_008	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200724_009	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200724_010	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200724_011	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200724_012	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200724_013	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200724_014	Perchlorate6850b.lcm	1x	☒	3100807-07
11	IB		20200724_015	Perchlorate6850b.lcm	1x	☒	
12	PERCHLORATEICV		20200724_016	Perchlorate6850b.lcm	1x	☒	3100807-08
13	IB		20200724_017	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200724_018	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200724_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200724_020	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-04X10		20200724_021	Perchlorate6850b.lcm	10x	☒	
18	EQ2000302-05X10DNU		20200724_022	Perchlorate6850b.lcm	10x	☒	
19	E2000626-001X2		20200724_023	Perchlorate6850b.lcm	2x	☒	
20	E2000627-001X10		20200724_024	Perchlorate6850b.lcm	10x	☒	
21	E2000627-005X100		20200724_025	Perchlorate6850b.lcm	100x	☒	
22	E2000627-006X100		20200724_026	Perchlorate6850b.lcm	100x	☒	
23	E2000627-009X1000		20200724_027	Perchlorate6850b.lcm	1000x	☒	
24	E2000640-001X200		20200724_028	Perchlorate6850b.lcm	200x	☒	
25	PERCHLORATE7		20200724_029	Perchlorate6850b.lcm	1x	☒	3100807-04
26	E2000660-001X10		20200724_030	Perchlorate6850b.lcm	10x	☒	
27	E2000627-004X10		20200724_031	Perchlorate6850b.lcm	10x	☒	
28	PERCHLORATE7		20200724_032	Perchlorate6850b.lcm	1x	☒	3100807-04
29	EQ2000302-05X10		20200724_033	Perchlorate6850b.lcm	10x	☒	
30	PERCHLORATE7		20200724_034	Perchlorate6850b.lcm	1x	☒	3100807-04
31	E2000660-003X10		20200724_035	Perchlorate6850b.lcm	10x	☒	
32	E2000660-004X10		20200724_036	Perchlorate6850b.lcm	10x	☒	
33	E2000660-005X2		20200724_037	Perchlorate6850b.lcm	2x	☒	
34	E2000660-006X10		20200724_038	Perchlorate6850b.lcm	10x	☒	
35	PERCHLORATE7		20200724_039	Perchlorate6850b.lcm	1x	☒	3100807-04
36	EQ2000303-01		20200724_040	Perchlorate6850b.lcm	1x	☒	
37	EQ2000303-02		20200724_041	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-03		20200724_042	Perchlorate6850b.lcm	1x	☒	
39	E2000641-001X20		20200724_043	Perchlorate6850b.lcm	20x	☒	
40	E2000641-002X20		20200724_044	Perchlorate6850b.lcm	20x	☒	
41	E2000641-003X10		20200724_045	Perchlorate6850b.lcm	10x	☒	
42	E2000641-004X20		20200724_046	Perchlorate6850b.lcm	20x	☒	
43	E2000641-005X10		20200724_047	Perchlorate6850b.lcm	10x	☒	
44	E2000641-006X10		20200724_048	Perchlorate6850b.lcm	10x	☒	
45	E2000641-007X10		20200724_049	Perchlorate6850b.lcm	10x	☒	
46	PERCHLORATE7		20200724_050	Perchlorate6850b.lcm	1x	☒	3100807-04
47	E2000641-008X10		20200724_051	Perchlorate6850b.lcm	10x	☒	
48	E2000641-009X10		20200724_052	Perchlorate6850b.lcm	10x	☒	
49	E2000648-001X10		20200724_053	Perchlorate6850b.lcm	10x	☒	
50	E2000648-002X10		20200724_054	Perchlorate6850b.lcm	10x	☒	
51	E2000648-003X20		20200724_055	Perchlorate6850b.lcm	20x	☒	
52	E2000648-005X10		20200724_056	Perchlorate6850b.lcm	10x	☒	

Initial Calibration - Detailed Report

Calibration ID: EC2000016 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2000016-01	PERCHLORATE1	20200724_005	07/24/2020 11:48
02	EC2000016-02	PERCHLORATE2	20200724_006	07/24/2020 11:56
03	EC2000016-03	PERCHLORATE3	20200724_007	07/24/2020 12:04
04	EC2000016-04	PERCHLORATE4	20200724_008	07/24/2020 12:11
05	EC2000016-05	PERCHLORATE5	20200724_009	07/24/2020 12:19
06	EC2000016-06	PERCHLORATE6	20200724_010	07/24/2020 12:27
07	EC2000016-07	PERCHLORATE7	20200724_011	07/24/2020 12:35
08	EC2000016-08	PERCHLORATE8	20200724_012	07/24/2020 12:43
09	EC2000016-09	PERCHLORATE9	20200724_013	07/24/2020 12:51
10	EC2000016-10	PERCHLORATE10	20200724_014	07/24/2020 12:59

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 4.659** **Average RF = 0.121**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1283	02	0.5000	0.13	03	0.7000	0.1207	04	1.0000	0.1251
05	2.0000	0.1211	06	5.0000	0.1202	07	10.0000	0.1211	08	20.0000	0.1168
09	30.0000	0.1121	10	50.0000	0.1148						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.106	6.0	02	0.5000	0.537	7.4	03	0.7000	0.698	-0.3
04	1.0000	1.03	3.4	05	2.0000	2.00	0.1	06	5.0000	4.97	-0.7
07	10.0000	10.0	0.1	08	20.0000	19.3	-3.5	09	30.0000	27.8	-7.3
10	50.0000	47.4	-5.1								

Initial Calibration Verification Summary Report

Calibration ID:	EC2000016	**Instrument ID:**	E-LCMS-01
Datafile ID:	20200724_016	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2000016-11	T	Average RF	10	9.867	ng/mL	-1.3	<= 15

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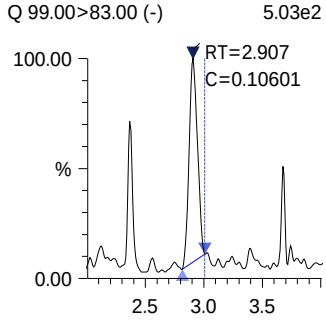
PERCHLORATE1

Date acquired: 7/24/2020 11:48:19 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_005.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE1	7/24/2020 11:48:19 AM	2348	0.10601	20200724_005	2.907	25.0000	1.0000	5
Sodium Perchlorate-18O4_IS	PERCHLORATE1	7/24/2020 11:48:19 AM	183001	1.00000	20200724_005	2.903	25.0000	1.0000	5

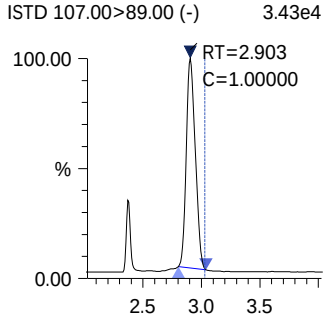
Perchlorate

Conc 0.10601
Area 2348



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 183001



ALS Group Houston

PERCHLORATE2

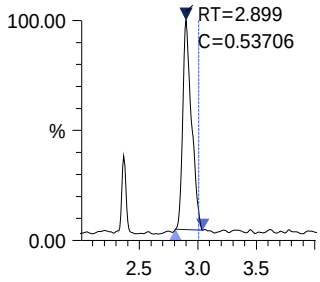
Date acquired: 7/24/2020 11:56:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_006.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE2	7/24/2020 11:56:11 AM	11773	0.53706	20200724_006	2.899	25.0000	1.0000	6
Sodium Perchlorate-18O4_IS	PERCHLORATE2	7/24/2020 11:56:11 AM	181125	1.00000	20200724_006	2.898	25.0000	1.0000	6

Perchlorate

Conc 0.53706
Area 11773

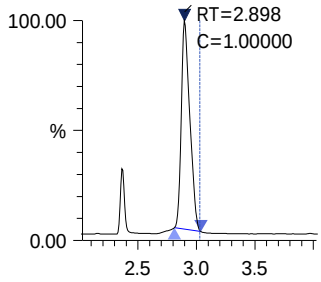
Q 99.00>83.00 (-) 2.32e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 181125

ISTD 107.00>89.00 (-) 3.62e4



ALS Group Houston

PERCHLORATE3

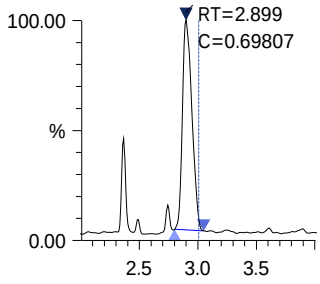
Date acquired: 7/24/2020 12:04:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_007.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE3	7/24/2020 12:04:05 PM	15258	0.69807	20200724_007	2.899	25.0000	1.0000	7
Sodium Perchlorate-18O4_IS	PERCHLORATE3	7/24/2020 12:04:05 PM	180602	1.00000	20200724_007	2.896	25.0000	1.0000	7

Perchlorate

Conc 0.69807
Area 15258

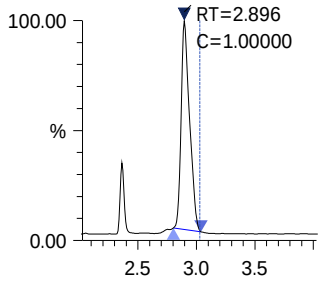
Q 99.00>83.00 (-) 2.79e3



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 180602

ISTD 107.00>89.00 (-) 3.65e4



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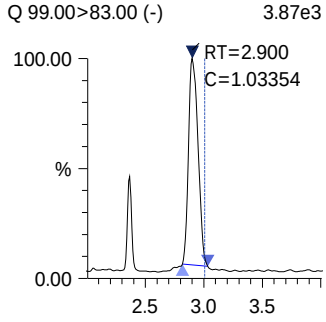
PERCHLORATE4

Date acquired: 7/24/2020 12:11:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_008.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE4	7/24/2020 12:11:58 PM	20922	1.03354	20200724_008	2.900	25.0000	1.0000	8
Sodium Perchlorate-18O4_IS	PERCHLORATE4	7/24/2020 12:11:58 PM	167260	1.00000	20200724_008	2.902	25.0000	1.0000	8

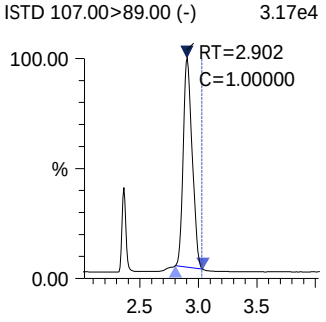
Perchlorate

Conc 1.03354
Area 20922



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 167260



ALS Group Houston

PERCHLORATE5

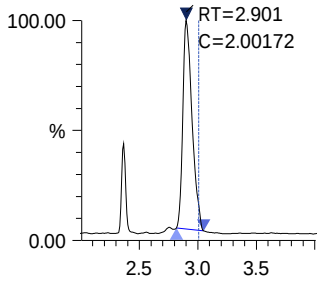
Date acquired: 7/24/2020 12:19:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_009.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE5	7/24/2020 12:19:50 PM	39343	2.00172	20200724_009	2.901	25.0000	1.0000	9
Sodium Perchlorate-18O4_IS	PERCHLORATE5	7/24/2020 12:19:50 PM	162397	1.00000	20200724_009	2.899	25.0000	1.0000	9

Perchlorate

Conc 2.00172
Area 39343

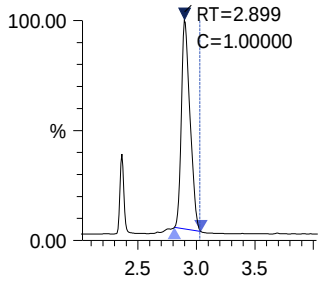
Q 99.00>83.00 (-) 7.39e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 162397

ISTD 107.00>89.00 (-) 3.19e4



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PERCHLORATE6

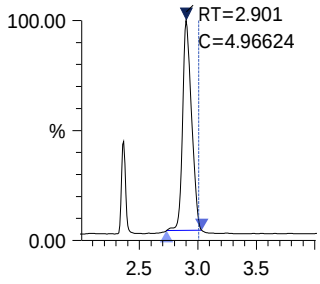
Date acquired: 7/24/2020 12:27:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_010.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE6	7/24/2020 12:27:42 PM	102216	4.96624	20200724_010	2.901	25.0000	1.0000	10
Sodium Perchlorate-18O4_IS	PERCHLORATE6	7/24/2020 12:27:42 PM	170060	1.00000	20200724_010	2.900	25.0000	1.0000	10

Perchlorate

Conc 4.96624
Area 102216

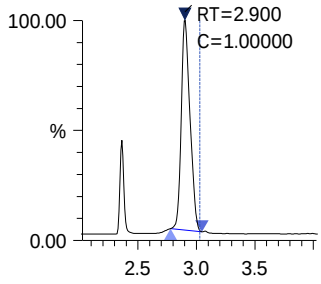
Q 99.00>83.00 (-) 1.97e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 170060

ISTD 107.00>89.00 (-) 3.28e4



ALS Group Houston

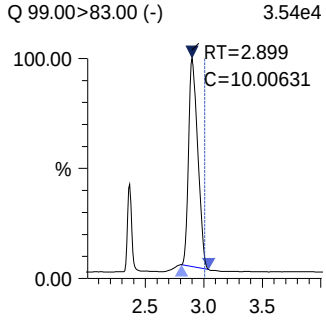
PERCHLORATE7

Date acquired: 7/24/2020 12:35:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_011.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 12:35:33 PM	187110	10.00631	20200724_011	2.899	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 12:35:33 PM	154502	1.00000	20200724_011	2.897	25.0000	1.0000	4

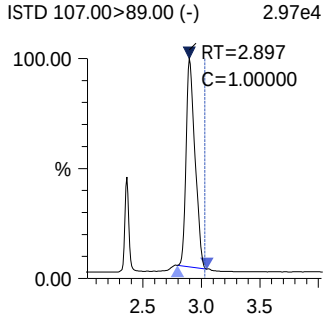
Perchlorate

Conc 10.00631
Area 187110



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 154502



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PERCHLORATE8

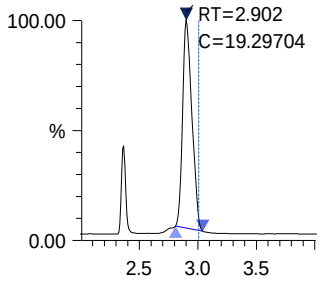
Date acquired: 7/24/2020 12:43:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_012.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE8	7/24/2020 12:43:26 PM	349524	19.29704	20200724_012	2.902	25.0000	1.0000	11
Sodium Perchlorate-18O4_IS	PERCHLORATE8	7/24/2020 12:43:26 PM	149657	1.00000	20200724_012	2.900	25.0000	1.0000	11

Perchlorate

Conc 19.29704
Area 349524

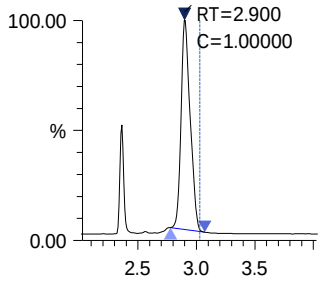
Q 99.00>83.00 (-) 6.58e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 149657

ISTD 107.00>89.00 (-) 2.78e4



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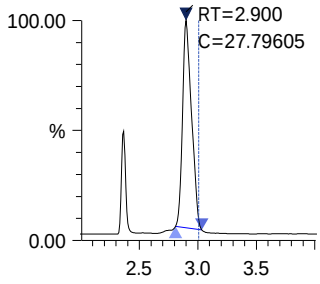
PERCHLORATE9

Date acquired: 7/24/2020 12:51:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_013.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE9	7/24/2020 12:51:22 PM	465757	27.79605	20200724_013	2.900	25.0000	1.0000	12
Sodium Perchlorate-18O4_IS	PERCHLORATE9	7/24/2020 12:51:22 PM	138448	1.00000	20200724_013	2.898	25.0000	1.0000	12

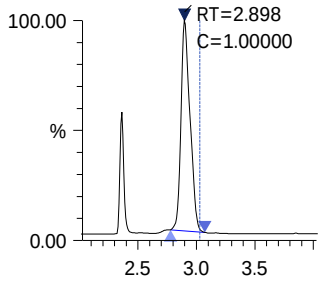
Perchlorate

Conc 27.79605
Area 465757
Q 99.00>83.00 (-) 9.05e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 138448
ISTD 107.00>89.00 (-) 2.59e4



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PERCHLORATE10

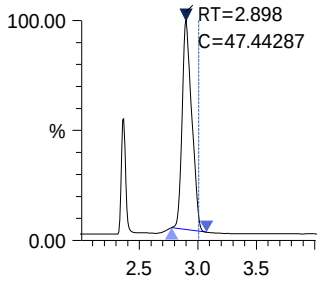
Date acquired: 7/24/2020 12:59:14 PM
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Data File: I:\LCMS01\DATA\20200724\20200724_014.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE10	7/24/2020 12:59:14 PM	708682	47.44287	20200724_014	2.898	25.0000	1.0000	13
Sodium Perchlorate-18O4_IS	PERCHLORATE10	7/24/2020 12:59:14 PM	123422	1.00000	20200724_014	2.896	25.0000	1.0000	13

Perchlorate

Conc 47.44287
Area 708682

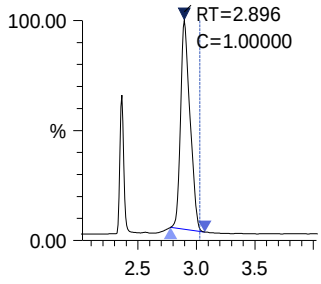
Q 99.00>83.00 (-) 1.28e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 123422

ISTD 107.00>89.00 (-) 2.23e4



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PERCHLORATEICV

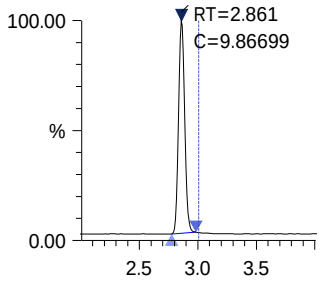
Date acquired: 7/24/2020 1:28:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_016.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATEICV	7/24/2020 1:28:19 PM	231631	9.86699	20200724_016	2.861	25.0000	1.0000	14
Sodium Perchlorate-18O4_IS	PERCHLORATEICV	7/24/2020 1:28:19 PM	193964	1.00000	20200724_016	2.859	25.0000	1.0000	14

Perchlorate

Conc 9.86699
Area 231631

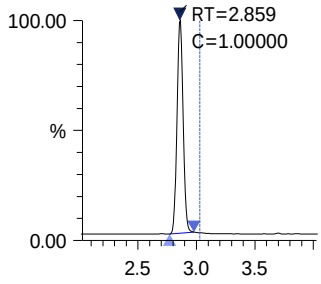
Q 99.00>83.00 (-) 6.30e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 193964

ISTD 107.00>89.00 (-) 5.33e4



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20200724

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200724_005	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200724_006	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200724_007	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200724_008	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200724_009	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200724_010	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200724_011	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200724_012	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200724_013	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200724_014	Perchlorate6850b.lcm	1x	☒	3100807-07
11	IB		20200724_015	Perchlorate6850b.lcm	1x	☒	
12	PERCHLORATEICV		20200724_016	Perchlorate6850b.lcm	1x	☒	3100807-08
13	IB		20200724_017	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200724_018	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200724_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200724_020	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-04X10		20200724_021	Perchlorate6850b.lcm	10x	☒	
18	EQ2000302-05X10DNU		20200724_022	Perchlorate6850b.lcm	10x	☒	
19	E2000626-001X2		20200724_023	Perchlorate6850b.lcm	2x	☒	
20	E2000627-001X10		20200724_024	Perchlorate6850b.lcm	10x	☒	
21	E2000627-005X100		20200724_025	Perchlorate6850b.lcm	100x	☒	
22	E2000627-006X100		20200724_026	Perchlorate6850b.lcm	100x	☒	
23	E2000627-009X1000		20200724_027	Perchlorate6850b.lcm	1000x	☒	
24	E2000640-001X200		20200724_028	Perchlorate6850b.lcm	200x	☒	
25	PERCHLORATE7		20200724_029	Perchlorate6850b.lcm	1x	☒	3100807-04
26	E2000660-001X10		20200724_030	Perchlorate6850b.lcm	10x	☒	
27	E2000627-004X10		20200724_031	Perchlorate6850b.lcm	10x	☒	
28	PERCHLORATE7		20200724_032	Perchlorate6850b.lcm	1x	☒	3100807-04
29	EQ2000302-05X10		20200724_033	Perchlorate6850b.lcm	10x	☒	
30	PERCHLORATE7		20200724_034	Perchlorate6850b.lcm	1x	☒	3100807-04
31	E2000660-003X10		20200724_035	Perchlorate6850b.lcm	10x	☒	
32	E2000660-004X10		20200724_036	Perchlorate6850b.lcm	10x	☒	
33	E2000660-005X2		20200724_037	Perchlorate6850b.lcm	2x	☒	
34	E2000660-006X10		20200724_038	Perchlorate6850b.lcm	10x	☒	
35	PERCHLORATE7		20200724_039	Perchlorate6850b.lcm	1x	☒	3100807-04
36	EQ2000303-01		20200724_040	Perchlorate6850b.lcm	1x	☒	
37	EQ2000303-02		20200724_041	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-03		20200724_042	Perchlorate6850b.lcm	1x	☒	
39	E2000641-001X20		20200724_043	Perchlorate6850b.lcm	20x	☒	
40	E2000641-002X20		20200724_044	Perchlorate6850b.lcm	20x	☒	
41	E2000641-003X10		20200724_045	Perchlorate6850b.lcm	10x	☒	
42	E2000641-004X20		20200724_046	Perchlorate6850b.lcm	20x	☒	
43	E2000641-005X10		20200724_047	Perchlorate6850b.lcm	10x	☒	
44	E2000641-006X10		20200724_048	Perchlorate6850b.lcm	10x	☒	
45	E2000641-007X10		20200724_049	Perchlorate6850b.lcm	10x	☒	
46	PERCHLORATE7		20200724_050	Perchlorate6850b.lcm	1x	☒	3100807-04
47	E2000641-008X10		20200724_051	Perchlorate6850b.lcm	10x	☒	
48	E2000641-009X10		20200724_052	Perchlorate6850b.lcm	10x	☒	
49	E2000648-001X10		20200724_053	Perchlorate6850b.lcm	10x	☒	
50	E2000648-002X10		20200724_054	Perchlorate6850b.lcm	10x	☒	
51	E2000648-003X20		20200724_055	Perchlorate6850b.lcm	20x	☒	
52	E2000648-005X10		20200724_056	Perchlorate6850b.lcm	10x	☒	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070625

Service Request: E2000641
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_020

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.0	0.1210	0.1213	0.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070625

Service Request: E2000641
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_029

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.86	0.1210	0.1193	-1.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070625

Service Request: E2000641
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_032

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.75	0.1210	0.1180	-2.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070625

Service Request: E2000641
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_034

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1220	0.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070625

Service Request: E2000641
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_039

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.0	0.1210	0.1214	0.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070625

Service Request: E2000641
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_050

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.68	0.1210	0.1172	-3.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070625

Service Request: E2000641
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_060

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1226	1.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Analyzed:**	7/24/20 13:59

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_020	**Lab Code:**	EQ2000311-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-01	149,874	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Analyzed:**	7/24/20 15:11

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_029	**Lab Code:**	EQ2000311-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-02	142,468	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Analyzed:**	7/24/20 15:37

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_032	**Lab Code:**	EQ2000311-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-03	143,487	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Analyzed:**	7/24/20 15:53

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_034	**Lab Code:**	EQ2000311-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-04	142,073	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Analyzed:**	7/24/20 16:33

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_039	**Lab Code:**	EQ2000311-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-05	142,477	2.90
Method Blank	EQ2000303-01	138,240	2.90
Lab Control Sample	EQ2000303-02	138,805	2.89
Duplicate Lab Control Sample	EQ2000303-03	151,438	2.90
16WW16-200714	E2000641-001	113,090	2.90
16WW35-200714	E2000641-002	88,612	2.89
16WW36-200714	E2000641-003	110,235	2.90
16WW55-200714	E2000641-004	123,240	2.90
16IW10-200714	E2000641-005	126,236	2.89
16RW09-200714	E2000641-006	123,125	2.90
16RW07-200714	E2000641-007	114,375	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Analyzed:**	7/24/20 17:59

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_050	**Lab Code:**	EQ2000311-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-06	128,840	2.90
16RW07-200714-FD	E2000641-008	115,250	2.90
16RW06-200714	E2000641-009	113,964	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000641
Project:	HS20070625	**Date Analyzed:**	7/24/20 19:18

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_060	**Lab Code:**	EQ2000311-07
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-07	129,501	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group Houston

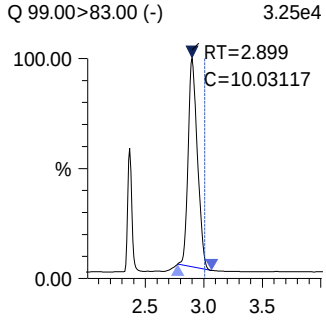
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Acquired by: System Administrator
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Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

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Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 4:33:02 PM	142477	1.00000	20200724_039	2.897	25.0000	1.0000	4

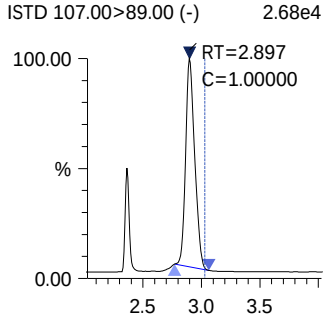
Perchlorate

Conc 10.03117
Area 172976



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 142477



ALS Group Houston

EQ2000303-01

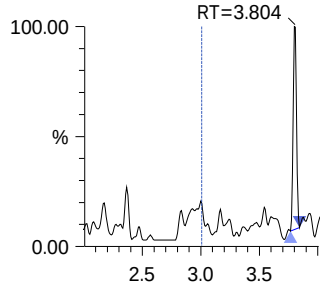
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_040.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 3

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000303-01	7/24/2020 4:40:57 PM	----	----	20200724_040	----	25.0000	1.0000	26
Sodium Perchlorate-18O4_IS	EQ2000303-01	7/24/2020 4:40:57 PM	138240	1.00000	20200724_040	2.896	25.0000	1.0000	26

Perchlorate

Conc ----
Area ----

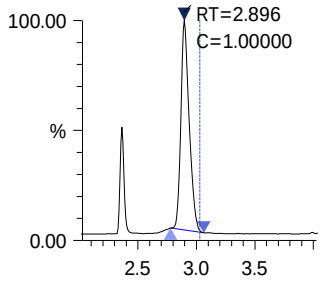
Q 99.00>83.00 (-) 3.28e2



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 138240

ISTD 107.00>89.00 (-) 2.82e4



ALS Group Houston

EQ2000303-02

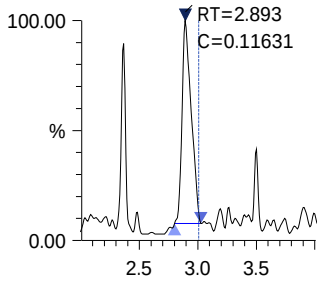
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_041.lcd
Vial: 27 | Inj. Volume: 25.0000uL | Tray: 3

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000303-02	7/24/2020 4:48:48 PM	1954	0.11631	20200724_041	2.893	25.0000	1.0000	27
Sodium Perchlorate-18O4_IS	EQ2000303-02	7/24/2020 4:48:48 PM	138805	1.00000	20200724_041	2.893	25.0000	1.0000	27

Perchlorate

Conc 0.11631
Area 1954

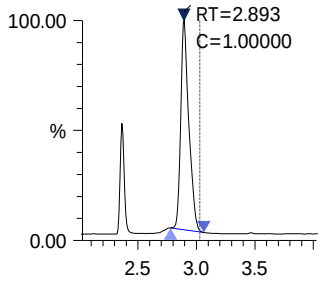
Q 99.00>83.00 (-) 3.80e2



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 138805

ISTD 107.00>89.00 (-) 2.90e4



ALS Group Houston

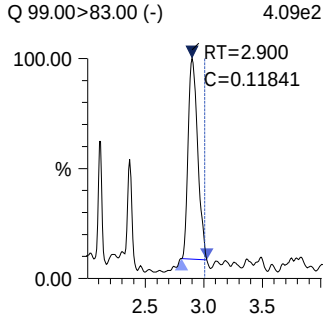
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_042.lcd
Vial: 28 | Inj. Volume: 25.0000uL | Tray: 3

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000303-03	7/24/2020 4:56:39 PM	2170	0.11841	20200724_042	2.900	25.0000	1.0000	28
Sodium Perchlorate-18O4_IS	EQ2000303-03	7/24/2020 4:56:39 PM	151438	1.00000	20200724_042	2.898	25.0000	1.0000	28

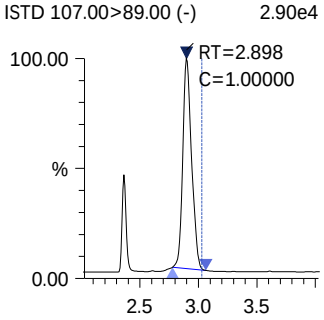
Perchlorate

Conc 0.11841
Area 2170



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 151438



ALS Group Houston

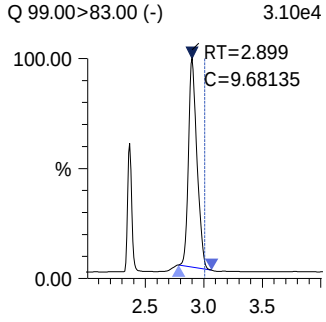
PERCHLORATE7

Date acquired: 7/24/2020 5:59:41 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_050.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 5:59:41 PM	150965	9.68135	20200724_050	2.899	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 5:59:41 PM	128840	1.00000	20200724_050	2.895	25.0000	1.0000	4

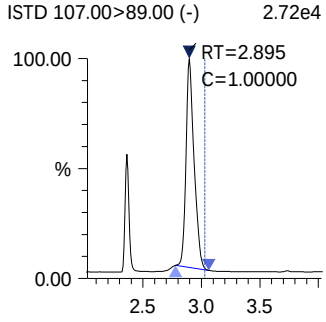
Perchlorate

Conc 9.68135
Area 150965



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 128840



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August 10, 2020

Analytical Report for Service Request No: K2006047

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: ALS Houston DOD TOC / HS20070625

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 17, 2020
For your reference, these analyses have been assigned our service request number **K2006047.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Table of Contents

Acronyms
Qualifiers
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General Chemistry
Raw Data
    General Chemistry

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: ALS Houston DOD TOC
Sample Matrix: Water

Service Request: K2006047
Date Received: 07/17/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Six water samples were received for analysis at ALS Environmental on 07/17/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

Method SM 5310 C, 08/08/2020: The detection limit was elevated for Total Organic Carbon in sample 18IW10-200714 due to the nature of the sample matrix. Analyzing the undiluted sample could have potentially damaged the instrumentation.

Approved by Noe D. Davis Date 08/10/2020

Chain of Custody

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V2006047

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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 14302**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20070625
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20070625-01**	**16WW16-200714**	**Groundwater**	**14 Jul 2020 07:10**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			29 Jul 2020
2.	**HS20070625-02**	**16WW35-200714**	**Groundwater**	**14 Jul 2020 08:05**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			29 Jul 2020
3.	**HS20070625-03**	**16WW36-200714**	**Groundwater**	**14 Jul 2020 08:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			29 Jul 2020
4.	**HS20070625-04**	**16WW55-200714**	**Groundwater**	**14 Jul 2020 09:45**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			29 Jul 2020
5.	**HS20070625-05**	**16IW10-200714**	**Groundwater**	**14 Jul 2020 10:35**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			29 Jul 2020
6.	**HS20070625-06**	**16RW09-200714**	**Groundwater**	**14 Jul 2020 11:35**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			29 Jul 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14302**

Relinquished By: _____ Date/Time: 7/16/2020 1800

Received By: _____ Date/Time: 7/17/20 0930

Cooler ID(s): _____ Temperature(s): _____

PC VL

Cooler Receipt and Preservation Form

Client ALS/Houston Service Request K20 DL0047

Received: 7/17/20 Opened: 7/17/20 By: [signature] Unloaded: 7/17/20 By: [signature]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID NA	Tracking Number NA	Filed
1.5	—	—	—	—	IR02	14302	1891 8878 4191	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2006047
Project:	ALS Houston DOD TOC/HS20070625	**Date Collected:**	07/14/20
Sample Matrix:	Water	**Date Received:**	07/17/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16WW16-200714	K2006047-001	**18.4**	2.5	1.0	0.4	5	08/08/20 12:03	
16WW35-200714	K2006047-002	**67.0**	2.5	1.0	0.4	5	08/08/20 12:03	
16WW36-200714	K2006047-003	**18.6**	0.50	0.20	0.07	1	08/08/20 12:03	
16WW55-200714	K2006047-004	**5.58**	0.50	0.20	0.07	1	08/08/20 12:03	
16IW10-200714	K2006047-005	ND U	5.0	2.0	0.7	10	08/08/20 12:03	
16RW09-200714	K2006047-006	**2.56**	0.50	0.20	0.07	1	08/08/20 12:03	
Method Blank	K2006047-MB	ND U	0.50	0.20	0.07	1	08/08/20 12:03	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006047
Project:	ALS Houston DOD TOC/HS20070625	**Date Analyzed:**	08/08/20
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	690270

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2006047-LCS	25.9	25.0	103	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2006047
Project: ALS Houston DOD TOC/HS20070625

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	690270	KQ2010960-03	08/08/20 12:03	25.0	25.5	102	90-110
CCV2	690270	KQ2010960-04	08/08/20 12:03	25.0	26.1	104	90-110
CCV3	690270	KQ2010960-05	08/08/20 12:03	25.0	25.0	100	90-110
CCV4	690270	KQ2010960-06	08/08/20 12:03	25.0	24.4	98	90-110
CCV5	690270	KQ2010960-07	08/08/20 12:03	25.0	24.9	99	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2006047
Project: ALS Houston DOD TOC/HS20070625

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	690270	KQ2010960-08	08/08/20 12:03	0.50	0.20	0.07	ND	U
CCB2	690270	KQ2010960-09	08/08/20 12:03	0.50	0.20	0.07	ND	U
CCB3	690270	KQ2010960-10	08/08/20 12:03	0.50	0.20	0.07	ND	U
CCB4	690270	KQ2010960-11	08/08/20 12:03	0.50	0.20	0.07	ND	U
CCB5	690270	KQ2010960-12	08/08/20 12:03	0.50	0.20	0.07	ND	U

Raw Data

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Work Request # 6047 6158 6197 6297 6333 6206 6308

Tier: IV IV II II IV IV I

Date Analyzed: 8.8.20 6321 6497

Analyst: MK II II

Run # 690270/690271 690269

Analysis: TOC/DOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA MK
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

6206-1MS low Rec Matrix
6047-5 Has Matrix issues raised MRL
6497-4 needs DIL
5 needs rerun

Final Approved by: _____ Date: 8/10/20

DOREPORT

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690270 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006047-001	Carbon, Total Organic	N/A		Water	3.67 mg/L	10 mL	18.4 mg/L	5	0.4	2.5			8/8/20 12:03:00	N	IV
K2006047-002	Carbon, Total Organic	N/A		Water	13.40 mg/L	10 mL	67.0 mg/L	5	0.4	2.5			8/8/20 12:03:00	N	IV
K2006047-003	Carbon, Total Organic	N/A		Water	18.64 mg/L	10 mL	18.6 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006047-004	Carbon, Total Organic	N/A		Water	5.58 mg/L	10 mL	5.58 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006047-005	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	5.0 mg/L U	10	0.7	5.0			8/8/20 12:03:00	N	IV
K2006047-006	Carbon, Total Organic	N/A		Water	2.56 mg/L	10 mL	2.56 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006158-001	Carbon, Total Organic	N/A		Ground Water	13.70 mg/L	10 mL	13.7 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006158-003	Carbon, Total Organic	N/A		Ground Water	8.37 mg/L	10 mL	8.37 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006158-004	Carbon, Total Organic	N/A		Ground Water	8.30 mg/L	10 mL	8.30 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006158-005	Carbon, Total Organic	N/A		Ground Water	46.07 mg/L	10 mL	1840 mg/L	40	3	20			8/8/20 12:03:00	N	IV
K2006158-006	Carbon, Total Organic	N/A		Ground Water	20.80 mg/L	10 mL	416 mg/L	20	2	10			8/8/20 12:03:00	N	IV
K2006197-002	Carbon, Total Organic	N/A		Water	16.68 mg/L	10 mL	16.7 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-001	Carbon, Total Organic	N/A		Wastewater	2.11 mg/L	10 mL	2.11 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-002	Carbon, Total Organic	N/A		Wastewater	0.95 mg/L	10 mL	0.95 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-003	Carbon, Total Organic	N/A		Wastewater	0.11 mg/L	10 mL	0.11 mg/L J	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-004	Carbon, Total Organic	N/A		Wastewater	4.21 mg/L	10 mL	4.21 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006333-001	Carbon, Total Organic	N/A		Ground Water	4.16 mg/L	10 mL	4.16 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006333-002	Carbon, Total Organic	N/A		Ground Water	4.33 mg/L	10 mL	4.33 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-01	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-02	Carbon, Total Organic	LCS		Water	25.85 mg/L	10 mL	25.9 mg/L	1	0.07	0.50	103		8/8/20 12:03:00	N	IV
KQ2010960-03	Carbon, Total Organic	CCV		Water	25.52 mg/L	10 mL	25.5 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-04	Carbon, Total Organic	CCV		Water	26.08 mg/L	10 mL	26.1 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-05	Carbon, Total Organic	CCV		Water	25.01 mg/L	10 mL	25.0 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-06	Carbon, Total Organic	CCV		Water	24.38 mg/L	10 mL	24.4 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-07	Carbon, Total Organic	CCV		Water	24.86 mg/L	10 mL	24.9 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-11	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-12	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690270 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2010960-13	Carbon, Total Organic	DUP	K2006158-001	Ground Water	13.63 mg/L	10 mL	13.6 mg/L	1	0.07	0.50		<1	8/8/20 12:03:00	N	IV
KQ2010960-14	Carbon, Total Organic	MS	K2006158-001	Ground Water	41.06 mg/L	10 mL	41.1 mg/L	1	0.07	0.50	109		8/8/20 12:03:00	N	IV
KQ2010960-15	Carbon, Total Organic	DUP	K2006297-004	Wastewater	4.18 mg/L	10 mL	4.18 mg/L	1	0.07	0.50		<1	8/8/20 12:03:00	N	II
KQ2010960-16	Carbon, Total Organic	MS	K2006297-004	Wastewater	32.03 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	111		8/8/20 12:03:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690271 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006206-001	Carbon, Total Organic	N/A		Water	1.10 mg/L	10 mL	1.10 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006206-002	Carbon, Total Organic	N/A		Water	1.16 mg/L	10 mL	1.16 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006308-001	Carbon, Total Organic	N/A		Drinking Water	0.76 mg/L	10 mL	0.76 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	I
K2006321-001	Carbon, Total Organic	N/A		Water	0.75 mg/L	10 mL	0.75 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006321-002	Carbon, Total Organic	N/A		Water	4.37 mg/L	10 mL	8.7 mg/L	2	0.2	1.0			8/8/20 12:03:00	N	II
K2006321-003	Carbon, Total Organic	N/A		Water	4.10 mg/L	10 mL	4.10 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006321-004	Carbon, Total Organic	N/A		Water	8.76 mg/L	10 mL	8.76 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006321-005	Carbon, Total Organic	N/A		Water	2.70 mg/L	10 mL	2.70 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006321-006	Carbon, Total Organic	N/A		Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006497-002	Carbon, Total Organic	N/A		Ground Water	4.55 mg/L	10 mL	4.55 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006497-003	Carbon, Total Organic	N/A		Ground Water	4.57 mg/L	10 mL	4.57 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006497-004.R01	Carbon, Total Organic	N/A		Ground Water	112.94 mg/L	10 mL	113 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006497-005.R01	Carbon, Total Organic	N/A		Ground Water	6.54 mg/L	10 mL	6.54 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-01	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-05	Carbon, Total Organic	LCS		Water	24.91 mg/L	10 mL	24.9 mg/L	1	0.07	0.50	100		8/8/20 12:03:00	N	IV
KQ2010974-06	Carbon, Total Organic	DLCS		Water	25.04 mg/L	10 mL	25.0 mg/L	1	0.07	0.50	100	<1	8/8/20 12:03:00	N	IV
KQ2010974-07	Carbon, Total Organic	CCV		Water	25.01 mg/L	10 mL	25.0 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010974-08	Carbon, Total Organic	CCV		Water	24.38 mg/L	10 mL	24.4 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010974-09	Carbon, Total Organic	CCV		Water	24.86 mg/L	10 mL	24.9 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010974-10	Carbon, Total Organic	CCV		Water	26.16 mg/L	10 mL	26.2 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010974-12	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-13	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-14	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-15	Carbon, Total Organic	DUP	K2006206-001	Water	1.13 mg/L	10 mL	1.13 mg/L	1	0.07	0.50		2	8/8/20 12:03:00	N	IV
KQ2010974-16	Carbon, Total Organic	MS	K2006206-001	Water	14.69 mg/L	10 mL	14.7 mg/L	1	0.07	0.50	54*		8/8/20 12:03:00	N	IV
KQ2010974-17	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV

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Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690269 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006297-001	Carbon, Dissolved Organic (DOC)	N/A		Wastewater	2.11 mg/L	10 mL	2.11 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-002	Carbon, Dissolved Organic (DOC)	N/A		Wastewater	0.95 mg/L	10 mL	0.95 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-003	Carbon, Dissolved Organic (DOC)	N/A		Wastewater	0.11 mg/L	10 mL	0.11 mg/L J	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-004	Carbon, Dissolved Organic (DOC)	N/A		Wastewater	4.21 mg/L	10 mL	4.21 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-01	Carbon, Dissolved Organic (DOC)	DUP	K2006297-004	Wastewater	4.18 mg/L	10 mL	4.18 mg/L	1	0.07	0.50		<1	8/8/20 12:03:00	N	II
KQ2010959-02	Carbon, Dissolved Organic (DOC)	MS	K2006297-004	Wastewater	32.03 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	111		8/8/20 12:03:00	N	II
KQ2010959-03	Carbon, Dissolved Organic (DOC)	CCV		Wastewater	25.01 mg/L	10 mL	25.0 mg/L	1					8/8/20 12:03:00	N	II
KQ2010959-04	Carbon, Dissolved Organic (DOC)	CCV		Wastewater	24.38 mg/L	10 mL	24.4 mg/L	1					8/8/20 12:03:00	N	II
KQ2010959-05	Carbon, Dissolved Organic (DOC)	CCV		Wastewater	24.86 mg/L	10 mL	24.9 mg/L	1					8/8/20 12:03:00	N	II
KQ2010959-06	Carbon, Dissolved Organic (DOC)	CCB		Wastewater	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-07	Carbon, Dissolved Organic (DOC)	CCB		Wastewater	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-08	Carbon, Dissolved Organic (DOC)	CCB		Wastewater	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-09	Carbon, Dissolved Organic (DOC)	MB		Wastewater	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-10	Carbon, Dissolved Organic (DOC)	LCS		Wastewater	25.23 mg/L	10 mL	25.2 mg/L	1	0.07	0.50	101		8/8/20 12:03:00	N	II
KQ2010959-11	Carbon, Dissolved Organic (DOC)	DLCS		Wastewater	25.11 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100	<1	8/8/20 12:03:00	N	II

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TOC: 690270
TOC: 690271
TOC: ~~690290~~ MK 8-10-20
DOC 690269

Schedule: 080820

Version: 13
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/08/09 13:02 - Sunday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2006047-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2006047-002 5X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2006047-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2006047-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2006047-005 10X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2006047-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2006158-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2006158-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2006158-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2006158-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2006158-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2006158-005 40X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2006158-006 20X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2006333-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2006333-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
22	Sample	K2006297-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2006297-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2006297-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2006297-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2006297-004D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2006297-004MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2006197-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2006297-001*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K2006297-002*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K2006297-003*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K2006297-004*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2006297-004D*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K2006297-004S*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K2006308-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K2006321-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K2006321-002 2X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K2006321-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready

Schedule: 080820

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
41	Sample	K2006321-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K2006321-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K2006321-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K2006206-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K2006206-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K2006206-1MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K2006206-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	~~K2006280-001~~	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
49	Sample	K2006280-001D	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
50	Sample	K2006280-001S NR	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
51	Sample	K2006280-002	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
52	Sample	~~K2006280-003~~	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
53	Sample	K2006497-001	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
54	Sample	K2006497-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K2006497-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K2006497-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K2006497-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K2006497-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K2006330-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K2006330-001D NR	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
63	Sample	K2006330-001MS	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
64	Sample	K2006330-002	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
65	Sample	K2006330-003	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
68	Sample	K2006257-001	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
B	Check Standard	[TOC] CCV 25ppm_salt [25ppm salt]	CAS_salt (CAS_salt_0811a)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 080820
Saturday, August 08, 2020 12:03 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/08/10 07:53 - Monday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	080820	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v9) Fusion1 (Fusion1) (v13)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/08/08 12:03

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.44	27.20	13.76	49.74	07:57
2	TC Clean	9.84	22.99	13.15	49.66	07:18
3	TC Clean	1.63	14.75	13.12	49.68	07:03
4	TC Clean	0.84	13.84	12.99	49.66	07:00

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/08/08 12:37

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.08	12.88	12.96	49.75	08:00
2	TC Clean	4.72	17.45	12.72	49.65	07:16
3	TC Clean	1.01	14.02	13.01	49.67	07:02

4	TC Clean	0.80	13.73	12.93	49.67	07:00

Sample Type: Clean From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/08/08 13:11

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.26	12.71	12.97	49.75	07:58
2	TC Clean	4.82	17.53	12.71	49.59	07:16
3	TC Clean	1.11	14.03	12.92	49.64	07:00
4	TC Clean	1.03	13.85	12.82	49.65	07:01

Sample Type: Blank (Creating v1430) From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/08/08 13:45

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.39	12.48	12.87	49.76	07:59
2	TC Clean	5.34	17.95	12.61	49.61	07:19
3	TC Clean	1.82	14.75	12.92	49.59	07:02
4	TC Clean	1.25	14.03	12.79	49.61	07:01
5	Reagent Blank	5.96	18.76	12.79	49.60	08:10
6	Acid Blank	0.56	13.15	12.59	49.74	08:01

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.2354 ppm	0.0000 ppm	0.0000%	2020/08/08 14:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2354	2.3545	10.95	23.83	12.88	49.78	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.5238 ppm (PASS)	0.0000 ppm	0%	2020/08/08 14:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.5238	255.2379	188.94	201.71	12.77	49.74	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/08 15:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.98	21.82	12.84	49.72	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/08 15:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.70	21.47	12.77	49.71	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	12.4067 ppm (PASS)	0.0000 ppm	0%	2020/08/08 15:35

NR

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25 ppm	1	12.4067	124.0671	96.92	109.68	12.76	49.68	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.6496 ppm	0.0000 ppm	0.0000%	2020/08/08 15:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6496	6.4957	13.86	26.57	12.71	49.62	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.8527 ppm (PASS)	0.0000 ppm	0%	2020/08/08 16:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.8527	258.5266	191.24	203.85	12.61	49.64	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	K2006047-001	3.6735 ppm	0.1980 ppm	5.3900%	2020/08/08 16:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8134	38.1344	36.05	48.77	12.72	49.62	10:29
2	TOC	3.5335	35.3346	34.09	46.79	12.70	49.62	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	K2006047-002 5X	13.4025 ppm	0.0162 ppm	0.1200%	2020/08/08 16:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.3910	133.9101	103.24	116.08	12.85	49.73	10:26
2	TOC	13.4140	134.1396	103.40	116.38	12.98	49.64	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	K2006047-003	18.6383 ppm	0.2445 ppm	1.3100%	2020/08/08 17:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.8112	188.1124	141.26	154.11	12.85	49.79	10:29
2	TOC	18.4654	184.6541	138.83	151.84	13.01	49.68	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K2006047-004	5.5848 ppm	0.1138 ppm	2.0400%	2020/08/08 17:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.6652	56.6523	49.04	61.94	12.90	49.74	10:29
2	TOC	5.5043	55.0429	47.91	60.86	12.95	49.70	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K2006047-005 10X	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/08 18:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	-771.14	-758.07	13.07	49.70	10:26
2	TOC	0.0000	0.0000	-527.65	-514.52	13.13	49.68	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K2006047-006	2.5618 ppm	0.6570 ppm	25.6500%	2020/08/08 18:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0264	30.2639	30.53	43.62	13.09	49.71	10:29

2	TOC	2.0972	20.9722	24.01	37.09	13.08	49.81	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K2006158-001	13.7039 ppm	0.0665 ppm	0.4900%	2020/08/08 19:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.7510	137.5096	105.76	118.84	13.08	49.66	10:28
2	TOC	13.6569	136.5688	105.10	117.97	12.87	49.66	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.0793 ppm (PASS)	0.0000 ppm	0%	2020/08/08 19:36

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.0793	260.7933	192.83	205.61	12.78	49.77	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0449 ppm (PASS)	0.0000 ppm	0%	2020/08/08 19:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0449	0.4490	10.21	23.03	12.82	49.62	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 9

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	10	TOC	K2006158-001D	13.6259 ppm	0.3394 ppm	2.4900%	2020/08/08 20:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.8659	138.6586	106.57	119.68	13.12	49.58	10:28
2	TOC	13.3859	133.8588	103.20	116.19	12.99	49.54	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K2006158-001MS	41.0625 ppm	0.3763 ppm	0.9200%	2020/08/08 20:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	41.3286	413.2855	299.21	312.31	13.10	49.51	10:27
2	TOC	40.7964	407.9639	295.48	308.63	13.15	49.48	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K2006158-003	8.3734 ppm	0.2055 ppm	2.4500%	2020/08/08 21:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.5188	85.1876	69.06	82.12	13.06	49.49	10:29
2	TOC	8.2281	82.2809	67.02	79.91	12.89	49.49	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2006158-004	8.2953 ppm	0.0755 ppm	0.9100%	2020/08/08 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.3487	83.4869	67.86	80.81	12.95	49.50	10:25
2	TOC	8.2419	82.4192	67.12	80.14	13.02	49.50	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2006158-005 40X	46.0666 ppm	0.3094 ppm	0.6700%	2020/08/08 21:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	45.8478	458.4784	330.92	343.86	12.94	49.51	10:30
2	TOC	46.2853	462.8534	333.98	347.14	13.16	49.54	10:25

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K2006158-006 20X	20.8042 ppm	0.6440 ppm	3.1000%	2020/08/08 22:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.2596	212.5963	158.43	171.47	13.03	49.55	10:28
2	TOC	20.3488	203.4885	152.04	165.18	13.14	49.54	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	RB	0.8427 ppm	0.1281 ppm	15.2000%	2020/08/08 22:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7521	7.5207	14.58	27.53	12.95	49.53	10:26
2	TOC	0.9333	9.3325	15.85	28.76	12.91	49.58	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K2006333-001	4.1567 ppm	0.1343 ppm	3.2300%	2020/08/08 23:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2517	42.5165	39.12	52.03	12.91	49.59	10:27
2	TOC	4.0618	40.6177	37.79	51.00	13.21	49.61	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K2006333-002	4.3346 ppm	0.1227 ppm	2.8300%	2020/08/08 23:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.4213	44.2130	40.32	53.25	12.94	49.64	10:29
2	TOC	4.2478	42.4781	39.10	52.25	13.15	49.60	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	RB	0.1913 ppm	0.0489 ppm	25.5500%	2020/08/09 00:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1568	1.5676	10.40	23.59	13.19	49.64	10:29
2	TOC	0.2259	2.2590	10.88	23.96	13.08	49.63	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.0089 ppm (PASS)	0.0000 ppm	0%	2020/08/09 00:46

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0089	250.0888	185.32	198.36	13.04	49.58	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/09 01:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.80	22.72	12.92	49.54	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/09 01:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.16	22.32	13.17	49.50	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC)	CAS_salt_010711	CAS_salt_010711

(v1430)	(v4)	(v38)

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.2283 ppm (PASS)	0.0000 ppm	0%	2020/08/09 01:30

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.2283	252.2827	186.86	199.88	13.01	49.48	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.1138 ppm (PASS)	0.0000 ppm	0%	2020/08/09 01:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1138	251.1380	186.06	199.23	13.17	49.48	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K2006297-001	2.1105 ppm	0.0374 ppm	1.7700%	2020/08/09 01:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1370	21.3699	24.29	37.63	13.34	49.47	10:28
2	TOC	2.0841	20.8410	23.92	37.17	13.25	49.48	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K2006297-002	0.9452 ppm	0.0011 ppm	0.1200%	2020/08/09 02:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9459	9.4594	15.94	29.10	13.17	49.52	10:26
2	TOC	0.9444	9.4437	15.92	28.99	13.07	49.54	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K2006297-003	0.1083 ppm	0.0214 ppm	19.7300%	2020/08/09 02:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1234	1.2340	10.17	23.36	13.19	49.56	10:26
2	TOC	0.0932	0.9318	9.95	23.02	13.07	49.58	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K2006297-004	4.2067 ppm	0.0302 ppm	0.7200%	2020/08/09 03:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2281	42.2813	38.96	52.02	13.06	49.65	10:26
2	TOC	4.1854	41.8537	38.66	51.79	13.13	49.71	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K2006297-004D	4.1821 ppm	0.0028 ppm	0.0700%	2020/08/09 03:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1801	41.8009	38.62	51.85	13.22	49.69	10:27
2	TOC	4.1841	41.8408	38.65	51.88	13.23	49.81	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K2006297-004MS	32.0297 ppm	0.4198 ppm	1.3100%	2020/08/09 04:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.7329	317.3288	231.90	245.22	13.32	49.79	10:26
2	TOC	32.3266	323.2662	236.07	249.38	13.31	49.79	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC)	CAS_salt_010711	CAS_salt_010711

(v1430) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K2006197-001 2 MC 8/10/20	16.6761 ppm	0.0755 ppm	0.4500%	2020/08/09 04:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.6227	166.2274	125.91	139.14	13.23	49.84	10:30
2	TOC	16.7295	167.2951	126.66	140.11	13.46	49.87	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.3841 ppm (PASS)	0.0000 ppm	0%	2020/08/09 05:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3841	243.8406	180.94	194.23	13.29	49.90	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/09 05:30

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.46	21.79	13.33	49.93	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2006297-001*	1.8964 ppm	0.0291 ppm	1.5400%	2020/08/09 05:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9170	19.1703	22.75	36.13	13.38	49.93	10:27
2	TOC	1.8758	18.7583	22.46	35.91	13.46	49.97	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K2006297-002*	1.4987 ppm	0.0616 ppm	4.1100%	2020/08/09 06:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4551	14.5515	19.51	32.81	13.30	49.99	10:27
2	TOC	1.5423	15.4225	20.12	33.48	13.36	49.97	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K2006297-003*	0.1828 ppm	0.1654 ppm	90.5000%	2020/08/09 06:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0658	0.6581	9.76	23.16	13.40	49.97	10:28
2	TOC	0.2997	2.9974	11.40	24.83	13.43	49.96	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2006297-004*	4.0275 ppm	0.0781 ppm	1.9400%	2020/08/09 07:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9722	39.7225	37.16	50.64	13.48	49.95	10:27
2	TOC	4.0827	40.8273	37.94	51.35	13.41	49.96	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2006297-004D*	4.0559 ppm	0.0077 ppm	0.1900%	2020/08/09 07:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0505	40.5051	37.71	51.12	13.41	49.92	10:25
2	TOC	4.0613	40.6134	37.79	51.33	13.54	49.89	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC)	CAS_salt_010711	CAS_salt_010711

(v1430) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K2006297-004S*	30.5388 ppm	0.0734 ppm	0.2400%	2020/08/09 08:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	30.4869	304.8694	223.16	236.50	13.34	49.92	10:24
2	TOC	30.5907	305.9072	223.89	237.09	13.20	49.89	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K2006308-001	0.7625 ppm	0.0787 ppm	10.3200%	2020/08/09 08:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8182	8.1821	15.04	28.47	13.43	49.90	10:28
2	TOC	0.7069	7.0688	14.26	27.66	13.40	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K2006321-001	0.7486 ppm	0.0339 ppm	4.5200%	2020/08/09 09:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7726	7.7259	14.72	28.07	13.35	49.97	10:29
2	TOC	0.7247	7.2470	14.38	27.66	13.28	49.99	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K2006321-002 2X	4.3676 ppm	0.0081 ppm	0.1800%	2020/08/09 09:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.3618	43.6185	39.90	53.10	13.20	50.01	10:31
2	TOC	4.3733	43.7325	39.98	53.00	13.02	50.01	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K2006321-003	4.0969 ppm	0.1642 ppm	4.0100%	2020/08/09 09:57

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	4.2130	42.1302	38.85	52.04	13.19	50.01	10:28
2	TOC	3.9808	39.8080	37.22	50.43	13.21	50.02	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8551 ppm (PASS)	0.0000 ppm	0%	2020/08/09 10:25

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8551	248.5506	184.25	197.11	12.86	50.01	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/09 10:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.76	21.69	12.93	50.00	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/09 10:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.94	21.07	13.13	49.99	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.9081 ppm (PASS)	0.0000 ppm	0%	2020/08/09 11:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.9081	249.0809	184.62	197.61	12.99	49.99	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.0424 ppm (PASS)	0.0000 ppm	0%	2020/08/09 11:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0424	250.4238	185.56	198.49	12.93	49.94	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	41	TOC	K2006321-004	8.7645 ppm	0.1527 ppm	1.7400%	2020/08/09 11:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.8724	88.7244	71.54	84.63	13.09	49.92	10:26
2	TOC	8.6565	86.5647	70.02	82.90	12.88	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	42	TOC	K2006321-005	2.7017 ppm	0.0034 ppm	0.1300%	2020/08/09 12:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7041	27.0408	28.27	41.07	12.80	49.90	10:25

2	TOC	2.6992	26.9923	28.24	41.15	12.92	49.88	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	43	TOC	K2006321-006	0.5873 ppm	0.0357 ppm	6.0800%	2020/08/09 12:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5620	5.6204	13.24	26.35	13.10	49.89	10:26
2	TOC	0.6125	6.1251	13.60	26.50	12.90	49.86	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	44	TOC	K2006206-001	1.0991 ppm	0.0640 ppm	5.8200%	2020/08/09 13:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1444	11.4438	17.33	30.11	12.79	49.83	10:28
2	TOC	1.0539	10.5386	16.69	29.74	13.05	49.84	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	45	TOC	K2006206-001D	1.1268 ppm	0.0070 ppm	0.6200%	2020/08/09 13:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1219	11.2185	17.17	30.13	12.96	49.83	10:28
2	TOC	1.1317	11.3169	17.24	30.21	12.97	49.76	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	K2006206-1MS	14.6942 ppm	0.0219 ppm	0.1500%	2020/08/09 13:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.6787	146.7871	112.27	125.21	12.94	49.77	10:29
2	TOC	14.7096	147.0965	112.49	125.36	12.87	49.66	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC)	CAS_salt_010711	CAS_salt_010711

(v1430) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	K2006206-002	1.1638 ppm	0.0607 ppm	5.2100%	2020/08/09 14:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2067	12.0668	17.76	30.75	12.98	49.75	10:28
2	TOC	1.1209	11.2086	17.16	30.26	13.10	49.76	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9271 ppm (PASS)	0.0000 ppm	0%	2020/08/09 14:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9271	249.2705	184.75	197.76	13.01	49.70	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/09 15:10

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.49	21.43	12.93	49.80	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	54	TOC	K2006497-002	4.5500 ppm	0.1081 ppm	2.3700%	2020/08/09 15:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6264	46.2643	41.75	54.68	12.93	49.65	10:26
2	TOC	4.4736	44.7361	40.68	53.75	13.07	49.71	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	55	TOC	K2006497-003	4.5664 ppm	0.0456 ppm	1.0000%	2020/08/09 15:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.5986	45.9863	41.56	54.51	12.95	49.81	10:27
2	TOC	4.5342	45.3420	41.11	54.18	13.08	49.66	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	56	TOC	K2006497-004	112.9375 ppm	9.2415 ppm	8.1800%	2020/08/09 16:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	119.4722	1194.7218	847.38	860.33	12.96	49.73	10:25
2	TOC	106.4027	1064.0272	755.70	769.59	13.89	49.60	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	K2006497-005	6.5386 ppm	2.1962 ppm	33.5900%	2020/08/09 16:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.0915	80.9152	66.06	79.76	13.70	49.66	10:31
2	TOC	4.9857	49.8567	44.27	57.47	13.20	49.76	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.1637 ppm (PASS)	0.0000 ppm	0%	2020/08/09 17:17

Pos	Base Analysis	ID	Rep	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run

	Type		#							Time
B	TOC	25 ppm	1	26.1637	261.6372	193.43	206.42	13.00	49.63	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	25.7284 ppm (PASS)	0.0000 ppm	0%	2020/08/09 17:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	0 ppm	1	25.7284	257.2836	190.37	203.33	12.96	49.69	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB	0.5261 ppm	0.0000 ppm	0.0000%	2020/08/09 17:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5261	5.2612	12.99	25.90	12.91	49.67	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.2861 ppm (PASS)	0.0000 ppm	0%	2020/08/09 18:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.2861	252.8615	187.27	200.30	13.03	49.64	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K2006497-006	49.0737 ppm	0.2470 ppm	0.5000%	2020/08/09 18:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	49.2483	492.4835	354.77	367.74	12.97	49.75	10:27
2	TOC	48.8991	488.9909	352.32	365.28	12.96	49.61	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	K2006330-001	2.2567 ppm	0.1489 ppm	6.6000%	2020/08/09 18:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3619	23.6194	25.87	38.89	13.02	49.67	10:26
2	TOC	2.1514	21.5139	24.39	37.12	12.73	49.82	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25ppm_salt From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25ppm_salt [25ppm salt]	22.5000 / 27.5000 (90% / 110%)	23.5306 ppm (PASS)	0.0000 ppm	0%	2020/08/09 19:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25ppm salt	1	23.5306	235.3063	187.46	200.62	13.15	49.68	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt (v5)	CAS_salt_0811a (v2)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.1418 ppm (PASS)	0.0000 ppm	0%	2020/08/09 19:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.1418	1.4183	10.89	23.95	13.06	49.75	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1429	1.3370	0.3660	0.0000	0.0000	0.0000	2020/08/05 18:45	Fusion1 (Fusion1)
v1430	1.9877	0.5570	0.0000	0.0000	0.0000	2020/08/08 14:36	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v38
Ver Creation: 2020/06/13 16:40
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 7.015x + 9.892
r^2 value: TOC: r^2 = 0.99974

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	9.5750	0.0000		2020/06/13 15:13
0.500 ppm	12.9010	0.5000		2020/06/13 15:28
1.0 ppm	15.6320	1.0000		2020/06/13 15:42
5.0 ppm	43.2510	5.0000		2020/06/13 15:56
10 ppm	82.4040	10.0000		2020/06/13 16:11
25 ppm	188.6880	25.0000		2020/06/13 16:25
50 ppm	358.6500	50.0000		2020/06/13 16:39

Name: CAS_salt_0811a (TOC)

Version: v2
Ver Creation: 2010/08/11 19:18
Comment:
Operator: Gen Chem Lab (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 7.576x + 9.202
r^2 value: TOC: r^2 = 0.99983

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0	10.4200	0.0000		2010/08/11 17:57
0.500 ppm	15.3130	0.5000		2010/08/11 18:11
1.000 ppm	17.5920	1.0000		2010/08/11 18:24
5.000 ppm	44.4730	5.0000		2010/08/11 18:37
10.000 ppm	83.3970	10.0000		2010/08/11 18:51
25.000 ppm	197.1510	25.0000		2010/08/11 19:04
50.000 ppm	389.2430	50.0000		2010/08/11 19:17

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Name: CAS_salt (TOC)

Version: v5 Operator: Gen Chem Lab (Fusion1)
Ver Creation: 2013/02/04 11:50
Comment: This method is designed to use the Non-Purgeable Organic Carbon (NPOC) method for TOC analysis on

waste water type samples.

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	7
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	7
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/08/09 19:42

ALS Environmental

StarLIMS Run: 690270/690271/690269

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 19-GEN-8-15-C 50 ppm LCS: 19-GEN-8-311 25.0 ppm

ICAL Date: 6/16/2020

ICAL ID: 19-GEN-8-22-G

ICS ID: 19-GEN-8-4-G

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 19-GEN-8-15-B 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-32J

21 % H3PO4: 19-GEN-08-32I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: MV	Date Analyzed: 8-8-20
Reviewed By: JL	Date Reviewed: 8/10/20

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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August 07, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20070674**

Laboratory Results for: **Longhorn Army Ammunition Plant 16 July 2020**

Dear Susan Huang,

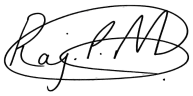
ALS Environmental received 8 sample(s) on Jul 16, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070674

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20070674-01	16WW56-200715	Groundwater		15-Jul-2020 07:20	16-Jul-2020 09:10	☐
HS20070674-02	16WW22-200715	Groundwater		15-Jul-2020 08:15	16-Jul-2020 09:10	☐
HS20070674-03	16WW41-200715	Groundwater		15-Jul-2020 09:05	16-Jul-2020 09:10	☐
HS20070674-04	16WW21-200715	Groundwater		15-Jul-2020 09:55	16-Jul-2020 09:10	☐
HS20070674-05	16WW39-200715	Groundwater		15-Jul-2020 10:50	16-Jul-2020 09:10	☐
HS20070674-06	16WW30-200715	Groundwater		15-Jul-2020 11:40	16-Jul-2020 09:10	☐
HS20070674-07	16WW29-200715	Groundwater		15-Jul-2020 12:25	16-Jul-2020 09:10	☐
HS20070674-08	16WW48-200715	Groundwater		15-Jul-2020 13:15	16-Jul-2020 09:10	☐

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070674

Work Order Comments

• Analysis of Perchlorate was performed by ALS Houston TX, High Resolution. Laboratory. Final report attached.

The analysis for TOC was subcontracted to ALS Environmental in Kelso WA. Final report attached.

GC Semivolatiles by Method RSK-175

Batch ID: R365278

Sample ID: HS20070616-13DUP

• Duplicate was performed on unrelated sample

GCMS Volatiles by Method SW8260

Batch ID: R365280

Sample ID: 16WW41-200715 (HS20070674-03)

• Surrogate 4_Bromofluorobenzene exceeded QC recovery limits due to matrix. Confirmed by re-analysis @ higher dilution.

Sample ID: 16WW56-200715 (HS20070674-01MS)

• MS/MSD failed QC limit for 1,1-Dichloroethene

WetChemistry by Method SW9056

Batch ID: R365322

Sample ID: 16WW29-200715 (HS20070674-07)

• Sample ran at 10X due to high concentration of Sulfate

Sample ID: 16WW41-200715 (HS20070674-03)

• Sample ran at 10X due to high concentration of Sulfate

Sample ID: 16WW48-200715 (HS20070674-08)

• Sample ran at 10X due to high concentration of Sulfate

• Sample ran at 2X due to high concentration of Sulfate

Batch ID: R365440

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R365202

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070674
Sample ID: 16WW56-200715 Lab ID:HS20070674-01
Collection Date: 15-Jul-2020 07:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	17-Jul-2020 13:57
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 13:57
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 13:57
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 13:57
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	17-Jul-2020 13:57
Trichloroethene	**9.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	17-Jul-2020 13:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 13:57
Surr: 1,2-Dichloroethane-d4	*92.8*			**0**	*81-118*	*%REC*	*1*	*17-Jul-2020 13:57*
Surr: 4-Bromofluorobenzene	*108*			**0**	*85-114*	*%REC*	*1*	*17-Jul-2020 13:57*
Surr: Dibromofluoromethane	*95.6*			**0**	*80-119*	*%REC*	*1*	*17-Jul-2020 13:57*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*17-Jul-2020 13:57*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	0.000250	U	0.000144	0.000250	0.00100	mg/L	1	17-Jul-2020 12:35
Ethene	**0.000930**	J	**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	17-Jul-2020 12:35
Methane	**0.00139**		**0.000107**	**0.00100**	**0.000500**	**mg/L**	1	17-Jul-2020 12:35
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**178**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	16-Jul-2020 23:36
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**5.20**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	16-Jul-2020 21:22
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	16-Jul-2020 21:22
Sulfate	**140**		**2.00**	**5.00**	**5.00**	**mg/L**	10	21-Jul-2020 12:38
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070674
Sample ID: 16WW22-200715 Lab ID:HS20070674-02
Collection Date: 15-Jul-2020 08:15 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	17-Jul-2020 14:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 14:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 14:21
cis-1,2-Dichloroethene	**2.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	17-Jul-2020 14:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	17-Jul-2020 14:21
Trichloroethene	**24**		**0.20**	**0.50**	**1.0**	**UG/L**	1	17-Jul-2020 14:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 14:21
Surr: 1,2-Dichloroethane-d4	*95.9*			**0**	*81-118*	*%REC*	*1*	*17-Jul-2020 14:21*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*17-Jul-2020 14:21*
Surr: Dibromofluoromethane	*98.2*			**0**	*80-119*	*%REC*	*1*	*17-Jul-2020 14:21*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*17-Jul-2020 14:21*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	0.000250	U	0.000144	0.000250	0.00100	mg/L	1	17-Jul-2020 12:43
Ethene	**0.00116**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	17-Jul-2020 12:43
Methane	**0.00204**		**0.000107**	**0.00100**	**0.000500**	**mg/L**	1	17-Jul-2020 12:43
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**204**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	16-Jul-2020 23:42
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**5.77**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	16-Jul-2020 22:16
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	16-Jul-2020 22:16
Sulfate	**283**		**2.00**	**5.00**	**5.00**	**mg/L**	10	21-Jul-2020 12:56
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070674
Sample ID: 16WW41-200715 Lab ID:HS20070674-03
Collection Date: 15-Jul-2020 09:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	20	U	6.0	20	20	UG/L	20	17-Jul-2020 17:32
1,1-Dichloroethene	**24**		**4.0**	**10**	**20**	**UG/L**	20	17-Jul-2020 17:32
1,2-Dichloroethane	10	U	4.0	10	20	UG/L	20	17-Jul-2020 17:32
cis-1,2-Dichloroethene	**2,000**		**4.0**	**10**	**20**	**UG/L**	20	17-Jul-2020 17:32
Methylene chloride	20	U	8.0	20	40	UG/L	20	17-Jul-2020 17:32
Trichloroethene	**6,200**		**50**	**120**	**250**	**UG/L**	250	17-Jul-2020 17:56
Vinyl chloride	**160**		**4.0**	**10**	**20**	**UG/L**	20	17-Jul-2020 17:32
Surr: 1,2-Dichloroethane-d4	*96.7*			**0**	*81-118*	*%REC*	*20*	*17-Jul-2020 17:32*
Surr: 1,2-Dichloroethane-d4	*98.4*			**0**	*81-118*	*%REC*	*250*	*17-Jul-2020 17:56*
Surr: 4-Bromofluorobenzene	*115*	*S*		**0**	*85-114*	*%REC*	*20*	*17-Jul-2020 17:32*
Surr: 4-Bromofluorobenzene	*109*			**0**	*85-114*	*%REC*	*250*	*17-Jul-2020 17:56*
Surr: Dibromofluoromethane	*99.3*			**0**	*80-119*	*%REC*	*250*	*17-Jul-2020 17:56*
Surr: Dibromofluoromethane	*96.6*			**0**	*80-119*	*%REC*	*20*	*17-Jul-2020 17:32*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*20*	*17-Jul-2020 17:32*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*250*	*17-Jul-2020 17:56*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	0.000250	U	0.000144	0.000250	0.00100	mg/L	1	17-Jul-2020 12:51
Ethene	**0.0102**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	17-Jul-2020 12:51
Methane	**0.0166**		**0.000107**	**0.00100**	**0.000500**	**mg/L**	1	17-Jul-2020 12:51
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**1,040**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	16-Jul-2020 23:51
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**5.90**		**0.300**	**1.00**	**1.00**	**mg/L**	10	16-Jul-2020 16:13
Nitrogen, Nitrate (As N)	1.00	U	0.300	1.00	1.00	mg/L	10	16-Jul-2020 16:13
Sulfate	**8,830**		**40.0**	**100**	**100**	**mg/L**	200	21-Jul-2020 13:14
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Sample ID: 16WW21-200715
Collection Date: 15-Jul-2020 09:55

ANALYTICAL REPORT
WorkOrder:HS20070674
Lab ID:HS20070674-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	17-Jul-2020 14:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 14:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 14:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 14:45
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	17-Jul-2020 14:45
Trichloroethene	**0.55**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	17-Jul-2020 14:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 14:45
Surr: 1,2-Dichloroethane-d4	*96.4*			**0**	*81-118*	*%REC*	*1*	*17-Jul-2020 14:45*
Surr: 4-Bromofluorobenzene	*108*			**0**	*85-114*	*%REC*	*1*	*17-Jul-2020 14:45*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*17-Jul-2020 14:45*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*17-Jul-2020 14:45*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**1.30**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	21-Jul-2020 18:22
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070674
Sample ID: 16WW39-200715 Lab ID:HS20070674-05
Collection Date: 15-Jul-2020 10:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	17-Jul-2020 15:56
1,1-Dichloroethene	**2.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	17-Jul-2020 15:56
1,2-Dichloroethane	**1.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	17-Jul-2020 15:56
cis-1,2-Dichloroethene	**74**		**0.20**	**0.50**	**1.0**	**UG/L**	1	17-Jul-2020 15:56
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	17-Jul-2020 15:56
Trichloroethene	**560**		**2.0**	**5.0**	**10**	**UG/L**	10	17-Jul-2020 19:08
Vinyl chloride	**3.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	17-Jul-2020 15:56
Surr: 1,2-Dichloroethane-d4	*96.3*			**0**	*81-118*	*%REC*	*1*	*17-Jul-2020 15:56*
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*81-118*	*%REC*	*10*	*17-Jul-2020 19:08*
Surr: 4-Bromofluorobenzene	*108*			**0**	*85-114*	*%REC*	*1*	*17-Jul-2020 15:56*
Surr: 4-Bromofluorobenzene	*108*			**0**	*85-114*	*%REC*	*10*	*17-Jul-2020 19:08*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*10*	*17-Jul-2020 19:08*
Surr: Dibromofluoromethane	*98.9*			**0**	*80-119*	*%REC*	*1*	*17-Jul-2020 15:56*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*10*	*17-Jul-2020 19:08*
Surr: Toluene-d8	*96.4*			**0**	*89-112*	*%REC*	*1*	*17-Jul-2020 15:56*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**7.98**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	21-Jul-2020 18:40
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070674
Sample ID: 16WW30-200715 Lab ID:HS20070674-06
Collection Date: 15-Jul-2020 11:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	17-Jul-2020 15:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 15:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 15:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 15:09
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	17-Jul-2020 15:09
Trichloroethene	**3.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	17-Jul-2020 15:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 15:09
Surr: 1,2-Dichloroethane-d4	*99.3*			**0**	*81-118*	*%REC*	*1*	*17-Jul-2020 15:09*
Surr: 4-Bromofluorobenzene	*97.6*			**0**	*85-114*	*%REC*	*1*	*17-Jul-2020 15:09*
Surr: Dibromofluoromethane	*99.5*			**0**	*80-119*	*%REC*	*1*	*17-Jul-2020 15:09*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*17-Jul-2020 15:09*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**3.79**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	21-Jul-2020 19:35
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070674
Sample ID: 16WW29-200715 Lab ID:HS20070674-07
Collection Date: 15-Jul-2020 12:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	17-Jul-2020 15:32
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 15:32
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 15:32
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 15:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	17-Jul-2020 15:32
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 15:32
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	17-Jul-2020 15:32
Surr: 1,2-Dichloroethane-d4	*94.2*			**0**	*81-118*	*%REC*	*1*	*17-Jul-2020 15:32*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*1*	*17-Jul-2020 15:32*
Surr: Dibromofluoromethane	*93.6*			**0**	*80-119*	*%REC*	*1*	*17-Jul-2020 15:32*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*17-Jul-2020 15:32*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000260**	J	**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	17-Jul-2020 12:59
Ethene	**0.00114**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	17-Jul-2020 12:59
Methane	**0.0313**		**0.000107**	**0.00100**	**0.000500**	**mg/L**	1	17-Jul-2020 12:59
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**24.4**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	16-Jul-2020 23:57
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**2.62**		**0.300**	**1.00**	**1.00**	**mg/L**	10	16-Jul-2020 16:32
Nitrogen, Nitrate (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	16-Jul-2020 23:28
Sulfate	**1,900**		**20.0**	**50.0**	**50.0**	**mg/L**	100	21-Jul-2020 14:08
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070674
Sample ID: 16WW48-200715 Lab ID:HS20070674-08
Collection Date: 15-Jul-2020 13:15 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	20	U	6.0	20	20	UG/L	20	17-Jul-2020 18:20
1,1-Dichloroethene	**27**		**4.0**	**10**	**20**	**UG/L**	20	17-Jul-2020 18:20
1,2-Dichloroethane	**34**		**4.0**	**10**	**20**	**UG/L**	20	17-Jul-2020 18:20
cis-1,2-Dichloroethene	**9,500**		**50**	**120**	**250**	**UG/L**	250	17-Jul-2020 18:44
Methylene chloride	20	U	8.0	20	40	UG/L	20	17-Jul-2020 18:20
Trichloroethene	**9,000**		**50**	**120**	**250**	**UG/L**	250	17-Jul-2020 18:44
Vinyl chloride	**22**		**4.0**	**10**	**20**	**UG/L**	20	17-Jul-2020 18:20
Surr: 1,2-Dichloroethane-d4	*97.9*			**0**	*81-118*	*%REC*	*20*	*17-Jul-2020 18:20*
Surr: 1,2-Dichloroethane-d4	*95.7*			**0**	*81-118*	*%REC*	*250*	*17-Jul-2020 18:44*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*20*	*17-Jul-2020 18:20*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*250*	*17-Jul-2020 18:44*
Surr: Dibromofluoromethane	*99.0*			**0**	*80-119*	*%REC*	*20*	*17-Jul-2020 18:20*
Surr: Dibromofluoromethane	*98.2*			**0**	*80-119*	*%REC*	*250*	*17-Jul-2020 18:44*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*20*	*17-Jul-2020 18:20*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*250*	*17-Jul-2020 18:44*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000249**	J	**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	17-Jul-2020 13:17
Ethene	**0.00160**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	17-Jul-2020 13:17
Methane	**0.00269**		**0.000107**	**0.00100**	**0.000500**	**mg/L**	1	17-Jul-2020 13:17
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**312**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	17-Jul-2020 00:19
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**9.40**		**0.300**	**1.00**	**1.00**	**mg/L**	10	16-Jul-2020 16:50
Nitrogen, Nitrate (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	16-Jul-2020 23:47
Sulfate	**2,330**		**20.0**	**50.0**	**50.0**	**mg/L**	100	21-Jul-2020 14:27
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	29-Jul-2020 12:01
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070674

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365202 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS20070674-01	16WW56-200715	15 Jul 2020 07:20			16 Jul 2020 23:36	1
HS20070674-02	16WW22-200715	15 Jul 2020 08:15			16 Jul 2020 23:42	1
HS20070674-03	16WW41-200715	15 Jul 2020 09:05			16 Jul 2020 23:51	1
HS20070674-07	16WW29-200715	15 Jul 2020 12:25			16 Jul 2020 23:57	1
HS20070674-08	16WW48-200715	15 Jul 2020 13:15			17 Jul 2020 00:19	1
Batch ID: R365278 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS20070674-01	16WW56-200715	15 Jul 2020 07:20			17 Jul 2020 12:35	1
HS20070674-02	16WW22-200715	15 Jul 2020 08:15			17 Jul 2020 12:43	1
HS20070674-03	16WW41-200715	15 Jul 2020 09:05			17 Jul 2020 12:51	1
HS20070674-07	16WW29-200715	15 Jul 2020 12:25			17 Jul 2020 12:59	1
HS20070674-08	16WW48-200715	15 Jul 2020 13:15			17 Jul 2020 13:17	1
Batch ID: R365280 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20070674-01	16WW56-200715	15 Jul 2020 07:20			17 Jul 2020 13:57	1
HS20070674-02	16WW22-200715	15 Jul 2020 08:15			17 Jul 2020 14:21	1
HS20070674-03	16WW41-200715	15 Jul 2020 09:05			17 Jul 2020 17:56	250
HS20070674-03	16WW41-200715	15 Jul 2020 09:05			17 Jul 2020 17:32	20
HS20070674-04	16WW21-200715	15 Jul 2020 09:55			17 Jul 2020 14:45	1
HS20070674-05	16WW39-200715	15 Jul 2020 10:50			17 Jul 2020 19:08	10
HS20070674-05	16WW39-200715	15 Jul 2020 10:50			17 Jul 2020 15:56	1
HS20070674-06	16WW30-200715	15 Jul 2020 11:40			17 Jul 2020 15:09	1
HS20070674-07	16WW29-200715	15 Jul 2020 12:25			17 Jul 2020 15:32	1
HS20070674-08	16WW48-200715	15 Jul 2020 13:15			17 Jul 2020 18:44	250
HS20070674-08	16WW48-200715	15 Jul 2020 13:15			17 Jul 2020 18:20	20
Batch ID: R365322 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070674-01	16WW56-200715	15 Jul 2020 07:20			16 Jul 2020 21:22	1
HS20070674-02	16WW22-200715	15 Jul 2020 08:15			16 Jul 2020 22:16	1
HS20070674-03	16WW41-200715	15 Jul 2020 09:05			16 Jul 2020 16:13	10
HS20070674-07	16WW29-200715	15 Jul 2020 12:25			16 Jul 2020 23:28	2
HS20070674-07	16WW29-200715	15 Jul 2020 12:25			16 Jul 2020 16:32	10
HS20070674-08	16WW48-200715	15 Jul 2020 13:15			16 Jul 2020 23:47	2
HS20070674-08	16WW48-200715	15 Jul 2020 13:15			16 Jul 2020 16:50	10

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070674

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365440 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070674-01	16WW56-200715	15 Jul 2020 07:20			21 Jul 2020 12:38	10
HS20070674-02	16WW22-200715	15 Jul 2020 08:15			21 Jul 2020 12:56	10
HS20070674-03	16WW41-200715	15 Jul 2020 09:05			21 Jul 2020 13:14	200
HS20070674-04	16WW21-200715	15 Jul 2020 09:55			21 Jul 2020 18:22	1
HS20070674-05	16WW39-200715	15 Jul 2020 10:50			21 Jul 2020 18:40	1
HS20070674-06	16WW30-200715	15 Jul 2020 11:40			21 Jul 2020 19:35	1
HS20070674-07	16WW29-200715	15 Jul 2020 12:25			21 Jul 2020 14:08	100
HS20070674-08	16WW48-200715	15 Jul 2020 13:15			21 Jul 2020 14:27	100
Batch ID: R365837 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20070674-01	16WW56-200715	15 Jul 2020 07:20			29 Jul 2020 12:01	1
HS20070674-02	16WW22-200715	15 Jul 2020 08:15			29 Jul 2020 12:01	1
HS20070674-03	16WW41-200715	15 Jul 2020 09:05			29 Jul 2020 12:01	1
HS20070674-04	16WW21-200715	15 Jul 2020 09:55			29 Jul 2020 12:01	1
HS20070674-05	16WW39-200715	15 Jul 2020 10:50			29 Jul 2020 12:01	1
HS20070674-06	16WW30-200715	15 Jul 2020 11:40			29 Jul 2020 12:01	1
HS20070674-07	16WW29-200715	15 Jul 2020 12:25			29 Jul 2020 12:01	1
HS20070674-08	16WW48-200715	15 Jul 2020 13:15			29 Jul 2020 12:01	1
Batch ID: R366343 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20070674-01	16WW56-200715	15 Jul 2020 07:20			07 Aug 2020 09:33	1
HS20070674-02	16WW22-200715	15 Jul 2020 08:15			07 Aug 2020 09:33	1
HS20070674-03	16WW41-200715	15 Jul 2020 09:05			07 Aug 2020 09:33	1
HS20070674-04	16WW21-200715	15 Jul 2020 09:55			07 Aug 2020 09:33	1
HS20070674-05	16WW39-200715	15 Jul 2020 10:50			07 Aug 2020 09:33	1
HS20070674-06	16WW30-200715	15 Jul 2020 11:40			07 Aug 2020 09:33	1
HS20070674-07	16WW29-200715	15 Jul 2020 12:25			07 Aug 2020 09:33	1
HS20070674-08	16WW48-200715	15 Jul 2020 13:15			07 Aug 2020 09:33	1

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070674

QC BATCH REPORT

Batch ID: R365278 (0) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-200717** Units: **mg/L** Analysis Date: **17-Jul-2020 10:00**
Client ID: Run ID: **FID-4_365278** SeqNo: **5666633** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000250	0.00100								U
Ethene	0.00100	0.00100								U
Methane	0.00100	0.000500								U

LCS Sample ID: **LCS-200717** Units: **mg/L** Analysis Date: **17-Jul-2020 09:44**
Client ID: Run ID: **FID-4_365278** SeqNo: **5666631** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0153	0.00100	0.01804	0	85.0	75 - 125				
Ethene	0.0150	0.00100	0.0168	0	89.6	75 - 125				
Methane	0.00829	0.000500	0.009647	0	85.9	75 - 125				

LCSD Sample ID: **LCSD-200717** Units: **mg/L** Analysis Date: **17-Jul-2020 09:51**
Client ID: Run ID: **FID-4_365278** SeqNo: **5666632** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0152	0.00100	0.01804	0	84.2	75 - 125	0.01533	0.902	30	
Ethene	0.0158	0.00100	0.0168	0	94.3	75 - 125	0.01505	5.11	30	
Methane	0.00864	0.000500	0.009647	0	89.6	75 - 125	0.008291	4.11	30	

DUP Sample ID: **HS20070616-13DUP** Units: **mg/L** Analysis Date: **17-Jul-2020 10:32**
Client ID: Run ID: **FID-4_365278** SeqNo: **5666637** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000392	0.00100					0.0002960	0	30	J
Ethene	0.00190	0.00100					0	200	30	R
Methane	0.0317	0.000500					0.03127	1.37	30	

The following samples were analyzed in this batch: HS20070674-01 HS20070674-02 HS20070674-03 HS20070674-07 HS20070674-08

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070674

QC BATCH REPORT

Batch ID: R365280 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200717** Units: **UG/L** Analysis Date: **17-Jul-2020 12:45**
Client ID: Run ID: **VOA6_365280** SeqNo: **5666190** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.63*	*1.0*	*50*	*0*	*87.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.92*	*1.0*	*50*	*0*	*114*	*85 - 114*				
Surr: Dibromofluoromethane	*44.05*	*1.0*	*50*	*0*	*88.1*	*80 - 119*				
Surr: Toluene-d8	*46.12*	*1.0*	*50*	*0*	*92.2*	*89 - 112*				

LCS Sample ID: **VLCSW-200717** Units: **UG/L** Analysis Date: **17-Jul-2020 11:57**
Client ID: Run ID: **VOA6_365280** SeqNo: **5666189** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.91	1.0	20	0	105	80 - 119				
1,1-Dichloroethene	20.87	1.0	20	0	104	71 - 131				
1,2-Dichloroethane	21.22	1.0	20	0	106	73 - 128				
cis-1,2-Dichloroethene	21.29	1.0	20	0	106	78 - 123				
Methylene chloride	22.16	2.0	20	0	111	74 - 124				
Trichloroethene	20.5	1.0	20	0	102	79 - 123				
Vinyl chloride	21.38	1.0	20	0	107	58 - 137				
Surr: 1,2-Dichloroethane-d4	*47.95*	*1.0*	*50*	*0*	*95.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.09*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*49.69*	*1.0*	*50*	*0*	*99.4*	*80 - 119*				
Surr: Toluene-d8	*49.06*	*1.0*	*50*	*0*	*98.1*	*89 - 112*				

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070674

QC BATCH REPORT

Batch ID: R365280 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20070674-01MS** Units: **UG/L** Analysis Date: **17-Jul-2020 16:20**
Client ID: **16WW56-200715** Run ID: **VOA6_365280** SeqNo: **5666199** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.48	1.0	20	0	97.4	80 - 119				
1,1-Dichloroethene	31.9	1.0	20	0	160	71 - 131				S
1,2-Dichloroethane	20.9	1.0	20	0	105	73 - 128				
cis-1,2-Dichloroethene	18.5	1.0	20	0	92.5	78 - 123				
Methylene chloride	17.69	2.0	20	0	88.5	74 - 124				
Trichloroethene	32.58	1.0	20	9.324	116	79 - 123				
Vinyl chloride	24.39	1.0	20	0	122	58 - 137				
Surr: 1,2-Dichloroethane-d4	*47.03*	*1.0*	*50*	*0*	*94.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*54.76*	*1.0*	*50*	*0*	*110*	*85 - 114*				
Surr: Dibromofluoromethane	*48.3*	*1.0*	*50*	*0*	*96.6*	*80 - 119*				
Surr: Toluene-d8	*52.63*	*1.0*	*50*	*0*	*105*	*89 - 112*				

MSD Sample ID: **HS20070674-01MSD** Units: **UG/L** Analysis Date: **17-Jul-2020 16:44**
Client ID: **16WW56-200715** Run ID: **VOA6_365280** SeqNo: **5666200** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.11	1.0	20	0	101	80 - 119	19.48	3.21	20	
1,1-Dichloroethene	31.9	1.0	20	0	159	71 - 131	31.9	0.015	20	S
1,2-Dichloroethane	21.12	1.0	20	0	106	73 - 128	20.9	1.03	20	
cis-1,2-Dichloroethene	19.16	1.0	20	0	95.8	78 - 123	18.5	3.5	20	
Methylene chloride	17.58	2.0	20	0	87.9	74 - 124	17.69	0.645	20	
Trichloroethene	31.87	1.0	20	9.324	113	79 - 123	32.58	2.2	20	
Vinyl chloride	23.53	1.0	20	0	118	58 - 137	24.39	3.59	20	
Surr: 1,2-Dichloroethane-d4	*48.79*	*1.0*	*50*	*0*	*97.6*	*81 - 118*	*47.03*	*3.66*	*20*	
Surr: 4-Bromofluorobenzene	*53.69*	*1.0*	*50*	*0*	*107*	*85 - 114*	*54.76*	*1.97*	*20*	
Surr: Dibromofluoromethane	*48.94*	*1.0*	*50*	*0*	*97.9*	*80 - 119*	*48.3*	*1.32*	*20*	
Surr: Toluene-d8	*51.64*	*1.0*	*50*	*0*	*103*	*89 - 112*	*52.63*	*1.89*	*20*	

The following samples were analyzed in this batch:

HS20070674-01	HS20070674-02	HS20070674-03	HS20070674-04
HS20070674-05	HS20070674-06	HS20070674-07	HS20070674-08

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070674

QC BATCH REPORT

Batch ID: R365202 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW2-200716** Units: **mg/L** Analysis Date: **16-Jul-2020 20:57**
Client ID: Run ID: **ManTech01_365202** SeqNo: **5664791** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **LCS2-200716** Units: **mg/L** Analysis Date: **16-Jul-2020 21:06**
Client ID: Run ID: **ManTech01_365202** SeqNo: **5664792** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1036	5.00	1000	0	104	85 - 115				

LCSD Sample ID: **LCSD2-200716** Units: **mg/L** Analysis Date: **16-Jul-2020 21:15**
Client ID: Run ID: **ManTech01_365202** SeqNo: **5664793** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1035	5.00	1000	0	104	85 - 115	1036	0.0541	20	

DUP Sample ID: **HS20070637-01DUP** Units: **mg/L** Analysis Date: **16-Jul-2020 21:44**
Client ID: Run ID: **ManTech01_365202** SeqNo: **5664797** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	179.2	5.00					179.1	0.067	20	

The following samples were analyzed in this batch: HS20070674-01 HS20070674-02 HS20070674-03 HS20070674-07 HS20070674-08

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070674

QC BATCH REPORT

Batch ID: R365322 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-071620** Units: **mg/L** Analysis Date: **17-Jul-2020 23:20**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Nitrogen, Nitrate (As N)	0.100	0.100								U

LCS Sample ID: **LCS-071620** Units: **mg/L** Analysis Date: **17-Jul-2020 23:38**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.398	0.100	4	0	110	80 - 120				
Nitrogen, Nitrate (As N)	3.944	0.100	4	0	98.6	80 - 120				

MS Sample ID: **HS20070674-01MS** Units: **mg/L** Analysis Date: **16-Jul-2020 21:40**
Client ID: **16WW56-200715** Run ID: **ICS-Integrion_365322** SeqNo: **5666946** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	7.228	0.100	2	5.197	102	80 - 120				
Nitrogen, Nitrate (As N)	2.258	0.100	2	0	113	80 - 120				

MS Sample ID: **HS20070313-01MS** Units: **mg/L** Analysis Date: **17-Jul-2020 05:31**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5667080** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	23.97	1.00	20	2.829	106	80 - 120				
Nitrogen, Nitrate (As N)	26.54	1.00	20	7.536	95.0	80 - 120				

MSD Sample ID: **HS20070674-01MSD** Units: **mg/L** Analysis Date: **16-Jul-2020 21:58**
Client ID: **16WW56-200715** Run ID: **ICS-Integrion_365322** SeqNo: **5666947** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	7.292	0.100	2	5.197	105	80 - 120	7.228	0.893	20	
Nitrogen, Nitrate (As N)	2.261	0.100	2	0	113	80 - 120	2.258	0.124	20	

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070674

QC BATCH REPORT

Batch ID: R365322 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS20070313-01MSD** Units: **mg/L** Analysis Date: **17-Jul-2020 05:49**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5667081** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	23.89	1.00	20	2.829	105	80 - 120	23.97	0.33	20	
Nitrogen, Nitrate (As N)	26.46	1.00	20	7.536	94.6	80 - 120	26.54	0.302	20	

The following samples were analyzed in this batch: HS20070674-01 HS20070674-02 HS20070674-03 HS20070674-07 HS20070674-08

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070674

QC BATCH REPORT

Batch ID: R365440 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-072120** Units: **mg/L** Analysis Date: **21-Jul-2020 09:47**
Client ID: Run ID: **ICS-Integrion_365440** SeqNo: **5669559** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS-072120** Units: **mg/L** Analysis Date: **21-Jul-2020 10:05**
Client ID: Run ID: **ICS-Integrion_365440** SeqNo: **5669560** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.398	0.100	4	0	110	80 - 120				
Sulfate	19.89	0.500	20	0	99.5	80 - 120				

MS Sample ID: **HS20070674-03MS** Units: **mg/L** Analysis Date: **21-Jul-2020 13:32**
Client ID: **16WW41-200715** Run ID: **ICS-Integrion_365440** SeqNo: **5669566** PrepDate: DF: **200**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	458.2	20.0	400	0	115	80 - 120				
Sulfate	10650	100	2000	8830	90.9	80 - 120				O

MSD Sample ID: **HS20070674-03MSD** Units: **mg/L** Analysis Date: **21-Jul-2020 13:50**
Client ID: **16WW41-200715** Run ID: **ICS-Integrion_365440** SeqNo: **5669567** PrepDate: DF: **200**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	457	20.0	400	0	114	80 - 120	458.2	0.262	20	
Sulfate	10610	100	2000	8830	88.7	80 - 120	10650	0.407	20	O

The following samples were analyzed in this batch:

HS20070674-01	HS20070674-02	HS20070674-03	HS20070674-04
HS20070674-05	HS20070674-06	HS20070674-07	HS20070674-08

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: **HS20070674**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
Maryland	343, 2019-2020	30-Sep-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070674

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20070674-01	16WW56-200715	Login	7/16/2020 11:37:15 AM	PMG	WET024
HS20070674-01	16WW56-200715	Login	7/16/2020 11:37:15 AM	PMG	Sub
HS20070674-01	16WW56-200715	Login	7/16/2020 11:37:15 AM	PMG	VOA184
HS20070674-01	16WW56-200715	Login	7/16/2020 11:37:15 AM	PMG	RSK007
HS20070674-01	16WW56-200715	Login	7/16/2020 11:37:15 AM	PMG	Sub

ALS Houston, US Date: 07-Aug-20

Sample Receipt Checklist

Work Order ID: HS20070674 **Date/Time Received:** **16-Jul-2020 09:10**

Client Name: CBI-Houston **Received by:** **Paresh M. Giga**

Completed By: */S/ Paresh M. Giga* (eSignature) 16-Jul-2020 12:18 (Date/Time) **Reviewed by:** */S/ RJ Modashia* (eSignature) 16-Jul-2020 15:19 (Date/Time)

Matrices: **GW** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.4C U/C	IR25
Cooler(s)/Kit(s):	Red	
Date/Time sample(s) sent to storage:	7/16/2020 12:40	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: No Trip Blank received

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX, 77099 (281) 530-5656 ATTN: RJ Medashia

HS20070674

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant 16 July 2020

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 16 JULY 2020_ALS**

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Perchlorate by SW6850	Metals (arsenic, chromium, manganese, nickel, thallium) by SW6020				Remarks (Preservativ etc.)
16WW56-200715	WG	7/15/20/0720		10	X	X	X	X	X	X					
16WW22-200715	WG	7/15/20/0815		10	X	X	X	X	X	X					
16WW41-200715	WG	7/15/20/0905		10	X	X	X	X	X	X					
16WW21-200715	WG	7/15/20/0955		7	X	X			X	X					
16WW39-200715	WG	7/15/20/1050		7	X	X			X	X					
16WW30-200715	WG	7/15/20/1140		7	X	X			X	X					
16WW29-200715	WG	7/15/20/1225		10	X	X	X	X	X	X					
16WW48-200715	WG	7/15/20/1315		10	X	X	X	X	X	X					

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	7/15/20	1430		7/16/20	0910						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

Rec'd 1.40 +21 Cli- 0.0

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Medashin

Page 1 of 1

Project: APTIM LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. 501032
Job: **LHAAP 16 JULY 2020_ALS**	
Prepared By: Scott Beesinger	P.O. Number

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	Analyses: VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Perchlorate by SW6850	Metals (arsenic, chromium, manganese, nickel, thallium) by SW6020	Remarks (Preservatives, etc.)	Lab I.D.#
Trip Blank	W	7/15/20		2	X								

HS20070674
Aptim Environmental & Infrastucture. Inc.
Longhorn Army Ammunition Plant 16 July 2020

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	7/15/20	1430		7/16/20	09:14						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

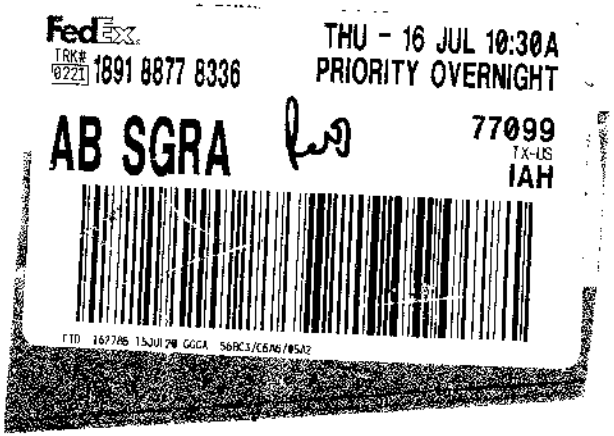
(Word) S:\I-ces\Forms\Chain of Custody - BiWeekly

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 7/15/20 Time: 1430
Name: Scott Rodriguez
Company: SHA

Seal Broken By:
Date:



July 29, 2020 Service Request No:E2000648

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

Laboratory Results for: HS20070674

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 16, 2020
For your reference, these analyses have been assigned our service request number **E2000648.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	ALS Houston	**Service Request No.:**	E2000648
Project:	HS20070674	**Date Received:**	07/16/20
Sample Matrix:	W		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eight samples were received for analysis at ALS Environmental in Houston on 07/16/20.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2000303: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD for this extraction batch. The LCS & LCSD recoveries are within QC limits.

The samples were ran at a 10x DF due to high matric interference at a 1x, resulting in failing internal standard criteria.

DOD Certification is held for the method/matrix/analytes provided in this report.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: ALS Environmental - US **Service Request:**E2000648
Project: HS20070674

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2000648-001	16WW56-200715	7/15/2020	0720
E2000648-002	16WW22-200715	7/15/2020	0815
E2000648-003	16WW41-200715	7/15/2020	0905
E2000648-004	16WW21-200715	7/15/2020	0955
E2000648-005	16WW39-200715	7/15/2020	1050
E2000648-006	16WW30-200715	7/15/2020	1140
E2000648-007	16WW29-200715	7/15/2020	1225
E2000648-008	16WW48-200715	7/15/2020	1315

Service Request Summary

Folder #: **E2000648**
Client Name: ALS Environmental - US
Project Name: HS20070674
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/16/20
Internal Due Date: 7/30/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS20070674
EDD: No EDD Specified

8 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
Location: EHRMS-WIC 7C
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2000648-001	16WW56-200715	Ground Water	07/15/20 0720	**IV**
E2000648-002	16WW22-200715	Ground Water	07/15/20 0815	**IV**
E2000648-003	16WW41-200715	Ground Water	07/15/20 0905	**IV**
E2000648-004	16WW21-200715	Ground Water	07/15/20 0955	**IV**
E2000648-005	16WW39-200715	Ground Water	07/15/20 1050	**IV**
E2000648-006	16WW30-200715	Ground Water	07/15/20 1140	**IV**
E2000648-007	16WW29-200715	Ground Water	07/15/20 1225	**IV**
E2000648-008	16WW48-200715	Ground Water	07/15/20 1315	**IV**

Service Request Summary

Folder #: **E2000648**
Client Name: ALS Environmental - US
Project Name: HS20070674
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/16/20
Internal Due Date: 7/30/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS20070674
EDD: No EDD Specified

8 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
Location: EHRMS-WIC 7C
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	8	Level II due 7/30,level IV 8/6

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	Internal standard not within the specified limits. See case narrative.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.
M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.

Data Qualifiers

Lab Standard

S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

10450 Stancliff Rd, Houston, TX 77099 | 281-530-5656 | www.alsglobal.com

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01 2020	11/30/2021
Arkansas Department of Environmental Quality	20-030-0	3/26/2021
Department of Defense	A2LA 2897.01	11/30/2021
Hawaii Department of Health	2020	4/30/2021
Illinois Environmental Protection Agency	2000322020-4	5/9/2021
Kansas Department of Health and Environment	E-10352	7/31/2020
Louisiana Department of Health and Hospitals	LA028-2020	12/31/2020
Maine Department of Health and Human Services	2020016	6/5/2022
Minnesota Department of Health	1785988	12/31/2020
Nebraska Department of Health and Human Services	NE-OS-25-13 (2020)	4/30/2021
Nevada Department of Concervation and Natural Resources	TX026932019-1	7/31/2020
New Hampshire Environmental Laboratory Accreditation Program	209420	4/24/2021
New York Department of Health	11707	3/31/2021
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Tennessee Department of Environment and Concervation	04016-2020	4/30/2021
Texas Commision on Environmental Quality	T104704231-20-26	4/30/2021
United States Department of Agriculture	P330-19-00299	10/10/2022
Utah Department of Health Environmental Laboratory Certification	TX026932019-9	7/31/2020
Washington Department of Health	C819	11/14/2020

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

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Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

E2000648 5
ALS Laboratory Group
HS20070674

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14295**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20070674
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20070674-01**	**16WW56-200715**	**Groundwater**	**15 Jul 2020 07:20**
	SUB_Perch-6850			30 Jul 2020
2.	**HS20070674-02**	**16WW22-200715**	**Groundwater**	**15 Jul 2020 08:15**
	SUB_Perch-6850			30 Jul 2020
3.	**HS20070674-03**	**16WW41-200715**	**Groundwater**	**15 Jul 2020 09:05**
	SUB_Perch-6850			30 Jul 2020
4.	**HS20070674-04**	**16WW21-200715**	**Groundwater**	**15 Jul 2020 09:55**
	SUB_Perch-6850			30 Jul 2020
5.	**HS20070674-05**	**16WW39-200715**	**Groundwater**	**15 Jul 2020 10:50**
	SUB_Perch-6850			30 Jul 2020
6.	**HS20070674-06**	**16WW30-200715**	**Groundwater**	**15 Jul 2020 11:40**
	SUB_Perch-6850			30 Jul 2020
7.	**HS20070674-07**	**16WW29-200715**	**Groundwater**	**15 Jul 2020 12:25**
	SUB_Perch-6850			30 Jul 2020
8.	**HS20070674-08**	**16WW48-200715**	**Groundwater**	**15 Jul 2020 13:15**
	SUB_Perch-6850			30 Jul 2020

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14295**

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By:	J. MACLEAN	Date/Time:	7/16/20 14:30
Received By:	CH	Date/Time:	7/16/20 14:30
Cooler ID(s):		Temperature(s):	

ALS Environmental

Cooler Receipt Form

Project Chemist CH

Client/Project ALS-HI

Thermometer ID 1824

Date/Time Received: 7/16/20

Initials: CH

Date/Time Logged in: 7/16/20

Initials CH

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ✓ ALS Courier ○ Client
2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other
3. Were custody seals on coolers? ○ Yes ✓ No — If yes, how many and where?
   Were they intact? ○ Yes ○ No ✓ N/A
   Were they signed and dated? ○ Yes ○ No ✓ N/A
4. Packing Material: ○ Inserts ✓ Baggies ○ Bubble Wrap ○ Gel Packs ✓ Wet Ice ○ Sleeves ○ Other
5. Foreign or Regulated Soil? ○ Yes ○ No — Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
-		7/16/20	1430	CH	2.9	☒
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: E2000648 ALS Laboratory Group HS20070674 5

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 361872 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 7/20/20 10:45

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000641-001	16WW16-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
2	E2000641-002	16WW35-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2000641-003	16WW36-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2000641-004	16WW55-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2000641-005	16IW10-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2000641-006	16RW09-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
7	E2000641-007	16RW07-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
8	E2000641-008	16RW07-200714-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
9	E2000641-009	16RW06-200714	.01	6850/ClO4 DOD			Ground Water	10mL	
10	E2000648-001	16WW56-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
11	E2000648-002	16WW22-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
12	E2000648-003	16WW41-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
13	E2000648-004	16WW21-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
14	E2000648-005	16WW39-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2000648-006	16WW30-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2000648-007	16WW29-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
17	E2000648-008	16WW48-200715	.01	6850/ClO4 DOD			Ground Water	10mL	
18	EQ2000303-01	MB		6850/ClO4 DOD			Liquid	10mL	
19	EQ2000303-02	LCS		6850/ClO4 DOD			Liquid	10mL	
20	EQ2000303-03	DLCS		6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4 Inventory ID 202037 Logbook Ref: Sodium Perchlorate Expires On: 05/22/2021

E2000641-001	100.00µL	E2000641-002	100.00µL	E2000641-003	100.00µL	E2000641-004	100.00µL	E2000641-005	100.00µL	E2000641-006	100.00µL
E2000641-007	100.00µL	E2000641-008	100.00µL	E2000641-009	100.00µL	E2000648-001	100.00µL	E2000648-002	100.00µL	E2000648-003	100.00µL
E2000648-004	100.00µL	E2000648-005	100.00µL	E2000648-006	100.00µL	E2000648-007	100.00µL	E2000648-008	100.00µL	EQ2000303-01	100.00µL
EQ2000303-02	100.00µL	EQ2000303-03	100.00µL								

Name: Perchlorate Intermediate Stock1 Inventory ID 209764 Logbook Ref: Perchlorate Int. Stock1 51820 Expires On: 11/18/2020

EQ2000303-02	1.00µL	EQ2000303-03	1.00µL

Preparation Information Benchsheet

Prep Run#: 361872
Team: Semivoa GCMS/GRIVERA
Prep WorkFlow: GenExt28Day
Prep Method: Method
Status: Prepped
Prep Date/Time: 7/20/20 10:45

Preparation Steps

Step: Preparation
Started: 7/20/20 10:45
Finished: 7/20/20 14:00
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	7/15/20 0720
Sample Matrix:	Ground Water	**Date Received:**	7/16/20
Sample Name:	16WW56-200715	**Units:**	µg/L
Lab Code:	E2000648-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/20/20	7/24/20 18:23	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	7/15/20 0815
Sample Matrix:	Ground Water	**Date Received:**	7/16/20
Sample Name:	16WW22-200715	**Units:**	µg/L
Lab Code:	E2000648-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.442**	J	1.00	0.500	0.250	10	7/20/20	7/24/20 18:31	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	7/15/20 0905
Sample Matrix:	Ground Water	**Date Received:**	7/16/20
Sample Name:	16WW41-200715	**Units:**	µg/L
Lab Code:	E2000648-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**155**		2.00	1.00	0.500	20	7/20/20	7/24/20 18:39	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	7/15/20 0955
Sample Matrix:	Ground Water	**Date Received:**	7/16/20
Sample Name:	16WW21-200715	**Units:**	µg/L
Lab Code:	E2000648-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.250**		0.100	0.0500	0.0250	1	7/20/20	7/21/20 18:56	361872	688734	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	7/15/20 1050
Sample Matrix:	Ground Water	**Date Received:**	7/16/20
Sample Name:	16WW39-200715	**Units:**	µg/L
Lab Code:	E2000648-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**15.1**		1.00	0.500	0.250	10	7/20/20	7/24/20 18:47	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	7/15/20 1140
Sample Matrix:	Ground Water	**Date Received:**	7/16/20
Sample Name:	16WW30-200715	**Units:**	µg/L
Lab Code:	E2000648-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.309**	J	1.00	0.500	0.250	10	7/20/20	7/24/20 18:54	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	7/15/20 1225
Sample Matrix:	Ground Water	**Date Received:**	7/16/20
Sample Name:	16WW29-200715	**Units:**	µg/L
Lab Code:	E2000648-007	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/20/20	7/24/20 19:02	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	7/15/20 1315
Sample Matrix:	Ground Water	**Date Received:**	7/16/20
Sample Name:	16WW48-200715	**Units:**	µg/L
Lab Code:	E2000648-008	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**157**		2.00	1.00	0.500	20	7/20/20	7/24/20 19:10	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2000303-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	7/20/20	7/24/20 16:40	361872	688371	

Accuracy & Precision

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10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070674
Sample Matrix: Ground Water

Service Request: E2000648
Date Analyzed: 7/24/20

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 361872

	Lab Control Sample EQ2000303-02			Duplicate Lab Control Sample EQ2000303-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.116	0.100	116	0.118	0.100	118	84 - 119	2	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000303-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.116**		0.100	0.0500	0.0250	1	7/20/20	7/24/20 16:48	361872	688371	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000648
Project:	HS20070674	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000303-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.118**		0.100	0.0500	0.0250	1	7/20/20	7/24/20 16:56	361872	688371	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
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www.alsglobal.com

20200720

1st Review: Kneir
2nd Review: Hvan

ALS Environmental
Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/20/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000014

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200720_006	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200720_007	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200720_008	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200720_009	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200720_016	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200720_011	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200720_012	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200720_013	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200720_014	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200720_015	Perchlorate6850b.lcm	1x	☒	3100807-07
11	PERCHLORATEICV		20200720_017	Perchlorate6850b.lcm	1x	☒	3100807-08
12	IB		20200720_018	Perchlorate6850b.lcm	1x	☒	
13	IB		20200720_019	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200720_020	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200720_021	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200720_022	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-01		20200720_023	Perchlorate6850b.lcm	1x	☒	
18	EQ2000302-02		20200720_024	Perchlorate6850b.lcm	1x	☒	
19	EQ2000302-03		20200720_025	Perchlorate6850b.lcm	1x	☒	
20	EQ2000302-04		20200720_026	Perchlorate6850b.lcm	1x	☒	
21	EQ2000302-05		20200720_027	Perchlorate6850b.lcm	1x	☒	
22	E2000626-001		20200720_028	Perchlorate6850b.lcm	1x	☒	
23	E2000627-001		20200720_029	Perchlorate6850b.lcm	1x	☒	
24	E2000627-002		20200720_030	Perchlorate6850b.lcm	1x	☒	
25	E2000627-003		20200720_031	Perchlorate6850b.lcm	1x	☒	
26	E2000627-004		20200720_032	Perchlorate6850b.lcm	1x	☒	
27	PERCHLORATE7		20200720_033	Perchlorate6850b.lcm	1x	☒	3100807-04
28	E2000627-005		20200720_034	Perchlorate6850b.lcm	1x	☒	
29	E2000627-006		20200720_035	Perchlorate6850b.lcm	1x	☒	
30	E2000627-007		20200720_036	Perchlorate6850b.lcm	1x	☒	
31	E2000627-008		20200720_037	Perchlorate6850b.lcm	1x	☒	
32	E2000627-009		20200720_038	Perchlorate6850b.lcm	1x	☒	
33	E2000638-001		20200720_039	Perchlorate6850b.lcm	1x	☒	
34	E2000639-001		20200720_040	Perchlorate6850b.lcm	1x	☒	
35	E2000640-001		20200720_041	Perchlorate6850b.lcm	1x	☒	
36	PERCHLORATE7		20200720_042	Perchlorate6850b.lcm	1x	☒	3100807-04
37	EQ2000303-01		20200720_043	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-02		20200720_044	Perchlorate6850b.lcm	1x	☒	
39	EQ2000303-03		20200720_045	Perchlorate6850b.lcm	1x	☒	
40	E2000641-001		20200720_046	Perchlorate6850b.lcm	1x	☒	
41	E2000641-002		20200720_047	Perchlorate6850b.lcm	1x	☒	
42	E2000641-003		20200720_048	Perchlorate6850b.lcm	1x	☒	
43	E2000641-004		20200720_049	Perchlorate6850b.lcm	1x	☒	
44	E2000641-005		20200720_050	Perchlorate6850b.lcm	1x	☒	
45	E2000641-006		20200720_051	Perchlorate6850b.lcm	1x	☒	
46	E2000641-007		20200720_052	Perchlorate6850b.lcm	1x	☒	
47	PERCHLORATE7		20200720_053	Perchlorate6850b.lcm	1x	☒	3100807-04
48	E2000641-008		20200720_054	Perchlorate6850b.lcm	1x	☒	
49	E2000641-009		20200720_055	Perchlorate6850b.lcm	1x	☒	
50	E2000648-001		20200720_056	Perchlorate6850b.lcm	1x	☒	
51	E2000648-002		20200720_057	Perchlorate6850b.lcm	1x	☒	
52	E2000648-003		20200720_058	Perchlorate6850b.lcm	1x	☒	

Initial Calibration - Detailed Report

Calibration ID: EC2000014 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2000014-01	PERCHLORATE1	20200720_006	07/20/2020 10:09
02	EC2000014-02	PERCHLORATE2	20200720_007	07/20/2020 10:17
03	EC2000014-03	PERCHLORATE3	20200720_008	07/20/2020 10:24
04	EC2000014-04	PERCHLORATE4	20200720_009	07/20/2020 10:32
06	EC2000014-06	PERCHLORATE6	20200720_011	07/20/2020 10:48
07	EC2000014-07	PERCHLORATE7	20200720_012	07/20/2020 10:56
08	EC2000014-08	PERCHLORATE8	20200720_013	07/20/2020 11:04
09	EC2000014-09	PERCHLORATE9	20200720_014	07/20/2020 11:12
10	EC2000014-10	PERCHLORATE10	20200720_015	07/20/2020 11:20
05	EC2000014-05	PERCHLORATE5	20200720_016	07/20/2020 12:28

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 3.545** **Average RF = 0.121**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1239	02	0.5000	0.1227	03	0.7000	0.1244	04	1.0000	0.1237
05	2.0000	0.1208	06	5.0000	0.1169	07	10.0000	0.1279	08	20.0000	0.1185
09	30.0000	0.1182	10	50.0000	0.1134						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.102	2.3	02	0.5000	0.507	1.4	03	0.7000	0.719	2.7
04	1.0000	1.02	2.2	05	2.0000	2.00	-0.2	06	5.0000	4.83	-3.4
07	10.0000	10.6	5.7	08	20.0000	19.6	-2.1	09	30.0000	29.3	-2.3
10	50.0000	46.8	-6.3								

Initial Calibration Verification Summary Report

Calibration ID:	EC2000014	**Instrument ID:**	E-LCMS-01
Datafile ID:	20200720_017	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2000014-11	T	Average RF	10	10.475	ng/mL	4.8	<= 15

ALS Group Houston

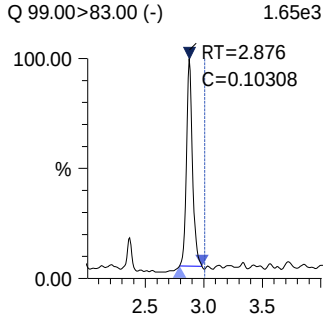
PERCHLORATE1

Date acquired: 7/20/2020 10:09:08 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_006.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE1	7/20/2020 10:09:08 AM	5665	0.10308	20200720_006	2.876	25.0000	1.0000	5
Sodium Perchlorate-18O4_IS	PERCHLORATE1	7/20/2020 10:09:08 AM	457293	1.00000	20200720_006	2.874	25.0000	1.0000	5

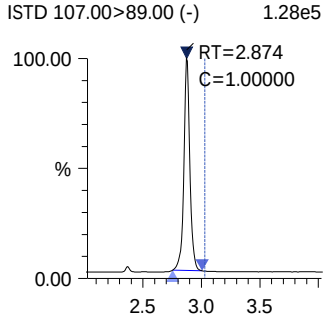
Perchlorate

Conc 0.10308
Area 5665



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 457293



ALS Group Houston

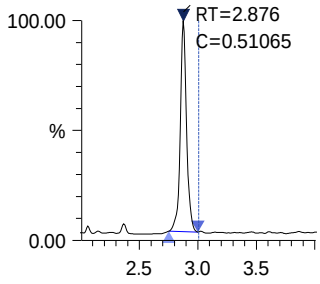
PERCHLORATE2

Date acquired: 7/20/2020 10:17:03 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_007.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE2	7/20/2020 10:17:03 AM	28211	0.51065	20200720_007	2.876	25.0000	1.0000	6
Sodium Perchlorate-18O4_IS	PERCHLORATE2	7/20/2020 10:17:03 AM	459674	1.00000	20200720_007	2.873	25.0000	1.0000	6

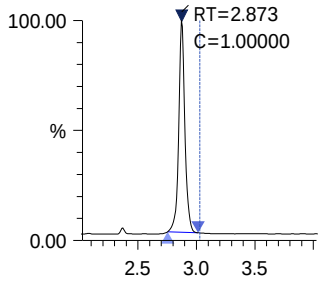
Perchlorate

Conc 0.51065
Area 28211
Q 99.00>83.00 (-) 7.64e3



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 459674
ISTD 107.00>89.00 (-) 1.26e5



ALS Group Houston

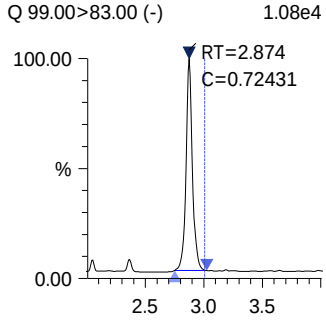
PERCHLORATE3

Date acquired: 7/20/2020 10:24:56 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_008.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE3	7/20/2020 10:24:56 AM	40510	0.72431	20200720_008	2.874	25.0000	1.0000	7
Sodium Perchlorate-18O4_IS	PERCHLORATE3	7/20/2020 10:24:56 AM	465371	1.00000	20200720_008	2.874	25.0000	1.0000	7

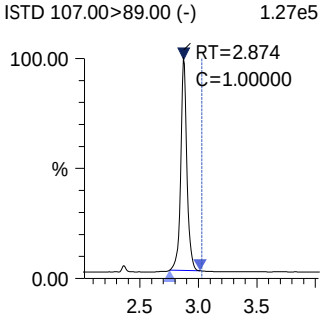
Perchlorate

Conc 0.72431
Area 40510



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 465371



ALS Group Houston

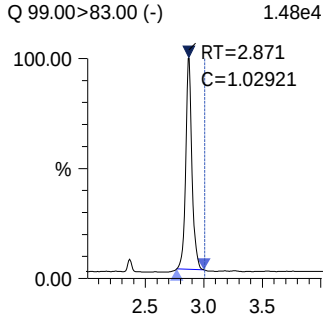
PERCHLORATE4

Date acquired: 7/20/2020 10:32:48 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_009.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE4	7/20/2020 10:32:48 AM	54285	1.02921	20200720_009	2.871	25.0000	1.0000	8
Sodium Perchlorate-18O4_IS	PERCHLORATE4	7/20/2020 10:32:48 AM	438869	1.00000	20200720_009	2.869	25.0000	1.0000	8

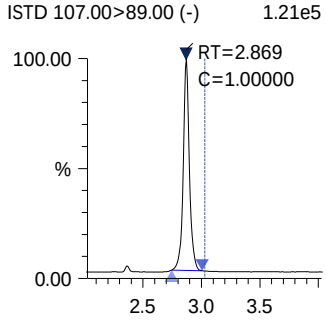
Perchlorate

Conc 1.02921
Area 54285



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 438869



ALS Group Houston

PERCHLORATE6

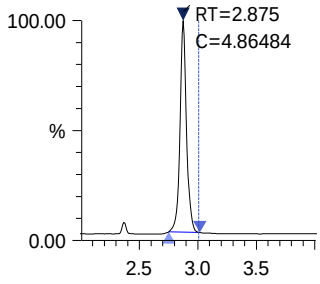
Date acquired: 7/20/2020 10:48:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_011.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE6	7/20/2020 10:48:37 AM	249126	4.86484	20200720_011	2.875	25.0000	1.0000	10
Sodium Perchlorate-18O4_IS	PERCHLORATE6	7/20/2020 10:48:37 AM	426098	1.00000	20200720_011	2.873	25.0000	1.0000	10

Perchlorate

Conc 4.86484
Area 249126

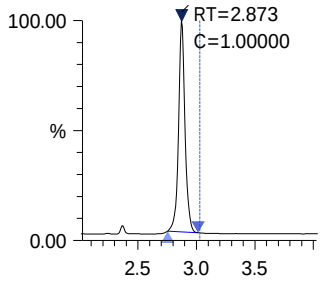
Q 99.00>83.00 (-) 6.50e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 426098

ISTD 107.00>89.00 (-) 1.12e5



ALS Group Houston

PERCHLORATE7

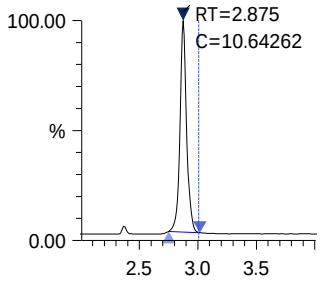
Date acquired: 7/20/2020 10:56:33 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_012.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/20/2020 10:56:33 AM	453181	10.64262	20200720_012	2.875	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/20/2020 10:56:33 AM	354309	1.00000	20200720_012	2.873	25.0000	1.0000	4

Perchlorate

Conc 10.64262
Area 453181

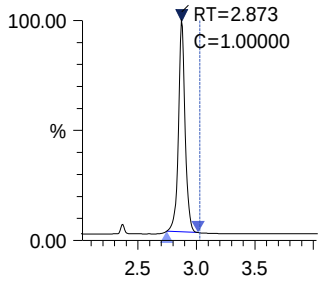
Q 99.00>83.00 (-) 1.16e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 354309

ISTD 107.00>89.00 (-) 9.03e4



ALS Group Houston

PERCHLORATE8

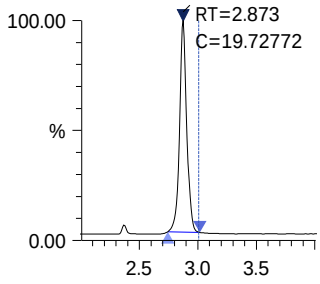
Date acquired: 7/20/2020 11:04:29 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_013.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE8	7/20/2020 11:04:29 AM	811652	19.72772	20200720_013	2.873	25.0000	1.0000	11
Sodium Perchlorate-18O4_IS	PERCHLORATE8	7/20/2020 11:04:29 AM	342336	1.00000	20200720_013	2.872	25.0000	1.0000	11

Perchlorate

Conc 19.72772
Area 811652

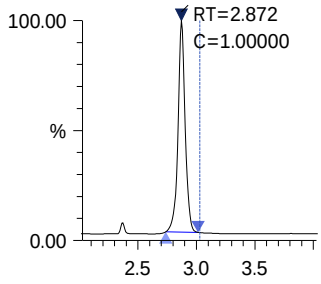
Q 99.00>83.00 (-) 1.93e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 342336

ISTD 107.00>89.00 (-) 8.10e4



ALS Group Houston

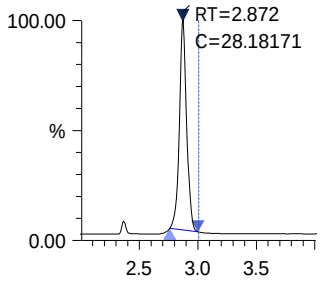
PERCHLORATE9

Date acquired: 7/20/2020 11:12:22 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_014.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE9	7/20/2020 11:12:22 AM	1067782	28.18171	20200720_014	2.872	25.0000	1.0000	12
Sodium Perchlorate-18O4_IS	PERCHLORATE9	7/20/2020 11:12:22 AM	315264	1.00000	20200720_014	2.871	25.0000	1.0000	12

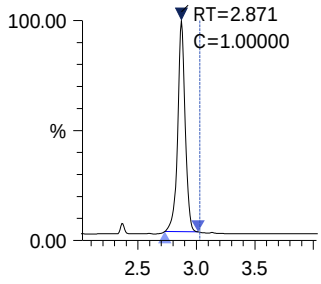
Perchlorate

Conc 28.18171
Area 1067782
Q 99.00>83.00 (-) 2.52e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 315264
ISTD 107.00>89.00 (-) 7.16e4



ALS Group Houston

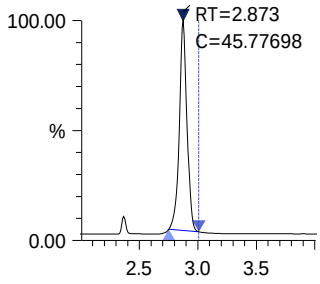
PERCHLORATE10

Date acquired: 7/20/2020 11:20:14 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_015.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE10	7/20/2020 11:20:14 AM	1515028	45.77698	20200720_015	2.873	25.0000	1.0000	13
Sodium Perchlorate-18O4_IS	PERCHLORATE10	7/20/2020 11:20:14 AM	275380	1.00000	20200720_015	2.872	25.0000	1.0000	13

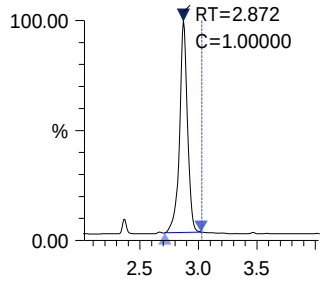
Perchlorate

Conc 45.77698
Area 1515028
Q 99.00>83.00 (-) 3.39e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 275380
ISTD 107.00>89.00 (-) 5.90e4



ALS Group Houston

PERCHLORATE5

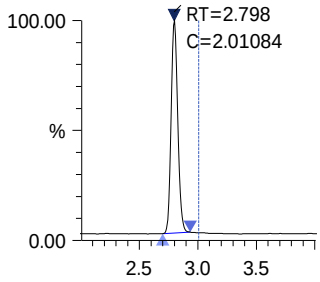
Date acquired: 7/20/2020 12:28:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_016.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE5	7/20/2020 12:28:05 PM	119859	2.01084	20200720_016	2.798	25.0000	1.0000	9
Sodium Perchlorate-18O4_IS	PERCHLORATE5	7/20/2020 12:28:05 PM	495966	1.00000	20200720_016	2.795	25.0000	1.0000	9

Perchlorate

Conc 2.01084
Area 119859

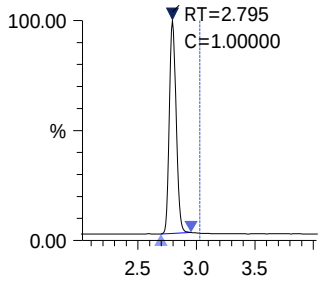
Q 99.00>83.00 (-) 3.02e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 495966

ISTD 107.00>89.00 (-) 1.24e5



ALS Group Houston

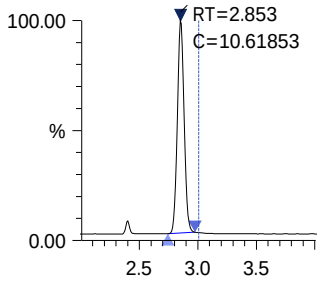
PERCHLORATEICV

Date acquired: 7/20/2020 12:52:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_017.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATEICV	7/20/2020 12:52:26 PM	490921	10.61853	20200720_017	2.853	25.0000	1.0000	14
Sodium Perchlorate-18O4_IS	PERCHLORATEICV	7/20/2020 12:52:26 PM	384686	1.00000	20200720_017	2.851	25.0000	1.0000	14

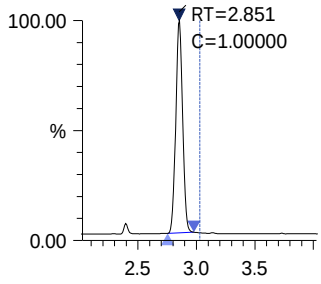
Perchlorate

Conc 10.61853
Area 490921
Q 99.00>83.00 (-) 1.21e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 384686
ISTD 107.00>89.00 (-) 9.52e4



20200724

1st Review: Kneir
2nd Review: Hvan

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: **EC2000016**

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200724_005	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200724_006	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200724_007	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200724_008	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200724_009	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200724_010	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200724_011	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200724_012	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200724_013	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200724_014	Perchlorate6850b.lcm	1x	☒	3100807-07
11	IB		20200724_015	Perchlorate6850b.lcm	1x	☒	
12	PERCHLORATEICV		20200724_016	Perchlorate6850b.lcm	1x	☒	3100807-08
13	IB		20200724_017	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200724_018	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200724_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200724_020	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-04X10		20200724_021	Perchlorate6850b.lcm	10x	☒	
18	EQ2000302-05X10DNU		20200724_022	Perchlorate6850b.lcm	10x	☒	
19	E2000626-001X2		20200724_023	Perchlorate6850b.lcm	2x	☒	
20	E2000627-001X10		20200724_024	Perchlorate6850b.lcm	10x	☒	
21	E2000627-005X100		20200724_025	Perchlorate6850b.lcm	100x	☒	
22	E2000627-006X100		20200724_026	Perchlorate6850b.lcm	100x	☒	
23	E2000627-009X1000		20200724_027	Perchlorate6850b.lcm	1000x	☒	
24	E2000640-001X200		20200724_028	Perchlorate6850b.lcm	200x	☒	
25	PERCHLORATE7		20200724_029	Perchlorate6850b.lcm	1x	☒	3100807-04
26	E2000660-001X10		20200724_030	Perchlorate6850b.lcm	10x	☒	
27	E2000627-004X10		20200724_031	Perchlorate6850b.lcm	10x	☒	
28	PERCHLORATE7		20200724_032	Perchlorate6850b.lcm	1x	☒	3100807-04
29	EQ2000302-05X10		20200724_033	Perchlorate6850b.lcm	10x	☒	
30	PERCHLORATE7		20200724_034	Perchlorate6850b.lcm	1x	☒	3100807-04
31	E2000660-003X10		20200724_035	Perchlorate6850b.lcm	10x	☒	
32	E2000660-004X10		20200724_036	Perchlorate6850b.lcm	10x	☒	
33	E2000660-005X2		20200724_037	Perchlorate6850b.lcm	2x	☒	
34	E2000660-006X10		20200724_038	Perchlorate6850b.lcm	10x	☒	
35	PERCHLORATE7		20200724_039	Perchlorate6850b.lcm	1x	☒	3100807-04
36	EQ2000303-01		20200724_040	Perchlorate6850b.lcm	1x	☒	
37	EQ2000303-02		20200724_041	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-03		20200724_042	Perchlorate6850b.lcm	1x	☒	
39	E2000641-001X20		20200724_043	Perchlorate6850b.lcm	20x	☒	
40	E2000641-002X20		20200724_044	Perchlorate6850b.lcm	20x	☒	
41	E2000641-003X10		20200724_045	Perchlorate6850b.lcm	10x	☒	
42	E2000641-004X20		20200724_046	Perchlorate6850b.lcm	20x	☒	
43	E2000641-005X10		20200724_047	Perchlorate6850b.lcm	10x	☒	
44	E2000641-006X10		20200724_048	Perchlorate6850b.lcm	10x	☒	
45	E2000641-007X10		20200724_049	Perchlorate6850b.lcm	10x	☒	
46	PERCHLORATE7		20200724_050	Perchlorate6850b.lcm	1x	☒	3100807-04
47	E2000641-008X10		20200724_051	Perchlorate6850b.lcm	10x	☒	
48	E2000641-009X10		20200724_052	Perchlorate6850b.lcm	10x	☒	
49	E2000648-001X10		20200724_053	Perchlorate6850b.lcm	10x	☒	
50	E2000648-002X10		20200724_054	Perchlorate6850b.lcm	10x	☒	
51	E2000648-003X20		20200724_055	Perchlorate6850b.lcm	20x	☒	
52	E2000648-005X10		20200724_056	Perchlorate6850b.lcm	10x	☒	

Initial Calibration - Detailed Report

Calibration ID: EC2000016 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2000016-01	PERCHLORATE1	20200724_005	07/24/2020 11:48
02	EC2000016-02	PERCHLORATE2	20200724_006	07/24/2020 11:56
03	EC2000016-03	PERCHLORATE3	20200724_007	07/24/2020 12:04
04	EC2000016-04	PERCHLORATE4	20200724_008	07/24/2020 12:11
05	EC2000016-05	PERCHLORATE5	20200724_009	07/24/2020 12:19
06	EC2000016-06	PERCHLORATE6	20200724_010	07/24/2020 12:27
07	EC2000016-07	PERCHLORATE7	20200724_011	07/24/2020 12:35
08	EC2000016-08	PERCHLORATE8	20200724_012	07/24/2020 12:43
09	EC2000016-09	PERCHLORATE9	20200724_013	07/24/2020 12:51
10	EC2000016-10	PERCHLORATE10	20200724_014	07/24/2020 12:59

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 4.659** **Average RF = 0.121**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1283	02	0.5000	0.13	03	0.7000	0.1207	04	1.0000	0.1251
05	2.0000	0.1211	06	5.0000	0.1202	07	10.0000	0.1211	08	20.0000	0.1168
09	30.0000	0.1121	10	50.0000	0.1148						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.106	6.0	02	0.5000	0.537	7.4	03	0.7000	0.698	-0.3
04	1.0000	1.03	3.4	05	2.0000	2.00	0.1	06	5.0000	4.97	-0.7
07	10.0000	10.0	0.1	08	20.0000	19.3	-3.5	09	30.0000	27.8	-7.3
10	50.0000	47.4	-5.1								

Initial Calibration Verification Summary Report

Calibration ID:	EC2000016	**Instrument ID:**	E-LCMS-01
Datafile ID:	20200724_016	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2000016-11	T	Average RF	10	9.867	ng/mL	-1.3	<= 15

ALS Group Houston

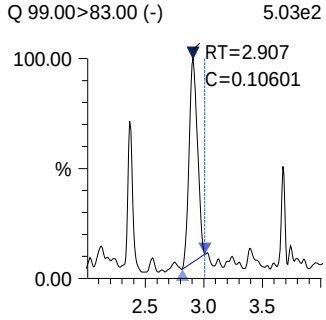
PERCHLORATE1

Date acquired: 7/24/2020 11:48:19 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_005.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE1	7/24/2020 11:48:19 AM	2348	0.10601	20200724_005	2.907	25.0000	1.0000	5
Sodium Perchlorate-18O4_IS	PERCHLORATE1	7/24/2020 11:48:19 AM	183001	1.00000	20200724_005	2.903	25.0000	1.0000	5

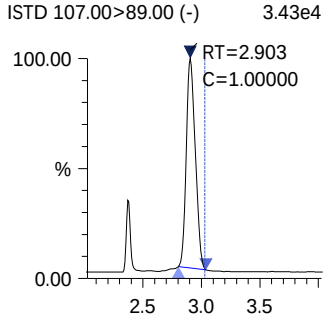
Perchlorate

Conc 0.10601
Area 2348



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 183001



ALS Group Houston

PERCHLORATE2

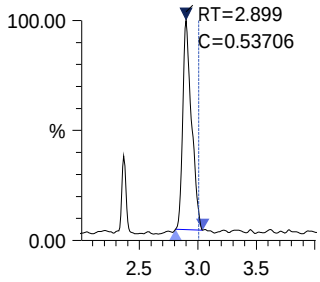
Date acquired: 7/24/2020 11:56:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_006.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE2	7/24/2020 11:56:11 AM	11773	0.53706	20200724_006	2.899	25.0000	1.0000	6
Sodium Perchlorate-18O4_IS	PERCHLORATE2	7/24/2020 11:56:11 AM	181125	1.00000	20200724_006	2.898	25.0000	1.0000	6

Perchlorate

Conc 0.53706
Area 11773

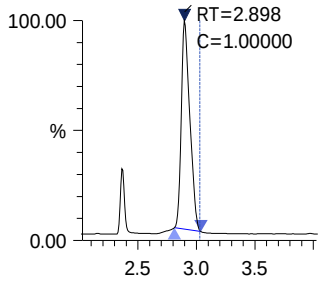
Q 99.00>83.00 (-) 2.32e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 181125

ISTD 107.00>89.00 (-) 3.62e4



ALS Group Houston

PERCHLORATE3

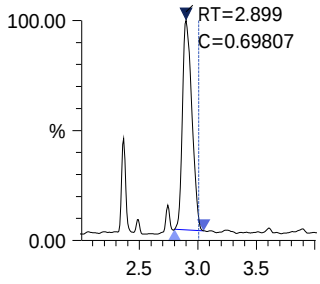
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_007.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE3	7/24/2020 12:04:05 PM	15258	0.69807	20200724_007	2.899	25.0000	1.0000	7
Sodium Perchlorate-18O4_IS	PERCHLORATE3	7/24/2020 12:04:05 PM	180602	1.00000	20200724_007	2.896	25.0000	1.0000	7

Perchlorate

Conc 0.69807
Area 15258

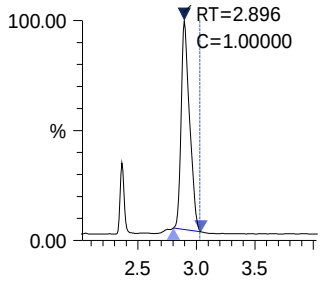
Q 99.00>83.00 (-) 2.79e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 180602

ISTD 107.00>89.00 (-) 3.65e4



ALS Group Houston

PERCHLORATE4

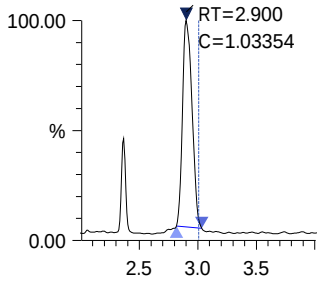
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Data File: I:\LCMS01\DATA\20200724\20200724_008.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE4	7/24/2020 12:11:58 PM	20922	1.03354	20200724_008	2.900	25.0000	1.0000	8
Sodium Perchlorate-18O4_IS	PERCHLORATE4	7/24/2020 12:11:58 PM	167260	1.00000	20200724_008	2.902	25.0000	1.0000	8

Perchlorate

Conc 1.03354
Area 20922

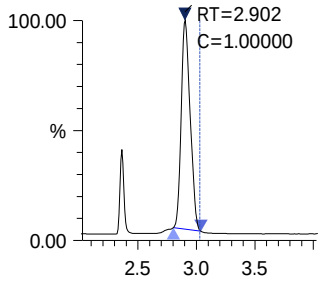
Q 99.00>83.00 (-) 3.87e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 167260

ISTD 107.00>89.00 (-) 3.17e4



ALS Group Houston

PERCHLORATE5

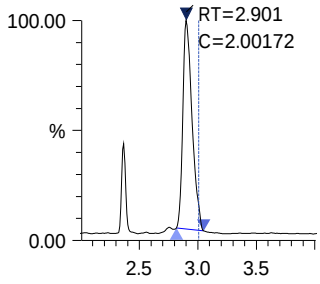
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Data File: I:\LCMS01\DATA\20200724\20200724_009.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE5	7/24/2020 12:19:50 PM	39343	2.00172	20200724_009	2.901	25.0000	1.0000	9
Sodium Perchlorate-18O4_IS	PERCHLORATE5	7/24/2020 12:19:50 PM	162397	1.00000	20200724_009	2.899	25.0000	1.0000	9

Perchlorate

Conc 2.00172
Area 39343

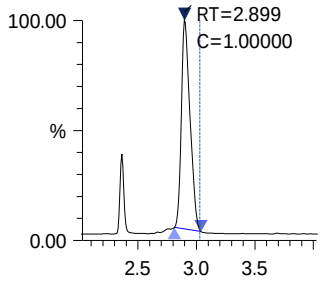
Q 99.00>83.00 (-) 7.39e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 162397

ISTD 107.00>89.00 (-) 3.19e4



ALS Group Houston

PERCHLORATE6

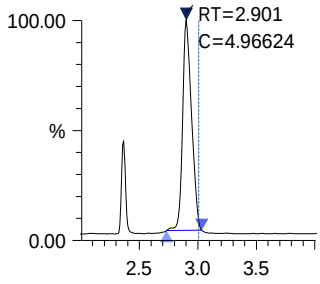
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Acquired by: System Administrator
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Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE6	7/24/2020 12:27:42 PM	102216	4.96624	20200724_010	2.901	25.0000	1.0000	10
Sodium Perchlorate-18O4_IS	PERCHLORATE6	7/24/2020 12:27:42 PM	170060	1.00000	20200724_010	2.900	25.0000	1.0000	10

Perchlorate

Conc 4.96624
Area 102216

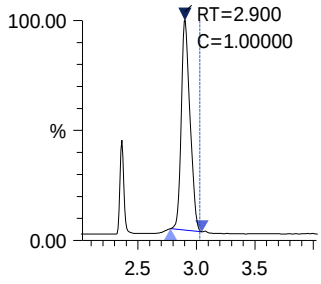
Q 99.00>83.00 (-) 1.97e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 170060

ISTD 107.00>89.00 (-) 3.28e4



ALS Group Houston

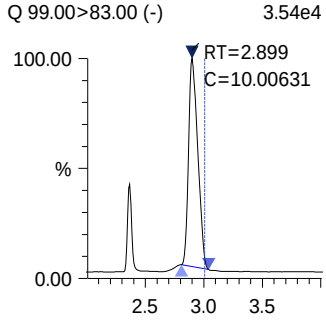
PERCHLORATE7

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Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 12:35:33 PM	187110	10.00631	20200724_011	2.899	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 12:35:33 PM	154502	1.00000	20200724_011	2.897	25.0000	1.0000	4

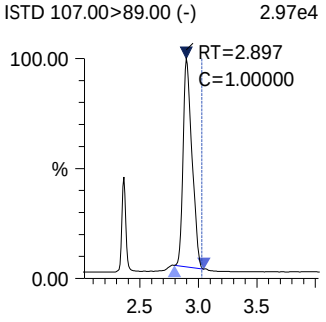
Perchlorate

Conc 10.00631
Area 187110



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 154502



ALS Group Houston

PERCHLORATE8

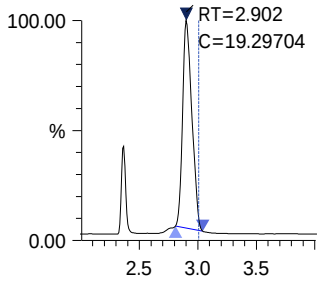
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Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE8	7/24/2020 12:43:26 PM	349524	19.29704	20200724_012	2.902	25.0000	1.0000	11
Sodium Perchlorate-18O4_IS	PERCHLORATE8	7/24/2020 12:43:26 PM	149657	1.00000	20200724_012	2.900	25.0000	1.0000	11

Perchlorate

Conc 19.29704
Area 349524

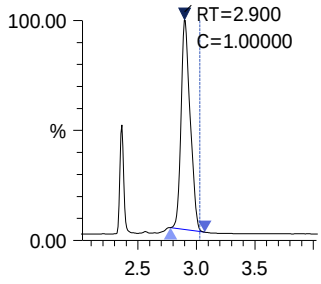
Q 99.00>83.00 (-) 6.58e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 149657

ISTD 107.00>89.00 (-) 2.78e4



ALS Group Houston

PERCHLORATE9

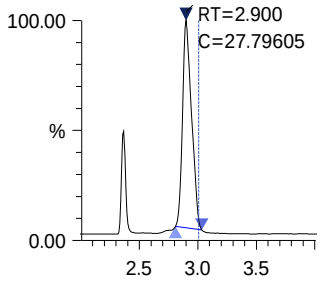
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Data File: I:\LCMS01\DATA\20200724\20200724_013.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE9	7/24/2020 12:51:22 PM	465757	27.79605	20200724_013	2.900	25.0000	1.0000	12
Sodium Perchlorate-18O4_IS	PERCHLORATE9	7/24/2020 12:51:22 PM	138448	1.00000	20200724_013	2.898	25.0000	1.0000	12

Perchlorate

Conc 27.79605
Area 465757

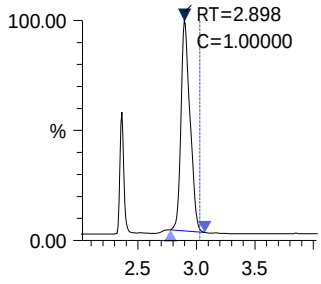
Q 99.00>83.00 (-) 9.05e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 138448

ISTD 107.00>89.00 (-) 2.59e4



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PERCHLORATE10

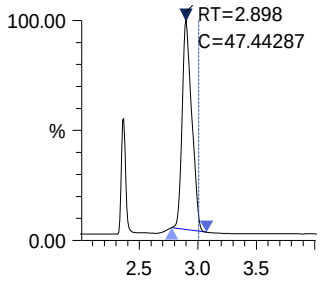
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_014.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE10	7/24/2020 12:59:14 PM	708682	47.44287	20200724_014	2.898	25.0000	1.0000	13
Sodium Perchlorate-18O4_IS	PERCHLORATE10	7/24/2020 12:59:14 PM	123422	1.00000	20200724_014	2.896	25.0000	1.0000	13

Perchlorate

Conc 47.44287
Area 708682

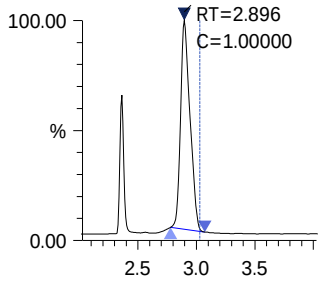
Q 99.00>83.00 (-) 1.28e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 123422

ISTD 107.00>89.00 (-) 2.23e4



ALS Group Houston

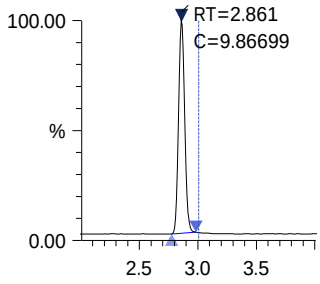
PERCHLORATEICV

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Acquired by: System Administrator
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Vial: 14 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATEICV	7/24/2020 1:28:19 PM	231631	9.86699	20200724_016	2.861	25.0000	1.0000	14
Sodium Perchlorate-18O4_IS	PERCHLORATEICV	7/24/2020 1:28:19 PM	193964	1.00000	20200724_016	2.859	25.0000	1.0000	14

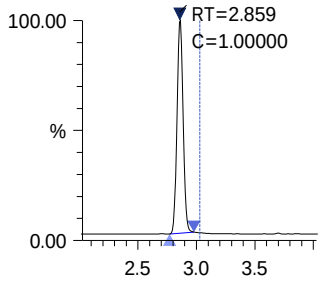
Perchlorate

Conc 9.86699
Area 231631
Q 99.00>83.00 (-) 6.30e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 193964
ISTD 107.00>89.00 (-) 5.33e4



Chromatograms and Selected Ion Monitoring

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August 07, 2020

Analytical Report for Service Request No: K2006044

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: ALS Houston DOD TOC

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 17, 2020
For your reference, these analyses have been assigned our service request number **K2006044.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: ALS Houston DOD TOC
Sample Matrix: Water

Service Request: K2006044
Date Received: 07/17/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Eight water samples were received for analysis at ALS Environmental on 07/17/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 08/07/2020

Chain of Custody

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IL200L0044

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14294**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20070674
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20070674-01**	**16WW56-200715**	**Groundwater**	**15 Jul 2020 07:20**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 Jul 2020
2.	**HS20070674-02**	**16WW22-200715**	**Groundwater**	**15 Jul 2020 08:15**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 Jul 2020
3.	**HS20070674-03**	**16WW41-200715**	**Groundwater**	**15 Jul 2020 09:05**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 Jul 2020
4.	**HS20070674-04**	**16WW21-200715**	**Groundwater**	**15 Jul 2020 09:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 Jul 2020
5.	**HS20070674-05**	**16WW39-200715**	**Groundwater**	**15 Jul 2020 10:50**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 Jul 2020
6.	**HS20070674-06**	**16WW30-200715**	**Groundwater**	**15 Jul 2020 11:40**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 Jul 2020
7.	**HS20070674-07**	**16WW29-200715**	**Groundwater**	**15 Jul 2020 12:25**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 Jul 2020
8.	**HS20070674-08**	**16WW48-200715**	**Groundwater**	**15 Jul 2020 13:15**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 Jul 2020

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14294**

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By:	J. Murphy	Date/Time:	7/16/20 18:00
Received By:		Date/Time:	7/17/20 0930
Cooler ID(s):		Temperature(s):	

PC KL

Cooler Receipt and Preservation Form

Client ALS/Houston Service Request *K20* OL0044

Received: 7/17/20 Opened: 7/17/20 By: [signature] Unloaded: 7/17/20 By: [signature]

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID NA	Tracking Number NA	Filed
1.5	—	—	—	—	IR02	14294	1891 8878 4191	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2006044
Project:	ALS Houston DOD TOC	**Date Collected:**	07/15/20
Sample Matrix:	Water	**Date Received:**	07/17/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16WW56-200715	K2006044-001	**0.93**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW22-200715	K2006044-002	**1.23**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW41-200715	K2006044-003	**42.0**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW21-200715	K2006044-004	**0.89**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW39-200715	K2006044-005	**2.61**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW30-200715	K2006044-006	**2.35**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW29-200715	K2006044-007	**15.3**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW48-200715	K2006044-008	**8.90**	0.50	0.20	0.07	1	08/05/20 17:56	
Method Blank	K2006044-MB	ND U	0.50	0.20	0.07	1	08/05/20 17:56	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006044
Project	ALS Houston DOD TOC	**Date Collected:**	07/15/20
Sample Matrix:	Water	**Date Received:**	07/17/20
		Date Analyzed:	08/05/20

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	16WW56-200715	**Units:**	mg/L
Lab Code:	K2006044-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K2006044-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	0.93	0.97	0.951	4	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006044
Project:	ALS Houston DOD TOC	**Date Collected:**	07/15/20
Sample Matrix:	Water	**Date Received:**	07/17/20
		Date Analyzed:	08/5/20
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	16WW56-200715	**Units:**	mg/L
Lab Code:	K2006044-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K2006044-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	0.93	25.6	25.0	99	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006044
Project:	ALS Houston DOD TOC	**Date Analyzed:**	08/05/20
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	689991

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2006044-LCS	26.2	25.0	105	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2006044
Project: ALS Houston DOD TOC

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	689991	KQ2010844-05	08/05/20 17:56	25.0	25.5	102	90-110
CCV2	689991	KQ2010844-06	08/05/20 17:56	25.0	25.8	103	90-110
CCV3	689991	KQ2010844-07	08/05/20 17:56	25.0	25.3	101	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2006044
Project: ALS Houston DOD TOC

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	689991	KQ2010844-08	08/05/20 17:56	0.50	0.20	0.07	ND	U
CCB2	689991	KQ2010844-09	08/05/20 17:56	0.50	0.20	0.07	ND	U
CCB3	689991	KQ2010844-10	08/05/20 17:56	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original (5714) 6036 6044 6221 6224 6047

Tier: 1 IV IV IV IV IV

Date Analyzed: 8/5/20

Analyst: MK Run # 690001 | 689971

Analysis: TDC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

6047 - 2, 5, 6 need to be reanalyzed samples were above curve
1, 3, 4 and 2, 5, 6, will be reanalyzed Due to failing CCB

Final Approved by: [signature] Date: 8/6/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 689991 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005714-002	Carbon, Total Organic	N/A		Water	7.88 mg/L	10 mL	78.8 mg/L	10	0.7	5.0			8/5/20 17:56:00	N	I
K2006036-001	Carbon, Total Organic	N/A		Water	2.13 mg/L	10 mL	2.13 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-001	Carbon, Total Organic	N/A		Water	0.93 mg/L	10 mL	0.93 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-002	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 mL	1.23 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-003	Carbon, Total Organic	N/A		Water	41.98 mg/L	10 mL	42.0 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-004	Carbon, Total Organic	N/A		Water	0.89 mg/L	10 mL	0.89 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-005	Carbon, Total Organic	N/A		Water	2.61 mg/L	10 mL	2.61 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-006	Carbon, Total Organic	N/A		Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-007	Carbon, Total Organic	N/A		Water	15.29 mg/L	10 mL	15.3 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-008	Carbon, Total Organic	N/A		Water	8.90 mg/L	10 mL	8.90 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006221-002	Carbon, Total Organic	N/A		Ground Water	8.66 mg/L	10 mL	8.66 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006221-003	Carbon, Total Organic	N/A		Ground Water	8.72 mg/L	10 mL	8.72 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006221-004	Carbon, Total Organic	N/A		Ground Water	27.89 mg/L	10 mL	27.9 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006221-005	Carbon, Total Organic	N/A		Ground Water	3.05 mg/L	10 mL	3.05 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006224-001	Carbon, Total Organic	N/A		Water		10 mL		1					8/5/20 17:56:00	N	IV
KQ2010844-01	Carbon, Total Organic	DUP	K2006044-001	Water	0.97 mg/L	10 mL	0.97 mg/L	1	0.07	0.50		4	8/5/20 17:56:00	N	IV
KQ2010844-02	Carbon, Total Organic	MS	K2006044-001	Water	25.60 mg/L	10 mL	25.6 mg/L	1	0.07	0.50	99		8/5/20 17:56:00	N	IV
KQ2010844-03	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	I
KQ2010844-04	Carbon, Total Organic	LCS		Water	26.18 mg/L	10 mL	26.2 mg/L	1	0.07	0.50	105		8/5/20 17:56:00	N	I
KQ2010844-05	Carbon, Total Organic	CCV		Water	25.48 mg/L	10 mL	25.5 mg/L	1					8/5/20 17:56:00	N	I
KQ2010844-06	Carbon, Total Organic	CCV		Water	25.83 mg/L	10 mL	25.8 mg/L	1					8/5/20 17:56:00	N	I
KQ2010844-07	Carbon, Total Organic	CCV		Water	25.31 mg/L	10 mL	25.3 mg/L	1					8/5/20 17:56:00	N	I
KQ2010844-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	I
KQ2010844-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	I
KQ2010844-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690001 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006047-001	Carbon, Total Organic	N/A		Water	3.58 mg/L	10 mL	3.58 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-002.R01	Carbon, Total Organic	N/A		Water	53.68 mg/L	10 mL	53.7 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-003	Carbon, Total Organic	N/A		Water	18.64 mg/L	10 mL	18.6 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-004	Carbon, Total Organic	N/A		Water	5.60 mg/L	10 mL	5.60 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-005.R01	Carbon, Total Organic	N/A		Water	86.41 mg/L	10 mL	86.4 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-006.R01	Carbon, Total Organic	N/A		Water	19.58 mg/L	10 mL	19.6 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006224-001	Carbon, Total Organic	N/A		Water	2.02 mg/L	10 mL	2.02 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-01	Carbon, Total Organic	DUP	K2006224-001	Water	2.22 mg/L	10 mL	2.22 mg/L	1	0.07	0.50		10	8/5/20 17:56:00	N	IV
KQ2010845-02	Carbon, Total Organic	MS	K2006224-001	Water	29.24 mg/L	10 mL	29.2 mg/L	1	0.07	0.50	109		8/5/20 17:56:00	N	IV
KQ2010845-03	Carbon, Total Organic	CCV		Water	25.83 mg/L	10 mL	25.8 mg/L	1					8/5/20 17:56:00	N	IV
KQ2010845-04	Carbon, Total Organic	CCV		Water	25.31 mg/L	10 mL	25.3 mg/L	1					8/5/20 17:56:00	N	IV
KQ2010845-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-07	Carbon, Total Organic	CCB		Water	1.08 mg/L	10 mL	1.08 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-08	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-09	Carbon, Total Organic	LCS		Water	25.67 mg/L	10 mL	25.7 mg/L	1	0.07	0.50	103		8/5/20 17:56:00	N	IV
KQ2010845-10	Carbon, Total Organic	CCV		Water	27.16 mg/L	10 mL	27.2 mg/L	1					8/5/20 17:56:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Schedule: 080520

Version: 10
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/08/06 10:08 - Thursday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	k2005714-002 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2006221-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2006221-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2006221-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2006221-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2006044-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2006044-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2006044-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2006044-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2006044-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2006044-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2006044-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2006044-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2006044-007	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2006044-008	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2006036-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K2006224-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K2006224-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K2006224-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2006047-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2006047-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2006047-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2006047-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2006047-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2006047-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
29	Sample	K2006047-002 5X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
30	Sample	K2006047-5 10X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K2006047-6 5X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25ppm_salt [25ppm salt]	CAS_salt (CAS_salt_0811a)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

NR

Fusion Report - 080520
Wednesday, August 05, 2020 05:56 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/08/06 10:34 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	080520	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v1) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v9) Fusion1 (Fusion1) (v10)		
Comment:			

Report Results

Sample Type: Blank (Creating v1429) From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/08/05 17:56

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.67	24.90	13.23	49.97	08:00
2	TC Clean	4.10	17.23	13.13	49.90	07:16
3	TC Clean	0.50	13.74	13.25	49.85	07:02
4	TC Clean	0.04	13.30	13.26	49.94	07:03
5	Reagent Blank	4.01	17.27	13.26	50.00	08:10
6	Acid Blank	0.37	13.64	13.28	49.61	05:34

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/05 18:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.17	22.40	13.24	50.09	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4763 ppm (PASS)	0.0000 ppm	0%	2020/08/05 18:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4763	254.7632	188.60	201.77	13.17	50.11	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/05 19:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.03	22.40	13.36	50.16	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/05 19:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.40	21.66	13.26	50.19	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	26.1783 ppm (PASS)	0.0000 ppm	0%	2020/08/05 19:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.1783	261.7826	193.53	206.65	13.12	50.17	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.3474 ppm	0.0000 ppm	0.0000%	2020/08/05 19:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3474	3.4737	11.61	25.12	13.51	50.18	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	k2005714-002 10x	7.8756 ppm	0.0371 ppm	0.4700%	2020/08/05 20:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8493	78.4934	64.23	77.66	13.43	50.18	10:29
2	TOC	7.9018	79.0180	64.60	78.25	13.65	50.16	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	K2006221-002	8.6645 ppm	0.2369 ppm	2.7300%	2020/08/05 20:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.8320	88.3197	71.12	84.56	13.44	50.20	10:28
2	TOC	8.4970	84.9697	68.78	82.43	13.65	50.24	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	K2006221-003	8.7199 ppm	0.1460 ppm	1.6700%	2020/08/05 21:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.8231	88.2313	71.06	84.45	13.39	50.18	10:28
2	TOC	8.6167	86.1671	69.62	83.04	13.42	50.20	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K2006221-004	27.8920 ppm	0.9180 ppm	3.2900%	2020/08/05 21:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.5411	285.4108	209.38	222.93	13.55	50.20	10:26
2	TOC	27.2428	272.4283	200.27	213.61	13.33	50.17	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K2006221-005	3.0464 ppm	0.0680 ppm	2.2300%	2020/08/05 22:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0946	30.9455	30.88	44.37	13.49	50.19	10:25
2	TOC	2.9983	29.9833	30.20	43.71	13.51	50.17	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K2006044-001	0.9314 ppm	0.0448 ppm	4.8100%	2020/08/05 22:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9631	9.6307	15.93	29.52	13.59	50.20	10:26
2	TOC	0.8998	8.9977	15.48	29.21	13.73	50.18	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	K2006044-001D	0.9707 ppm	0.0489 ppm	5.0400%	2020/08/05 23:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0053	10.0526	16.22	29.64	13.42	50.18	10:26

2	TOC	0.9361	9.3612	15.74	29.22	13.48	50.17	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.8333 ppm (PASS)	0.0000 ppm	0%	2020/08/05 23:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.8333	258.3328	191.11	204.62	13.52	50.18	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/05 23:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.95	22.27	13.32	50.19	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K2006044-001MS	25.5979 ppm	0.1718 ppm	0.6700%	2020/08/05 23:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.4764	254.7643	187.88	201.34	13.46	50.21	10:27
2	TOC	25.7193	257.1935	189.59	203.16	13.58	50.29	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	11	TOC	K2006044-002	1.2344 ppm	0.0396 ppm	3.2100%	2020/08/06 00:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2624	12.6243	18.03	31.57	13.54	50.24	10:30
2	TOC	1.2064	12.0641	17.63	31.12	13.48	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K2006044-003	41.9765 ppm	0.4087 ppm	0.9700%	2020/08/06 00:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	41.6875	416.8752	301.60	315.16	13.56	50.22	10:29
2	TOC	42.2654	422.6544	305.66	319.18	13.53	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2006044-004	0.8868 ppm	0.1462 ppm	16.4800%	2020/08/06 01:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9902	9.9015	16.12	29.44	13.32	50.21	10:27
2	TOC	0.7834	7.8345	14.67	28.15	13.48	50.22	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2006044-005	2.6089 ppm	0.0248 ppm	0.9500%	2020/08/06 01:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5913	25.9133	27.35	40.71	13.36	50.24	10:26
2	TOC	2.6264	26.2640	27.59	41.09	13.49	50.26	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K2006044-006	2.3500 ppm	0.0145 ppm	0.6200%	2020/08/06 02:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3603	23.6025	25.73	39.21	13.48	50.23	10:27
2	TOC	2.3397	23.3972	25.58	39.06	13.47	50.22	10:26

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K2006044-007	15.2921 ppm	0.0945 ppm	0.6200%	2020/08/06 02:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.2253	152.2529	115.97	129.45	13.48	50.22	10:30
2	TOC	15.3589	153.5886	116.91	130.40	13.49	50.21	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K2006044-008	8.9005 ppm	0.0962 ppm	1.0800%	2020/08/06 03:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9685	89.6854	72.08	85.57	13.49	50.29	10:26
2	TOC	8.8325	88.3254	71.13	84.67	13.54	50.21	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K2006036-001	2.1285 ppm	0.0291 ppm	1.3700%	2020/08/06 03:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1079	21.0793	23.96	37.42	13.46	50.19	10:26
2	TOC	2.1491	21.4913	24.25	37.74	13.50	50.26	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K2006224-001	2.0213 ppm	0.0465 ppm	2.3000%	2020/08/06 04:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9885	19.8847	23.12	36.65	13.53	50.23	10:25
2	TOC	2.0542	20.5419	23.58	36.98	13.40	50.19	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.3087 ppm (PASS)	0.0000 ppm	0%	2020/08/06 04:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.3087	253.0867	187.43	200.85	13.42	50.19	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/06 04:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.64	23.04	13.40	50.18	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/06 05:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.24	21.72	13.49	50.25	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.6691 ppm (PASS)	0.0000 ppm	0%	2020/08/06 05:23

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

	Type									
C	TOC	25.0 ppm	1	25.6691	256.6905	189.96	203.52	13.56	50.18	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K2006224-001D	2.2243 ppm	0.0695 ppm	3.1200%	2020/08/06 05:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2734	22.7343	25.12	38.38	13.27	50.19	10:26
2	TOC	2.1752	21.7521	24.43	37.73	13.30	50.17	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K2006224-001MS	29.2402 ppm	0.0525 ppm	0.1800%	2020/08/06 06:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.2031	292.0311	214.02	227.38	13.36	50.16	10:28
2	TOC	29.2774	292.7738	214.55	227.96	13.41	50.22	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K2006047-001	3.5809 ppm	0.0408 ppm	1.1400%	2020/08/06 06:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.6097	36.0975	34.49	48.21	13.72	50.18	10:25
2	TOC	3.5520	35.5201	34.09	47.55	13.46	50.20	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K2006047-002	53.6821 ppm	0.7354 ppm	1.3700%	2020/08/06 07:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	54.2022	542.0216	389.39	402.93	13.54	50.17	10:27
2	TOC	53.1621	531.6208	382.09	395.92	13.83	50.17	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K2006047-003	18.6374 ppm	0.2652 ppm	1.4200%	2020/08/06 07:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.8249	188.2495	141.22	154.86	13.63	50.19	10:29
2	TOC	18.4499	184.4989	138.59	152.24	13.65	50.15	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K2006047-004	5.5994 ppm	0.0964 ppm	1.7200%	2020/08/06 07:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.6675	56.6753	48.93	62.18	13.25	50.14	10:27
2	TOC	5.5312	55.3125	47.97	61.53	13.56	50.14	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K2006047-005	86.4136 ppm	4.0529 ppm	4.6900%	2020/08/06 08:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	83.5477	835.4772	595.24	608.81	13.57	50.11	10:24
2	TOC	89.2794	892.7944	635.45	649.95	14.50	50.10	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K2006047-006	18.8920 ppm	19.5781 ppm	103.6300%	2020/08/06 08:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.7358	327.3577	238.81	252.98	14.18	50.08	10:31
2	TOC	5.0481	50.4813	44.58	57.85	13.27	50.09	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2006047-002 5X	16.5885 ppm	0.8324 ppm	5.0200%	2020/08/06 09:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	17.1772	171.7715	129.67	142.98	13.32	50.08	10:26
2	TOC	15.9999	159.9993	121.41	134.63	13.22	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	27.1565 ppm (PASS)	0.0000 ppm	0%	2020/08/06 09:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	27.1565	271.5647	200.39	213.65	13.26	50.06	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	1.0759 ppm (PASS)	0.0000 ppm	0%	2020/08/06 10:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	1.0759	10.7586	17.44	30.42	12.98	50.06	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

30	TOC	K2006047-5 10X		NaN	NaN	NaN%	2020/08/06 10:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

Dilution	Method	Calibration
1:10	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1428	2.0260	0.3900	0.0000	0.0000	0.0000	2020/08/05 11:39	Fusion1 (Fusion1)
v1429	1.3370	0.3660	0.0000	0.0000	0.0000	2020/08/05 18:45	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v38	Calibration curve formula:	TOC: y = 7.015x + 9.892
Ver Creation:	2020/06/13 16:40	r^2 value:	TOC: r^2 = 0.99974
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	9.5750	0.0000		2020/06/13 15:13
0.500 ppm	12.9010	0.5000		2020/06/13 15:28
1.0 ppm	15.6320	1.0000		2020/06/13 15:42
5.0 ppm	43.2510	5.0000		2020/06/13 15:56
10 ppm	82.4040	10.0000		2020/06/13 16:11
25 ppm	188.6880	25.0000		2020/06/13 16:25
50 ppm	358.6500	50.0000		2020/06/13 16:39

Methods

Name: CAS_salt_010711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/02/21 17:57		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/08/06 10:31

ALS Environmental

StarLIMS Run: 689991/6900001

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 19-GEN-8-15-C 50 ppm LCS: 19-GEN-8-31I 25.0 ppm

ICAL Date: 6/16/2020

ICAL ID: 19-GEN-8-22-G

ICS ID: 19-GEN-8-4-G

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 19-GEN-8-15-B 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-32J

21 % H3PO4: 19-GEN-08-32I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: MK	Date Analyzed: 8/6/20
Reviewed By:	Date Reviewed: 8/6/20

July 31, 2020 Service Request No:E2000660

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

Laboratory Results for: HS20070744

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 17, 2020
For your reference, these analyses have been assigned our service request number **E2000660.**

This report was revised on September 25th, 2020; see case narratives for details.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Corey Grandits
Project Manager

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ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

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ALS Environmental

Client:	ALS Houston	**Service Request No.:**	E2000660
Project:	HS20070744	**Date Received:**	07/15/20
Sample Matrix:	W		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seven samples were received for analysis at ALS Environmental in Houston on 07/15/20.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Revision I - Sample E2000660-007 perchlorate was non-detect, the original report inserted a value of "0" instead of "ND". This report contains the corrected value for this sample ID.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2000302: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch. MS and MSD was performed on an unrelated sample, LCS/LCSD recoveries are within QC limits.

EQ2000319: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD. The LSC and DLCS recoveries are within QC limits.

DOD Certification is held for the method/matrix/analytes provided in this report.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: ALS Environmental - US **Service Request:**E2000660
Project: HS20070744

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2000660-001	16EW01-200716	7/16/2020	0720
E2000660-002	16EW05-200716	7/16/2020	0810
E2000660-003	16EW02-200716	7/16/2020	0950
E2000660-004	16EW02-200716-FD	7/16/2020	0950
E2000660-005	16IW09-200716	7/16/2020	1105
E2000660-006	16RW05-200716	7/16/2020	1200
E2000660-007	16EW06-200716	7/16/2020	0905

Service Request Summary

Folder #: **E2000660**
Client Name: ALS Environmental - US
Project Name: HS20070744
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/17/20
Internal Due Date: 7/31/2020
QAP: LAB QAP
Qualifier Set: HRMS Qualifier Set
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: HS20070744
EDD: No EDD Specified

7 125 mL-Plastic Bottle HDPE NM CLEAR Unpreserved
Location: EHRMS-WIC 4D
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2000660-001	16EW01-200716	Ground Water	07/16/20 0720	II
E2000660-002	16EW05-200716	Misc. Solid	07/16/20 0810	II
E2000660-003	16EW02-200716	Ground Water	07/16/20 0950	II
E2000660-004	16EW02-200716-FD	Ground Water	07/16/20 0950	II
E2000660-005	16IW09-200716	Ground Water	07/16/20 1105	II
E2000660-006	16RW05-200716	Ground Water	07/16/20 1200	II
E2000660-007	16EW06-200716	Misc. Solid	07/16/20 0905	II

Service Request Summary

Folder #: **E2000660**
Client Name: ALS Environmental - US
Project Name: HS20070744
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
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Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/17/20
Internal Due Date: 7/31/2020
QAP: LAB QAP
Qualifier Set: HRMS Qualifier Set
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: HS20070744
EDD: No EDD Specified

7 125 mL-Plastic Bottle HDPE NM CLEAR Unpreserved
Location: EHRMS-WIC 4D
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	7	Level II due 7/31,level IV on 8/7 Labeled as E2000649

Data Qualifiers

HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.

E Estimated value. The reported concentration is above the calibration range of the instrument.

H Sample extracted and/or analyzed out of suggested holding time.

J Estimated value. The reported concentration is below the MRL.

K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.

P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.

Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.

S Signal saturated detector. Result reported from dilution.

U Compound was analyzed for, but was not detected (ND).

X See Case Narrative.

Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.

i The MDL/MRL have been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

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ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01 2020	11/30/2021
Arkansas Department of Environmental Quality	20-030-0	3/26/2021
Department of Defense	A2LA 2897.01	11/30/2021
Hawaii Department of Health	2020	4/30/2021
Illinois Environmental Protection Agency	2000322020-4	5/9/2021
Louisiana Department of Health and Hospitals	LA028-2020	12/31/2020
Maine Department of Health and Human Services	2020016	6/5/2022
Minnesota Department of Health	1785988	12/31/2020
Nebraska Department of Health and Human Services	NE-OS-25-13 (2020)	4/30/2021
New Hampshire Environmental Laboratory Accreditation Program	209420	4/24/2021
New York Department of Health	11707	3/31/2021
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Tennessee Department of Environment and Concervation	04016-2020	4/30/2021
Texas Commision on Environmental Quality	T104704231-20-26	4/30/2021
United States Department of Agriculture	P330-19-00299	10/10/2022
Washington Department of Health	C819	11/14/2020

Chain of Custody

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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 14306**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20070744
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20070744-01**	**16EW01-200720**	**Groundwater**	**16 Jul 2020 07:20**
	SUB_Perch-6850			31 Jul 2020
2.	**HS20070744-02**	**16EW05-200720**	**Groundwater**	**16 Jul 2020 08:10**
	SUB_Perch-6850			31 Jul 2020
3.	**HS20070744-03**	**16EW02-200720**	**Groundwater**	**16 Jul 2020 09:50**
	SUB_Perch-6850			31 Jul 2020
4.	**HS20070744-04**	**16EW02-200720-FD**	**Groundwater**	**16 Jul 2020 09:50**
	SUB_Perch-6850			31 Jul 2020
5.	**HS20070744-05**	**16IW09-200720**	**Groundwater**	**16 Jul 2020 11:05**
	SUB_Perch-6850			31 Jul 2020
6.	**HS20070744-06**	**16RW05-200720**	**Groundwater**	**16 Jul 2020 12:00**
	SUB_Perch-6850			31 Jul 2020
7.	**HS20070744-08**	**16EW06-200715**	**Groundwater**	**16 Jul 2020 09:05**
	SUB_Perch-6850			31 Jul 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14306**

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: 7/17/20 1331

Cooler ID(s): _____ Temperature(s): _____

ALS Environmental

Cooler Receipt Form

Project Chemist CH

Client/Project ALS-US-H

Thermometer ID 1023

Date/Time Received: 7/10/20 Initials: CH Date/Time Logged in: 7/10/20 Initials CH

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ✓ ALS Courier ○ Client

2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other

3. Were custody seals on coolers? ○ Yes ✓ No If yes, how many and where?

Were they intact? ○ Yes ○ No ✓ N/A

Were they signed and dated? ○ Yes ○ No ✓ N/A

4. Packing Material: ○ Inserts ✓ Baggies ○ Bubble Wrap ○ Gel Packs ✓ Wet Ice ○ Sleeves ○ Other

5. Foreign or Regulated Soil? ○ Yes ○ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
-		7/10/20	1331	CH	1.4	☒
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No

7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No

8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No

9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No

10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label:

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 361870 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 7/20/20 10:39

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000626-001	LH18/24-SP650_070920-BIX	.01	6850/ClO4 DOD			Water	10mL	
2	E2000627-001	50WW08-200708	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2000627-002	50WW29-200708	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2000627-003	50WW05-200708	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2000627-004	50WW14-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2000627-005	50WW13-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
7	E2000627-006	50WW11-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
8	E2000627-007	50WW11-200709-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
9	E2000627-008	50WW06-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
10	E2000627-009	50WW12-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
11	E2000638-001	LH18/24-SP650_071420-BIX	.01	6850/ClO4 DOD			Ground Water	10mL	
12	E2000639-001	LH18/24-SP650_071420-BIX	.01	6850/ClO4 DOD			Ground Water	10mL	
13	E2000640-001	LH18/24-SP140_071420	.01	6850/ClO4 DOD			Ground Water	10mL	
14	E2000660-001	16EW01-200716	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2000660-003	16EW02-200716	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2000660-004	16EW02-200716-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
17	E2000660-005	16IW09-200716	.01	6850/ClO4 DOD			Ground Water	10mL	
18	E2000660-006	16RW05-200716	.01	6850/ClO4 DOD			Ground Water	10mL	
19	EQ2000302-01	MB		6850/ClO4 DOD			Liquid	10mL	
20	EQ2000302-02	LCS		6850/ClO4 DOD			Liquid	10mL	
21	EQ2000302-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
22	EQ2000302-04	50WW14-200709 MS	.01	6850/ClO4 DOD			Liquid	10mL	
23	EQ2000302-05	50WW14-200709 DMS	.01	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4 Inventory ID 202037 Logbook Ref: Sodium Perchlorate Expires On: 05/22/2021

E2000626-001	100.00µL	E2000627-001	100.00µL	E2000627-002	100.00µL	E2000627-003	100.00µL	E2000627-004	100.00µL	E2000627-005	100.00µL
E2000627-006	100.00µL	E2000627-007	100.00µL	E2000627-008	100.00µL	E2000627-009	100.00µL	E2000638-001	100.00µL	E2000639-001	100.00µL
E2000640-001	100.00µL	E2000660-001	100.00µL	E2000660-003	100.00µL	E2000660-004	100.00µL	E2000660-005	100.00µL	E2000660-006	100.00µL
EQ2000302-02	100.00µL	EQ2000302-03	100.00µL	EQ2000302-04	100.00µL	EQ2000302-05	100.00µL				

Name: Perchlorate Intermediate Stock1 Inventory ID 209764 Logbook Ref: Perchlorate Int. Stock1 51820 Expires On: 11/18/2020

EQ2000302-02	1.00µL	EQ2000302-03	1.00µL	EQ2000302-04	10.00µL	EQ2000302-05	10.00µL

Preparation Information Benchsheet

Prep Run#: 361870
Team: Semivoa GCMS/GRIVERA
Prep WorkFlow: GenExt28Day
Prep Method: Method
Status: Prepped
Prep Date/Time: 7/20/20 10:39

Preparation Steps

Step: Preparation
Started: 7/20/20 10:39
Finished: 7/20/20 14:00
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Preparation Information Benchsheet

Prep Run#: 362576 **Prep WorkFlow:** Gen CLO4 **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 7/30/20 08:49

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000660-002	16EW05-200716	.01	6850/ClO4 DOD			Misc. Solid	0.958g	
2	E2000660-007	16EW06-200716	.01	6850/ClO4 DOD			Misc. Solid	1.002g	
3	E2000678-001	C3-8	.01	6850/ClO4 DOD			Soil	1.058g	
4	E2000678-002	C7-1	.01	6850/ClO4 DOD			Soil	1.015g	
5	EQ2000319-01	MB		6850/ClO4 DOD			Solid	1.032g	
6	EQ2000319-02	LCS		6850/ClO4 DOD			Solid	1.012g	
7	EQ2000319-03	DLCS		6850/ClO4 DOD			Solid	1.012g	

Spiking Solutions

Name: Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4 Inventory ID 202037 Logbook Ref: Sodium Perchlorate Expires On: 05/22/2021

E2000660-002 100.00µL E2000660-007 100.00µL E2000678-001 100.00µL E2000678-002 100.00µL EQ2000319-01 100.00µL EQ2000319-02 100.00µL
EQ2000319-03 100.00µL

Name: Perchlorate Intermediate Stock1 Inventory ID 209764 Logbook Ref: Perchlorate Int. Stock1 51820 Expires On: 11/18/2020

EQ2000319-02 100.00µL EQ2000319-03 100.00µL

Preparation Steps

Step: Extraction
Started: 7/30/20 08:49
Finished: 7/30/20 15:15
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0720
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 15:18
Sample Name:	16EW01-200716	**Units:**	µg/L
Lab Code:	E2000660-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_030	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**28.4**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0810
Sample Matrix:	Misc. Solid	**Date Received:**	7/17/20
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 16:11
Sample Name:	16EW05-200716	**Units:**	µg/Kg
Lab Code:	E2000660-002	**Basis:**	Basis Adjustment Factor Missing

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_016	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**0.160**		1.04	0.783	0.314	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0950
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 16:01
Sample Name:	16EW02-200716	**Units:**	µg/L
Lab Code:	E2000660-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_035	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**16.2**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0950
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 16:09
Sample Name:	16EW02-200716-FD	**Units:**	µg/L
Lab Code:	E2000660-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_036	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**9.34**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 1105
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 16:17
Sample Name:	16IW09-200716	**Units:**	µg/L
Lab Code:	E2000660-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_037	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	2

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**0.184**		0.200	0.100	0.0500	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 1200
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 16:25
Sample Name:	16RW05-200716	**Units:**	µg/L
Lab Code:	E2000660-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_038	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**1.77**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0905
Sample Matrix:	Misc. Solid	**Date Received:**	7/17/20
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 16:19
Sample Name:	16EW06-200716	**Units:**	µg/Kg
Lab Code:	E2000660-007	**Basis:**	Basis Adjustment Factor Missing

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_017	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	ND		0.998	0.750	0.300	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/20/20 13:47
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2000302-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688323
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200720\20200720_023	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	ND		0.100	0.0500	0.0250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Misc. Solid	**Date Received:**	NA
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 15:47
Sample Name:	Method Blank	**Units:**	µg/Kg
Lab Code:	EQ2000319-01	**Basis:**	Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_013	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	ND		0.969	0.750	0.300	

Accuracy & Precision

ALS Environmental - Houston HRMS
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www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/20/20
Sample Matrix:	Ground Water		

Lab Control Sample Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Units:**	µg/L
Prep Method:	Method	**Basis:**	NA
		Extraction Lot:	361870

	Lab Control Sample EQ2000302-02			Duplicate Lab Control Sample EQ2000302-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.102	0.100	102	0.117	0.100	117	84 - 119	13	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/20/20 13:55
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000302-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688323
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200720\20200720_024	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**0.102**		0.100	0.0500	0.0250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/20/20 14:03
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000302-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688323
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200720\20200720_025	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**0.117**		0.100	0.0500	0.0250	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/30/20
Sample Matrix:	Misc. Solid		

Lab Control Sample Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Units:**	µg/Kg
Prep Method:	Method	**Basis:**	Dry
		Extraction Lot:	362576

	Lab Control Sample EQ2000319-02			Duplicate Lab Control Sample EQ2000319-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	102	98.8	103	100	98.8	102	84 - 121	2	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Misc. Solid	**Date Received:**	NA
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 15:55
Sample Name:	Lab Control Sample	**Units:**	µg/Kg
Lab Code:	EQ2000319-02	**Basis:**	Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_014	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**102**		0.988	0.750	0.300	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Misc. Solid	**Date Received:**	NA
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 16:03
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/Kg
Lab Code:	EQ2000319-03	**Basis:**	Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_015	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**100**		0.988	0.750	0.300	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Analyzed:	7/24/20

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	Batch QC	**Units:**	µg/L
Lab Code:	E2000627-004	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		Batch QCMS			Batch QCDMS					
		Matrix Spike			**Duplicate Matrix Spike**					
		EQ2000302-04			EQ2000302-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	3.69	4.69	1.00	99	4.79	1.00	110	84 - 119	2	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 14:07
Sample Name:	Batch QC	**Units:**	µg/L
Lab Code:	EQ2000302-04	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_021	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**4.69**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 15:45
Sample Name:	Batch QC	**Units:**	µg/L
Lab Code:	EQ2000302-05	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_033	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**4.79**		1.00	0.500	0.250	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20200720

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/20/2020
Cal. Std. xp: 11/18/2020
ICAL ID: **EC2000014**

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200720_006	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200720_007	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200720_008	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200720_009	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200720_016	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200720_011	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200720_012	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200720_013	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200720_014	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200720_015	Perchlorate6850b.lcm	1x	☒	3100807-07
11	PERCHLORATEICV		20200720_017	Perchlorate6850b.lcm	1x	☒	3100807-08
12	IB		20200720_018	Perchlorate6850b.lcm	1x	☒	
13	IB		20200720_019	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200720_020	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200720_021	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200720_022	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-01		20200720_023	Perchlorate6850b.lcm	1x	☒	
18	EQ2000302-02		20200720_024	Perchlorate6850b.lcm	1x	☒	
19	EQ2000302-03		20200720_025	Perchlorate6850b.lcm	1x	☒	
20	EQ2000302-04		20200720_026	Perchlorate6850b.lcm	1x	☒	
21	EQ2000302-05		20200720_027	Perchlorate6850b.lcm	1x	☒	
22	E2000626-001		20200720_028	Perchlorate6850b.lcm	1x	☒	
23	E2000627-001		20200720_029	Perchlorate6850b.lcm	1x	☒	
24	E2000627-002		20200720_030	Perchlorate6850b.lcm	1x	☒	
25	E2000627-003		20200720_031	Perchlorate6850b.lcm	1x	☒	
26	E2000627-004		20200720_032	Perchlorate6850b.lcm	1x	☒	
27	PERCHLORATE7		20200720_033	Perchlorate6850b.lcm	1x	☒	3100807-04
28	E2000627-005		20200720_034	Perchlorate6850b.lcm	1x	☒	
29	E2000627-006		20200720_035	Perchlorate6850b.lcm	1x	☒	
30	E2000627-007		20200720_036	Perchlorate6850b.lcm	1x	☒	
31	E2000627-008		20200720_037	Perchlorate6850b.lcm	1x	☒	
32	E2000627-009		20200720_038	Perchlorate6850b.lcm	1x	☒	
33	E2000638-001		20200720_039	Perchlorate6850b.lcm	1x	☒	
34	E2000639-001		20200720_040	Perchlorate6850b.lcm	1x	☒	
35	E2000640-001		20200720_041	Perchlorate6850b.lcm	1x	☒	
36	PERCHLORATE7		20200720_042	Perchlorate6850b.lcm	1x	☒	3100807-04
37	EQ2000303-01		20200720_043	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-02		20200720_044	Perchlorate6850b.lcm	1x	☒	
39	EQ2000303-03		20200720_045	Perchlorate6850b.lcm	1x	☒	
40	E2000641-001		20200720_046	Perchlorate6850b.lcm	1x	☒	
41	E2000641-002		20200720_047	Perchlorate6850b.lcm	1x	☒	
42	E2000641-003		20200720_048	Perchlorate6850b.lcm	1x	☒	
43	E2000641-004		20200720_049	Perchlorate6850b.lcm	1x	☒	
44	E2000641-005		20200720_050	Perchlorate6850b.lcm	1x	☒	
45	E2000641-006		20200720_051	Perchlorate6850b.lcm	1x	☒	
46	E2000641-007		20200720_052	Perchlorate6850b.lcm	1x	☒	
47	PERCHLORATE7		20200720_053	Perchlorate6850b.lcm	1x	☒	3100807-04
48	E2000641-008		20200720_054	Perchlorate6850b.lcm	1x	☒	
49	E2000641-009		20200720_055	Perchlorate6850b.lcm	1x	☒	
50	E2000648-001		20200720_056	Perchlorate6850b.lcm	1x	☒	
51	E2000648-002		20200720_057	Perchlorate6850b.lcm	1x	☒	
52	E2000648-003		20200720_058	Perchlorate6850b.lcm	1x	☒	

Initial Calibration - Detailed Report

Calibration ID: EC2000014 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2000014-01	PERCHLORATE1	20200720_006	07/20/2020 10:09
02	EC2000014-02	PERCHLORATE2	20200720_007	07/20/2020 10:17
03	EC2000014-03	PERCHLORATE3	20200720_008	07/20/2020 10:24
04	EC2000014-04	PERCHLORATE4	20200720_009	07/20/2020 10:32
06	EC2000014-06	PERCHLORATE6	20200720_011	07/20/2020 10:48
07	EC2000014-07	PERCHLORATE7	20200720_012	07/20/2020 10:56
08	EC2000014-08	PERCHLORATE8	20200720_013	07/20/2020 11:04
09	EC2000014-09	PERCHLORATE9	20200720_014	07/20/2020 11:12
10	EC2000014-10	PERCHLORATE10	20200720_015	07/20/2020 11:20
05	EC2000014-05	PERCHLORATE5	20200720_016	07/20/2020 12:28

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 3.545** **Average RF = 0.121**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1239	02	0.5000	0.1227	03	0.7000	0.1244	04	1.0000	0.1237
05	2.0000	0.1208	06	5.0000	0.1169	07	10.0000	0.1279	08	20.0000	0.1185
09	30.0000	0.1182	10	50.0000	0.1134						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.102	2.3	02	0.5000	0.507	1.4	03	0.7000	0.719	2.7
04	1.0000	1.02	2.2	05	2.0000	2.00	-0.2	06	5.0000	4.83	-3.4
07	10.0000	10.6	5.7	08	20.0000	19.6	-2.1	09	30.0000	29.3	-2.3
10	50.0000	46.8	-6.3								

Initial Calibration Verification Summary Report

Calibration ID:	EC2000014	**Instrument ID:**	E-LCMS-01
Datafile ID:	20200720_017	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2000014-11	T	Average RF	10	10.475	ng/mL	4.8	<= 15

ALS Group Houston

PERCHLORATE1

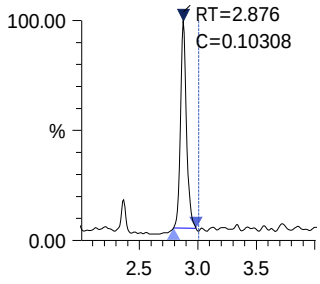
Date acquired: 7/20/2020 10:09:08 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_006.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE1	7/20/2020 10:09:08 AM	5665	0.10308	20200720_006	2.876	25.0000	1.0000	5
Sodium Perchlorate-18O4_IS	PERCHLORATE1	7/20/2020 10:09:08 AM	457293	1.00000	20200720_006	2.874	25.0000	1.0000	5

Perchlorate

Conc 0.10308
Area 5665

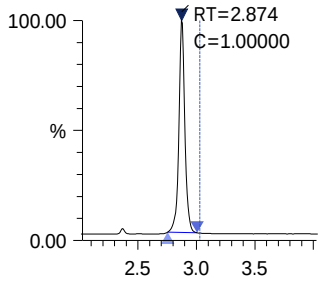
Q 99.00>83.00 (-) 1.65e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 457293

ISTD 107.00>89.00 (-) 1.28e5



ALS Group Houston

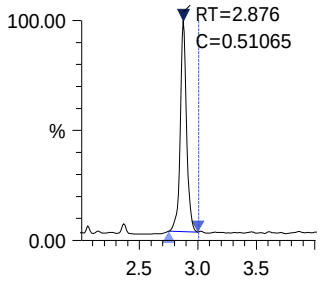
PERCHLORATE2

Date acquired: 7/20/2020 10:17:03 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_007.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE2	7/20/2020 10:17:03 AM	28211	0.51065	20200720_007	2.876	25.0000	1.0000	6
Sodium Perchlorate-18O4_IS	PERCHLORATE2	7/20/2020 10:17:03 AM	459674	1.00000	20200720_007	2.873	25.0000	1.0000	6

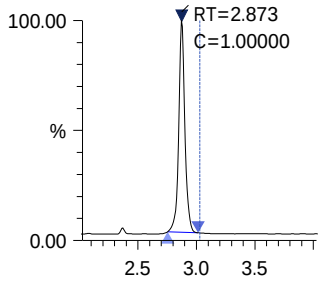
Perchlorate

Conc 0.51065
Area 28211
Q 99.00>83.00 (-) 7.64e3



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 459674
ISTD 107.00>89.00 (-) 1.26e5



ALS Group Houston

PERCHLORATE3

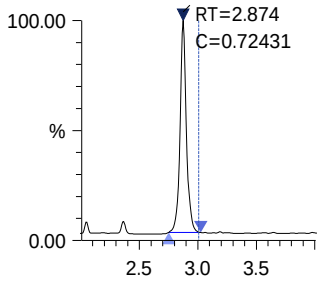
Date acquired: 7/20/2020 10:24:56 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_008.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE3	7/20/2020 10:24:56 AM	40510	0.72431	20200720_008	2.874	25.0000	1.0000	7
Sodium Perchlorate-18O4_IS	PERCHLORATE3	7/20/2020 10:24:56 AM	465371	1.00000	20200720_008	2.874	25.0000	1.0000	7

Perchlorate

Conc 0.72431
Area 40510

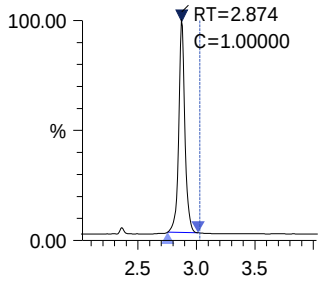
Q 99.00>83.00 (-) 1.08e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 465371

ISTD 107.00>89.00 (-) 1.27e5



ALS Group Houston

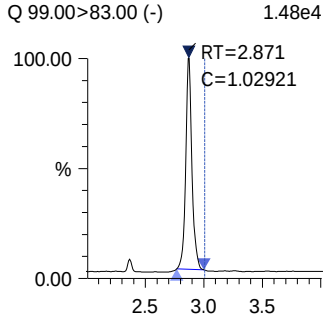
PERCHLORATE4

Date acquired: 7/20/2020 10:32:48 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_009.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE4	7/20/2020 10:32:48 AM	54285	1.02921	20200720_009	2.871	25.0000	1.0000	8
Sodium Perchlorate-18O4_IS	PERCHLORATE4	7/20/2020 10:32:48 AM	438869	1.00000	20200720_009	2.869	25.0000	1.0000	8

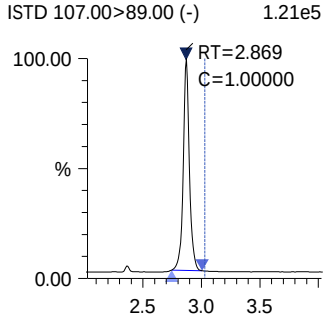
Perchlorate

Conc 1.02921
Area 54285



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 438869



ALS Group Houston

PERCHLORATE6

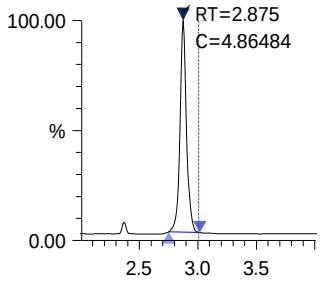
Date acquired: 7/20/2020 10:48:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_011.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE6	7/20/2020 10:48:37 AM	249126	4.86484	20200720_011	2.875	25.0000	1.0000	10
Sodium Perchlorate-18O4_IS	PERCHLORATE6	7/20/2020 10:48:37 AM	426098	1.00000	20200720_011	2.873	25.0000	1.0000	10

Perchlorate

Conc 4.86484
Area 249126

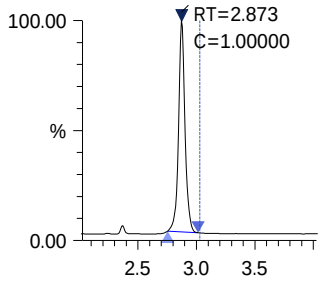
Q 99.00>83.00 (-) 6.50e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 426098

ISTD 107.00>89.00 (-) 1.12e5



ALS Group Houston

PERCHLORATE7

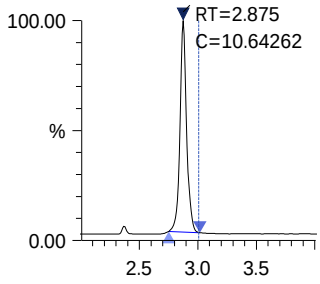
Date acquired: 7/20/2020 10:56:33 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_012.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/20/2020 10:56:33 AM	453181	10.64262	20200720_012	2.875	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/20/2020 10:56:33 AM	354309	1.00000	20200720_012	2.873	25.0000	1.0000	4

Perchlorate

Conc 10.64262
Area 453181

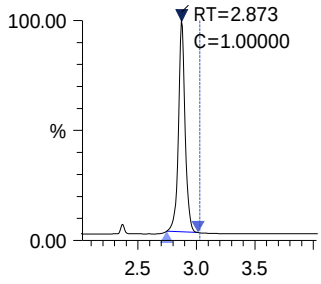
Q 99.00>83.00 (-) 1.16e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 354309

ISTD 107.00>89.00 (-) 9.03e4



ALS Group Houston

PERCHLORATE8

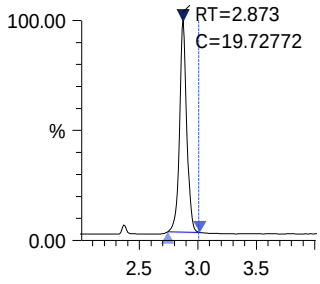
Date acquired: 7/20/2020 11:04:29 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_013.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE8	7/20/2020 11:04:29 AM	811652	19.72772	20200720_013	2.873	25.0000	1.0000	11
Sodium Perchlorate-18O4_IS	PERCHLORATE8	7/20/2020 11:04:29 AM	342336	1.00000	20200720_013	2.872	25.0000	1.0000	11

Perchlorate

Conc 19.72772
Area 811652

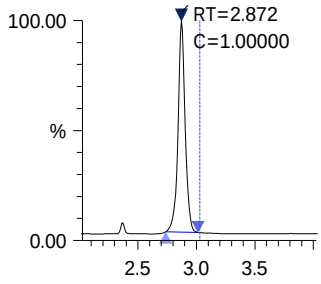
Q 99.00>83.00 (-) 1.93e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 342336

ISTD 107.00>89.00 (-) 8.10e4



ALS Group Houston

PERCHLORATE9

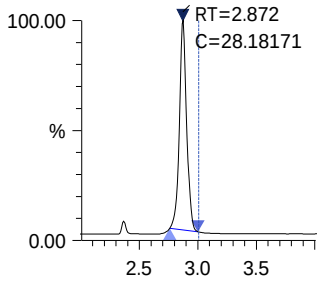
Date acquired: 7/20/2020 11:12:22 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_014.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE9	7/20/2020 11:12:22 AM	1067782	28.18171	20200720_014	2.872	25.0000	1.0000	12
Sodium Perchlorate-18O4_IS	PERCHLORATE9	7/20/2020 11:12:22 AM	315264	1.00000	20200720_014	2.871	25.0000	1.0000	12

Perchlorate

Conc 28.18171
Area 1067782

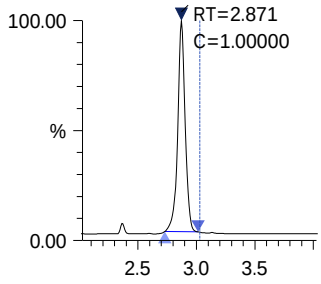
Q 99.00>83.00 (-) 2.52e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 315264

ISTD 107.00>89.00 (-) 7.16e4



ALS Group Houston

PERCHLORATE10

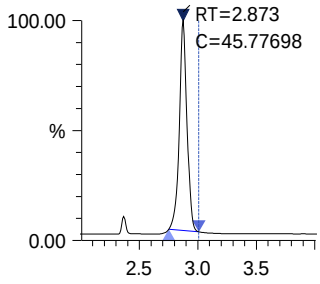
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_015.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE10	7/20/2020 11:20:14 AM	1515028	45.77698	20200720_015	2.873	25.0000	1.0000	13
Sodium Perchlorate-18O4_IS	PERCHLORATE10	7/20/2020 11:20:14 AM	275380	1.00000	20200720_015	2.872	25.0000	1.0000	13

Perchlorate

Conc 45.77698
Area 1515028

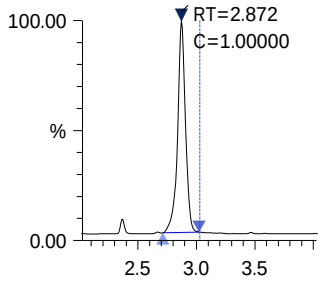
Q 99.00>83.00 (-) 3.39e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 275380

ISTD 107.00>89.00 (-) 5.90e4



ALS Group Houston

PERCHLORATE5

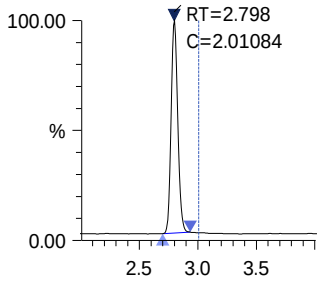
Date acquired: 7/20/2020 12:28:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_016.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE5	7/20/2020 12:28:05 PM	119859	2.01084	20200720_016	2.798	25.0000	1.0000	9
Sodium Perchlorate-18O4_IS	PERCHLORATE5	7/20/2020 12:28:05 PM	495966	1.00000	20200720_016	2.795	25.0000	1.0000	9

Perchlorate

Conc 2.01084
Area 119859

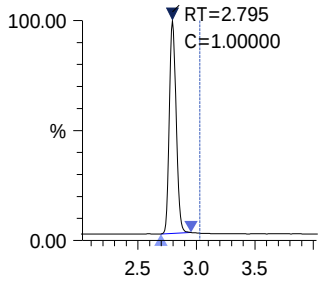
Q 99.00>83.00 (-) 3.02e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 495966

ISTD 107.00>89.00 (-) 1.24e5



ALS Group Houston

PERCHLORATEICV

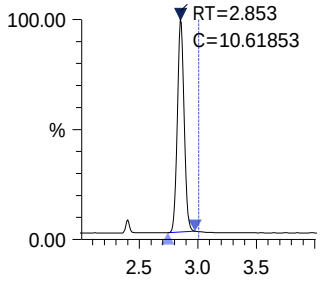
Date acquired: 7/20/2020 12:52:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_017.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATEICV	7/20/2020 12:52:26 PM	490921	10.61853	20200720_017	2.853	25.0000	1.0000	14
Sodium Perchlorate-18O4_IS	PERCHLORATEICV	7/20/2020 12:52:26 PM	384686	1.00000	20200720_017	2.851	25.0000	1.0000	14

Perchlorate

Conc 10.61853
Area 490921

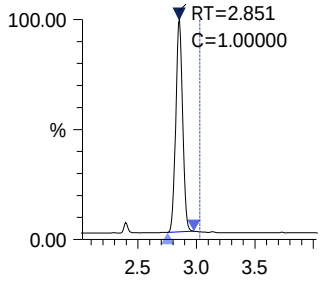
Q 99.00>83.00 (-) 1.21e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 384686

ISTD 107.00>89.00 (-) 9.52e4



20200724

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200724_005	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200724_006	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200724_007	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200724_008	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200724_009	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200724_010	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200724_011	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200724_012	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200724_013	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200724_014	Perchlorate6850b.lcm	1x	☒	3100807-07
11	IB		20200724_015	Perchlorate6850b.lcm	1x	☒	
12	PERCHLORATEICV		20200724_016	Perchlorate6850b.lcm	1x	☒	3100807-08
13	IB		20200724_017	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200724_018	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200724_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200724_020	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-04X10		20200724_021	Perchlorate6850b.lcm	10x	☒	
18	EQ2000302-05X10DNU		20200724_022	Perchlorate6850b.lcm	10x	☒	
19	E2000626-001X2		20200724_023	Perchlorate6850b.lcm	2x	☒	
20	E2000627-001X10		20200724_024	Perchlorate6850b.lcm	10x	☒	
21	E2000627-005X100		20200724_025	Perchlorate6850b.lcm	100x	☒	
22	E2000627-006X100		20200724_026	Perchlorate6850b.lcm	100x	☒	
23	E2000627-009X1000		20200724_027	Perchlorate6850b.lcm	1000x	☒	
24	E2000640-001X200		20200724_028	Perchlorate6850b.lcm	200x	☒	
25	PERCHLORATE7		20200724_029	Perchlorate6850b.lcm	1x	☒	3100807-04
26	E2000660-001X10		20200724_030	Perchlorate6850b.lcm	10x	☒	
27	E2000627-004X10		20200724_031	Perchlorate6850b.lcm	10x	☒	
28	PERCHLORATE7		20200724_032	Perchlorate6850b.lcm	1x	☒	3100807-04
29	EQ2000302-05X10		20200724_033	Perchlorate6850b.lcm	10x	☒	
30	PERCHLORATE7		20200724_034	Perchlorate6850b.lcm	1x	☒	3100807-04
31	E2000660-003X10		20200724_035	Perchlorate6850b.lcm	10x	☒	
32	E2000660-004X10		20200724_036	Perchlorate6850b.lcm	10x	☒	
33	E2000660-005X2		20200724_037	Perchlorate6850b.lcm	2x	☒	
34	E2000660-006X10		20200724_038	Perchlorate6850b.lcm	10x	☒	
35	PERCHLORATE7		20200724_039	Perchlorate6850b.lcm	1x	☒	3100807-04
36	EQ2000303-01		20200724_040	Perchlorate6850b.lcm	1x	☒	
37	EQ2000303-02		20200724_041	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-03		20200724_042	Perchlorate6850b.lcm	1x	☒	
39	E2000641-001X20		20200724_043	Perchlorate6850b.lcm	20x	☒	
40	E2000641-002X20		20200724_044	Perchlorate6850b.lcm	20x	☒	
41	E2000641-003X10		20200724_045	Perchlorate6850b.lcm	10x	☒	
42	E2000641-004X20		20200724_046	Perchlorate6850b.lcm	20x	☒	
43	E2000641-005X10		20200724_047	Perchlorate6850b.lcm	10x	☒	
44	E2000641-006X10		20200724_048	Perchlorate6850b.lcm	10x	☒	
45	E2000641-007X10		20200724_049	Perchlorate6850b.lcm	10x	☒	
46	PERCHLORATE7		20200724_050	Perchlorate6850b.lcm	1x	☒	3100807-04
47	E2000641-008X10		20200724_051	Perchlorate6850b.lcm	10x	☒	
48	E2000641-009X10		20200724_052	Perchlorate6850b.lcm	10x	☒	
49	E2000648-001X10		20200724_053	Perchlorate6850b.lcm	10x	☒	
50	E2000648-002X10		20200724_054	Perchlorate6850b.lcm	10x	☒	
51	E2000648-003X20		20200724_055	Perchlorate6850b.lcm	20x	☒	
52	E2000648-005X10		20200724_056	Perchlorate6850b.lcm	10x	☒	

Initial Calibration - Detailed Report

Calibration ID: EC2000016 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2000016-01	PERCHLORATE1	20200724_005	07/24/2020 11:48
02	EC2000016-02	PERCHLORATE2	20200724_006	07/24/2020 11:56
03	EC2000016-03	PERCHLORATE3	20200724_007	07/24/2020 12:04
04	EC2000016-04	PERCHLORATE4	20200724_008	07/24/2020 12:11
05	EC2000016-05	PERCHLORATE5	20200724_009	07/24/2020 12:19
06	EC2000016-06	PERCHLORATE6	20200724_010	07/24/2020 12:27
07	EC2000016-07	PERCHLORATE7	20200724_011	07/24/2020 12:35
08	EC2000016-08	PERCHLORATE8	20200724_012	07/24/2020 12:43
09	EC2000016-09	PERCHLORATE9	20200724_013	07/24/2020 12:51
10	EC2000016-10	PERCHLORATE10	20200724_014	07/24/2020 12:59

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 4.659** **Average RF = 0.121**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1283	02	0.5000	0.13	03	0.7000	0.1207	04	1.0000	0.1251
05	2.0000	0.1211	06	5.0000	0.1202	07	10.0000	0.1211	08	20.0000	0.1168
09	30.0000	0.1121	10	50.0000	0.1148						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.106	6.0	02	0.5000	0.537	7.4	03	0.7000	0.698	-0.3
04	1.0000	1.03	3.4	05	2.0000	2.00	0.1	06	5.0000	4.97	-0.7
07	10.0000	10.0	0.1	08	20.0000	19.3	-3.5	09	30.0000	27.8	-7.3
10	50.0000	47.4	-5.1								

Initial Calibration Verification Summary Report

Calibration ID:	EC2000016	**Instrument ID:**	E-LCMS-01
Datafile ID:	20200724_016	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2000016-11	T	Average RF	10	9.867	ng/mL	-1.3	<= 15

ALS Group Houston

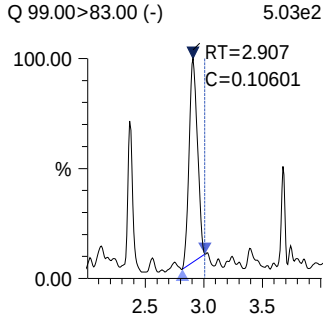
PERCHLORATE1

Date acquired: 7/24/2020 11:48:19 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_005.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE1	7/24/2020 11:48:19 AM	2348	0.10601	20200724_005	2.907	25.0000	1.0000	5
Sodium Perchlorate-18O4_IS	PERCHLORATE1	7/24/2020 11:48:19 AM	183001	1.00000	20200724_005	2.903	25.0000	1.0000	5

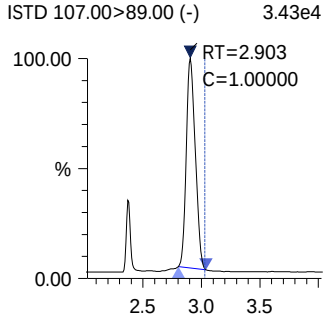
Perchlorate

Conc 0.10601
Area 2348



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 183001



ALS Group Houston

PERCHLORATE2

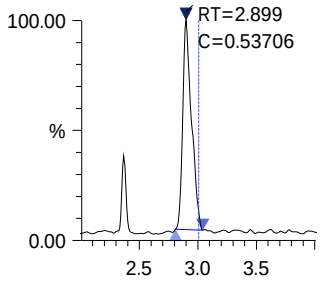
Date acquired: 7/24/2020 11:56:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_006.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE2	7/24/2020 11:56:11 AM	11773	0.53706	20200724_006	2.899	25.0000	1.0000	6
Sodium Perchlorate-18O4_IS	PERCHLORATE2	7/24/2020 11:56:11 AM	181125	1.00000	20200724_006	2.898	25.0000	1.0000	6

Perchlorate

Conc 0.53706
Area 11773

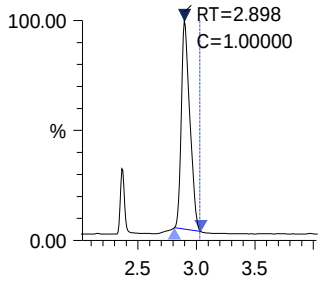
Q 99.00>83.00 (-) 2.32e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 181125

ISTD 107.00>89.00 (-) 3.62e4



ALS Group Houston

PERCHLORATE3

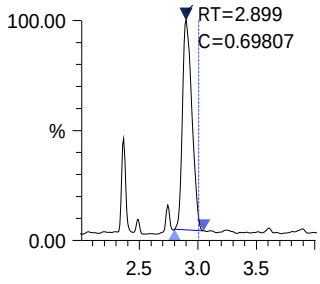
Date acquired: 7/24/2020 12:04:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_007.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE3	7/24/2020 12:04:05 PM	15258	0.69807	20200724_007	2.899	25.0000	1.0000	7
Sodium Perchlorate-18O4_IS	PERCHLORATE3	7/24/2020 12:04:05 PM	180602	1.00000	20200724_007	2.896	25.0000	1.0000	7

Perchlorate

Conc 0.69807
Area 15258

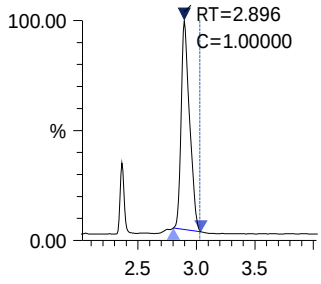
Q 99.00>83.00 (-) 2.79e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 180602

ISTD 107.00>89.00 (-) 3.65e4



ALS Group Houston

PERCHLORATE4

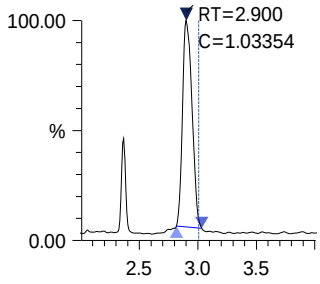
Date acquired: 7/24/2020 12:11:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_008.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE4	7/24/2020 12:11:58 PM	20922	1.03354	20200724_008	2.900	25.0000	1.0000	8
Sodium Perchlorate-18O4_IS	PERCHLORATE4	7/24/2020 12:11:58 PM	167260	1.00000	20200724_008	2.902	25.0000	1.0000	8

Perchlorate

Conc 1.03354
Area 20922

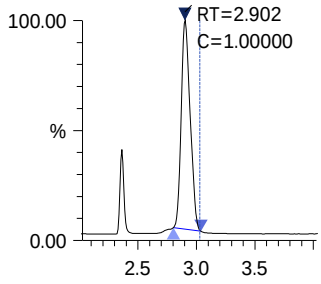
Q 99.00>83.00 (-) 3.87e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 167260

ISTD 107.00>89.00 (-) 3.17e4



ALS Group Houston

PERCHLORATE5

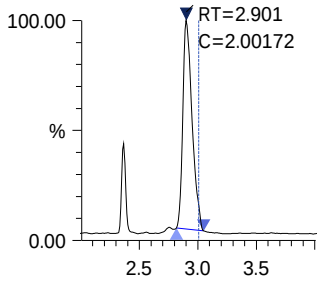
Date acquired: 7/24/2020 12:19:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_009.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE5	7/24/2020 12:19:50 PM	39343	2.00172	20200724_009	2.901	25.0000	1.0000	9
Sodium Perchlorate-18O4_IS	PERCHLORATE5	7/24/2020 12:19:50 PM	162397	1.00000	20200724_009	2.899	25.0000	1.0000	9

Perchlorate

Conc 2.00172
Area 39343

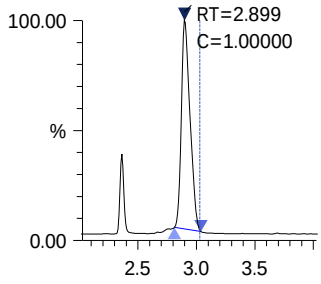
Q 99.00>83.00 (-) 7.39e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 162397

ISTD 107.00>89.00 (-) 3.19e4



ALS Group Houston

PERCHLORATE6

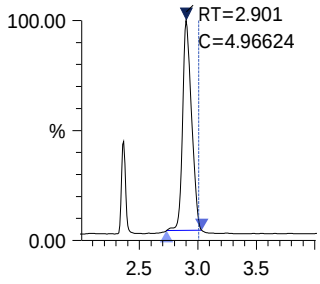
Date acquired: 7/24/2020 12:27:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_010.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE6	7/24/2020 12:27:42 PM	102216	4.96624	20200724_010	2.901	25.0000	1.0000	10
Sodium Perchlorate-18O4_IS	PERCHLORATE6	7/24/2020 12:27:42 PM	170060	1.00000	20200724_010	2.900	25.0000	1.0000	10

Perchlorate

Conc 4.96624
Area 102216

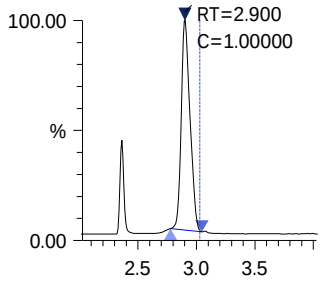
Q 99.00>83.00 (-) 1.97e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 170060

ISTD 107.00>89.00 (-) 3.28e4



ALS Group Houston

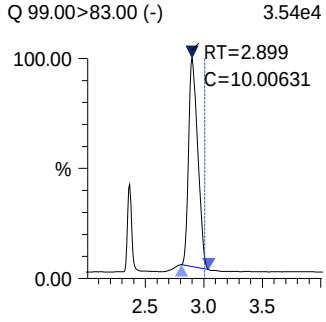
PERCHLORATE7

Date acquired: 7/24/2020 12:35:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_011.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 12:35:33 PM	187110	10.00631	20200724_011	2.899	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 12:35:33 PM	154502	1.00000	20200724_011	2.897	25.0000	1.0000	4

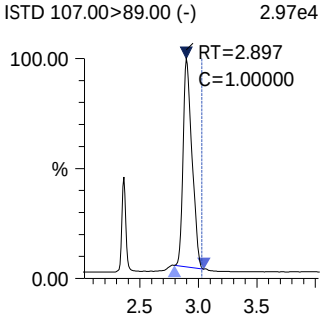
Perchlorate

Conc 10.00631
Area 187110



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 154502



ALS Group Houston

PERCHLORATE8

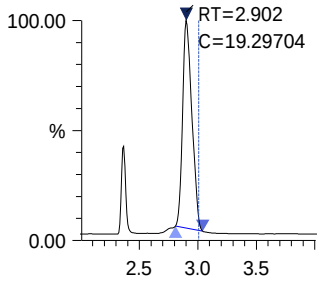
Date acquired: 7/24/2020 12:43:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_012.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE8	7/24/2020 12:43:26 PM	349524	19.29704	20200724_012	2.902	25.0000	1.0000	11
Sodium Perchlorate-18O4_IS	PERCHLORATE8	7/24/2020 12:43:26 PM	149657	1.00000	20200724_012	2.900	25.0000	1.0000	11

Perchlorate

Conc 19.29704
Area 349524

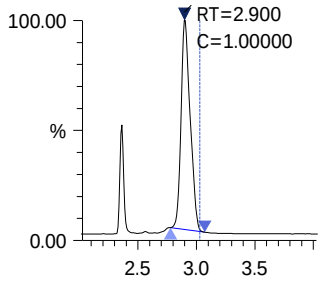
Q 99.00>83.00 (-) 6.58e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 149657

ISTD 107.00>89.00 (-) 2.78e4



ALS Group Houston

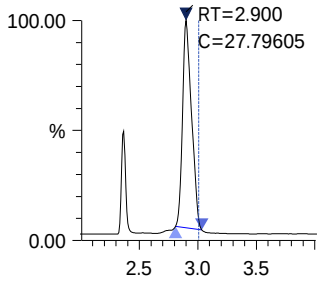
PERCHLORATE9

Date acquired: 7/24/2020 12:51:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_013.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE9	7/24/2020 12:51:22 PM	465757	27.79605	20200724_013	2.900	25.0000	1.0000	12
Sodium Perchlorate-18O4_IS	PERCHLORATE9	7/24/2020 12:51:22 PM	138448	1.00000	20200724_013	2.898	25.0000	1.0000	12

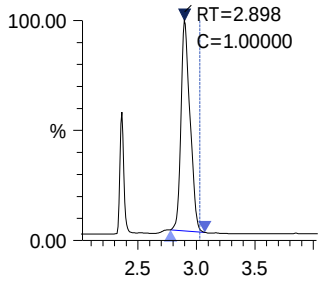
Perchlorate

Conc 27.79605
Area 465757
Q 99.00>83.00 (-) 9.05e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 138448
ISTD 107.00>89.00 (-) 2.59e4



ALS Group Houston

PERCHLORATE10

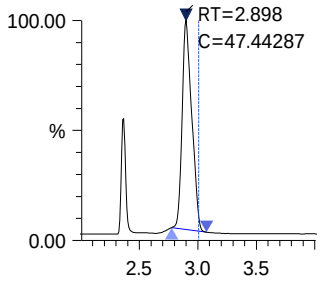
Date acquired: 7/24/2020 12:59:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_014.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE10	7/24/2020 12:59:14 PM	708682	47.44287	20200724_014	2.898	25.0000	1.0000	13
Sodium Perchlorate-18O4_IS	PERCHLORATE10	7/24/2020 12:59:14 PM	123422	1.00000	20200724_014	2.896	25.0000	1.0000	13

Perchlorate

Conc 47.44287
Area 708682

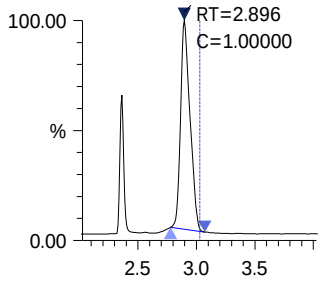
Q 99.00>83.00 (-) 1.28e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 123422

ISTD 107.00>89.00 (-) 2.23e4



ALS Group Houston

PERCHLORATEICV

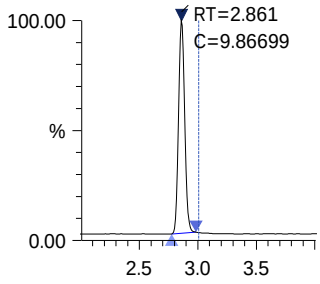
Date acquired: 7/24/2020 1:28:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_016.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATEICV	7/24/2020 1:28:19 PM	231631	9.86699	20200724_016	2.861	25.0000	1.0000	14
Sodium Perchlorate-18O4_IS	PERCHLORATEICV	7/24/2020 1:28:19 PM	193964	1.00000	20200724_016	2.859	25.0000	1.0000	14

Perchlorate

Conc 9.86699
Area 231631

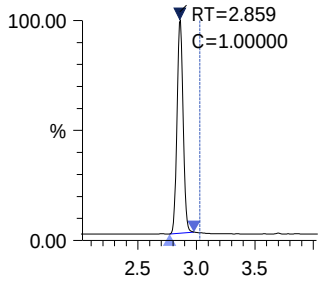
Q 99.00>83.00 (-) 6.30e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 193964

ISTD 107.00>89.00 (-) 5.33e4



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
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www.alsglobal.com

20200720

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/20/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000014

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200720_006	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200720_007	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200720_008	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200720_009	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200720_016	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200720_011	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200720_012	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200720_013	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200720_014	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200720_015	Perchlorate6850b.lcm	1x	☒	3100807-07
11	PERCHLORATEICV		20200720_017	Perchlorate6850b.lcm	1x	☒	3100807-08
12	IB		20200720_018	Perchlorate6850b.lcm	1x	☒	
13	IB		20200720_019	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200720_020	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200720_021	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200720_022	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-01		20200720_023	Perchlorate6850b.lcm	1x	☒	
18	EQ2000302-02		20200720_024	Perchlorate6850b.lcm	1x	☒	
19	EQ2000302-03		20200720_025	Perchlorate6850b.lcm	1x	☒	
20	EQ2000302-04		20200720_026	Perchlorate6850b.lcm	1x	☒	
21	EQ2000302-05		20200720_027	Perchlorate6850b.lcm	1x	☒	
22	E2000626-001		20200720_028	Perchlorate6850b.lcm	1x	☒	
23	E2000627-001		20200720_029	Perchlorate6850b.lcm	1x	☒	
24	E2000627-002		20200720_030	Perchlorate6850b.lcm	1x	☒	
25	E2000627-003		20200720_031	Perchlorate6850b.lcm	1x	☒	
26	E2000627-004		20200720_032	Perchlorate6850b.lcm	1x	☒	
27	PERCHLORATE7		20200720_033	Perchlorate6850b.lcm	1x	☒	3100807-04
28	E2000627-005		20200720_034	Perchlorate6850b.lcm	1x	☒	
29	E2000627-006		20200720_035	Perchlorate6850b.lcm	1x	☒	
30	E2000627-007		20200720_036	Perchlorate6850b.lcm	1x	☒	
31	E2000627-008		20200720_037	Perchlorate6850b.lcm	1x	☒	
32	E2000627-009		20200720_038	Perchlorate6850b.lcm	1x	☒	
33	E2000638-001		20200720_039	Perchlorate6850b.lcm	1x	☒	
34	E2000639-001		20200720_040	Perchlorate6850b.lcm	1x	☒	
35	E2000640-001		20200720_041	Perchlorate6850b.lcm	1x	☒	
36	PERCHLORATE7		20200720_042	Perchlorate6850b.lcm	1x	☒	3100807-04
37	EQ2000303-01		20200720_043	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-02		20200720_044	Perchlorate6850b.lcm	1x	☒	
39	EQ2000303-03		20200720_045	Perchlorate6850b.lcm	1x	☒	
40	E2000641-001		20200720_046	Perchlorate6850b.lcm	1x	☒	
41	E2000641-002		20200720_047	Perchlorate6850b.lcm	1x	☒	
42	E2000641-003		20200720_048	Perchlorate6850b.lcm	1x	☒	
43	E2000641-004		20200720_049	Perchlorate6850b.lcm	1x	☒	
44	E2000641-005		20200720_050	Perchlorate6850b.lcm	1x	☒	
45	E2000641-006		20200720_051	Perchlorate6850b.lcm	1x	☒	
46	E2000641-007		20200720_052	Perchlorate6850b.lcm	1x	☒	
47	PERCHLORATE7		20200720_053	Perchlorate6850b.lcm	1x	☒	3100807-04
48	E2000641-008		20200720_054	Perchlorate6850b.lcm	1x	☒	
49	E2000641-009		20200720_055	Perchlorate6850b.lcm	1x	☒	
50	E2000648-001		20200720_056	Perchlorate6850b.lcm	1x	☒	
51	E2000648-002		20200720_057	Perchlorate6850b.lcm	1x	☒	
52	E2000648-003		20200720_058	Perchlorate6850b.lcm	1x	☒	

20200724

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: **EC2000016**

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200724_005	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200724_006	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200724_007	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200724_008	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200724_009	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200724_010	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200724_011	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200724_012	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200724_013	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200724_014	Perchlorate6850b.lcm	1x	☒	3100807-07
11	IB		20200724_015	Perchlorate6850b.lcm	1x	☒	
12	PERCHLORATEICV		20200724_016	Perchlorate6850b.lcm	1x	☒	3100807-08
13	IB		20200724_017	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200724_018	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200724_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200724_020	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-04X10		20200724_021	Perchlorate6850b.lcm	10x	☒	
18	EQ2000302-05X10DNU		20200724_022	Perchlorate6850b.lcm	10x	☒	
19	E2000626-001X2		20200724_023	Perchlorate6850b.lcm	2x	☒	
20	E2000627-001X10		20200724_024	Perchlorate6850b.lcm	10x	☒	
21	E2000627-005X100		20200724_025	Perchlorate6850b.lcm	100x	☒	
22	E2000627-006X100		20200724_026	Perchlorate6850b.lcm	100x	☒	
23	E2000627-009X1000		20200724_027	Perchlorate6850b.lcm	1000x	☒	
24	E2000640-001X200		20200724_028	Perchlorate6850b.lcm	200x	☒	
25	PERCHLORATE7		20200724_029	Perchlorate6850b.lcm	1x	☒	3100807-04
26	E2000660-001X10		20200724_030	Perchlorate6850b.lcm	10x	☒	
27	E2000627-004X10		20200724_031	Perchlorate6850b.lcm	10x	☒	
28	PERCHLORATE7		20200724_032	Perchlorate6850b.lcm	1x	☒	3100807-04
29	EQ2000302-05X10		20200724_033	Perchlorate6850b.lcm	10x	☒	
30	PERCHLORATE7		20200724_034	Perchlorate6850b.lcm	1x	☒	3100807-04
31	E2000660-003X10		20200724_035	Perchlorate6850b.lcm	10x	☒	
32	E2000660-004X10		20200724_036	Perchlorate6850b.lcm	10x	☒	
33	E2000660-005X2		20200724_037	Perchlorate6850b.lcm	2x	☒	
34	E2000660-006X10		20200724_038	Perchlorate6850b.lcm	10x	☒	
35	PERCHLORATE7		20200724_039	Perchlorate6850b.lcm	1x	☒	3100807-04
36	EQ2000303-01		20200724_040	Perchlorate6850b.lcm	1x	☒	
37	EQ2000303-02		20200724_041	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-03		20200724_042	Perchlorate6850b.lcm	1x	☒	
39	E2000641-001X20		20200724_043	Perchlorate6850b.lcm	20x	☒	
40	E2000641-002X20		20200724_044	Perchlorate6850b.lcm	20x	☒	
41	E2000641-003X10		20200724_045	Perchlorate6850b.lcm	10x	☒	
42	E2000641-004X20		20200724_046	Perchlorate6850b.lcm	20x	☒	
43	E2000641-005X10		20200724_047	Perchlorate6850b.lcm	10x	☒	
44	E2000641-006X10		20200724_048	Perchlorate6850b.lcm	10x	☒	
45	E2000641-007X10		20200724_049	Perchlorate6850b.lcm	10x	☒	
46	PERCHLORATE7		20200724_050	Perchlorate6850b.lcm	1x	☒	3100807-04
47	E2000641-008X10		20200724_051	Perchlorate6850b.lcm	10x	☒	
48	E2000641-009X10		20200724_052	Perchlorate6850b.lcm	10x	☒	
49	E2000648-001X10		20200724_053	Perchlorate6850b.lcm	10x	☒	
50	E2000648-002X10		20200724_054	Perchlorate6850b.lcm	10x	☒	
51	E2000648-003X20		20200724_055	Perchlorate6850b.lcm	20x	☒	
52	E2000648-005X10		20200724_056	Perchlorate6850b.lcm	10x	☒	

20200730

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	null		20200730_001	Perchlorate6850b.lcm	1x	☒	
2	null		20200730_002	Perchlorate6850b.lcm	1x	☒	
3	IB		20200730_003	Perchlorate6850b.lcm	1x	☒	
4	IB		20200730_004	Perchlorate6850b.lcm	1x	☒	
5	LODV		20200730_005	Perchlorate6850b.lcm	1x	☒	
6	ICS		20200730_006	Perchlorate6850b.lcm	1x	☒	
7	PERCHLORATE7		20200730_007	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE7		20200730_012	Perchlorate6850b.lcm	1x	☒	3100807-04
9	EQ2000319-01		20200730_013	Perchlorate6850b.lcm	1x	☒	
10	EQ2000319-02		20200730_014	Perchlorate6850b.lcm	1x	☒	
11	EQ2000319-03		20200730_015	Perchlorate6850b.lcm	1x	☒	
12	E2000660-002		20200730_016	Perchlorate6850b.lcm	1x	☒	
13	E2000660-007		20200730_017	Perchlorate6850b.lcm	1x	☒	
14	E2000678-001		20200730_018	Perchlorate6850b.lcm	1x	☒	
15	E2000678-002		20200730_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200730_021	Perchlorate6850b.lcm	1x	☒	3100807-04
17	E2000678-001X2		20200730_022	Perchlorate6850b.lcm	2x	☒	
18	E2000539-004X50000		20200730_023	Perchlorate6850b.lcm	50000x	☒	
19	PERCHLORATE7		20200730_025	Perchlorate6850b.lcm	1x	☒	3100807-04
20	EQ2000317-01		20200730_026	Perchlorate6850b.lcm	1x	☒	
21	EQ2000317-02		20200730_027	Perchlorate6850b.lcm	1x	☒	
22	EQ2000317-03		20200730_028	Perchlorate6850b.lcm	1x	☒	
23	E2000657-001		20200730_029	Perchlorate6850b.lcm	1x	☒	
24	E2000657-002		20200730_030	Perchlorate6850b.lcm	1x	☒	
25	E2000657-003		20200730_031	Perchlorate6850b.lcm	1x	☒	
26	E2000657-004		20200730_032	Perchlorate6850b.lcm	1x	☒	
27	E2000657-005		20200730_033	Perchlorate6850b.lcm	1x	☒	
28	PERCHLORATE7		20200730_034	Perchlorate6850b.lcm	1x	☒	3100807-04
29	E2000657-006		20200730_035	Perchlorate6850b.lcm	1x	☒	
30	E2000669-001		20200730_036	Perchlorate6850b.lcm	1x	☒	
31	E2000671-001		20200730_037	Perchlorate6850b.lcm	1x	☒	
32	E2000671-002		20200730_038	Perchlorate6850b.lcm	1x	☒	
33	E2000671-003		20200730_039	Perchlorate6850b.lcm	1x	☒	
34	E2000671-004		20200730_040	Perchlorate6850b.lcm	1x	☒	
35	E2000671-005		20200730_041	Perchlorate6850b.lcm	1x	☒	
36	E2000671-006		20200730_042	Perchlorate6850b.lcm	1x	☒	
37	E2000671-007		20200730_043	Perchlorate6850b.lcm	1x	☒	
38	E2000672-001		20200730_044	Perchlorate6850b.lcm	1x	☒	
39	PERCHLORATE7		20200730_045	Perchlorate6850b.lcm	1x	☒	3100807-04
40	E2000689-001		20200730_046	Perchlorate6850b.lcm	1x	☒	
41	EQ2000318-01		20200730_047	Perchlorate6850b.lcm	1x	☒	
42	EQ2000318-02		20200730_048	Perchlorate6850b.lcm	1x	☒	
43	EQ2000318-03		20200730_049	Perchlorate6850b.lcm	1x	☒	
44	EQ2000318-04		20200730_050	Perchlorate6850b.lcm	1x	☒	
45	EQ2000318-05		20200730_051	Perchlorate6850b.lcm	1x	☒	
46	E2000680-001		20200730_052	Perchlorate6850b.lcm	1x	☒	
47	E2000680-002		20200730_053	Perchlorate6850b.lcm	1x	☒	
48	E2000680-003		20200730_054	Perchlorate6850b.lcm	1x	☒	
49	E2000680-004		20200730_055	Perchlorate6850b.lcm	1x	☒	
50	PERCHLORATE7		20200730_056	Perchlorate6850b.lcm	1x	☒	3100807-04
51	E2000680-005		20200730_057	Perchlorate6850b.lcm	1x	☒	
52	E2000680-006		20200730_058	Perchlorate6850b.lcm	1x	☒	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/20/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200720\20200720_022

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1210	0.1285	6.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/20/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200720\20200720_033

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1212	0.1	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/20/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200720\20200720_042

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.4	0.1210	0.1247	3.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/22/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200722\20200722_016

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1215	0.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/22/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200722\20200722_024

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.89	0.1210	0.1189	-1.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/23/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200723\20200723_007

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1214	0.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/23/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200723\20200723_017

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.34	0.1210	0.1122	-7.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_020

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.0	0.1210	0.1213	0.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_029

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.86	0.1210	0.1193	-1.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_032

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.75	0.1210	0.1180	-2.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_034

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1220	0.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_039

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.0	0.1210	0.1214	0.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_050

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.68	0.1210	0.1172	-3.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_060

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1226	1.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/30/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200730\20200730_012

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689277
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.4	0.1210	0.1256	3.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/30/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200730\20200730_021

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689277
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.21	0.1210	0.1115	-7.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/31/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200731\20200731_007

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689277
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.05	0.1210	0.1095	-9.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/31/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200731\20200731_011

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689277
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	8.90	0.1210	0.1077	-11.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/20/20 13:39

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200720\20200720_022	**Lab Code:**	EQ2000310-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-01	380,500	2.80
Method Blank	EQ2000302-01	475,788	2.87
Lab Control Sample	EQ2000302-02	485,348	2.87
Duplicate Lab Control Sample	EQ2000302-03	485,451	2.87

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/20/20 15:22

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200720\20200720_033	**Lab Code:**	EQ2000310-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-02	373,864	2.79

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/20/20 16:55

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200720\20200720_042	**Lab Code:**	EQ2000310-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-03	224,958	2.91

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/22/20 19:13

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200722\20200722_016	**Lab Code:**	EQ2000310-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-04	223,422	2.95

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/22/20 20:16

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200722\20200722_024	**Lab Code:**	EQ2000310-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-05	232,812	2.95

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/23/20 11:41

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200723\20200723_007	**Lab Code:**	EQ2000310-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-06	202,016	2.92

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/23/20 13:00

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200723\20200723_017	**Lab Code:**	EQ2000310-07
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-07	202,415	2.91

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 13:59

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_020	**Lab Code:**	EQ2000311-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-01	149,874	2.90
Batch QCMS	EQ2000302-04	80,779	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 15:11

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_029	**Lab Code:**	EQ2000311-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-02	142,468	2.90
16EW01-200716	E2000660-001	100,818	2.89
Batch QC	E2000627-004	214,190	2.85

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 15:37

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_032	**Lab Code:**	EQ2000311-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-03	143,487	2.90
Batch QCDMS	EQ2000302-05	121,804	2.85

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 15:53

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_034	**Lab Code:**	EQ2000311-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-04	142,073	2.90
16EW02-200716	E2000660-003	120,778	2.90
16EW02-200716-FD	E2000660-004	123,973	2.90
16IW09-200716	E2000660-005	107,123	2.89
16RW05-200716	E2000660-006	145,435	2.89

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 16:33

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_039	**Lab Code:**	EQ2000311-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-05	142,477	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 17:59

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_050	**Lab Code:**	EQ2000311-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-06	128,840	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 19:18

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_060	**Lab Code:**	EQ2000311-07
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-07	129,501	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/30/20 15:40

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200730\20200730_012	**Lab Code:**	EQ2000322-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689277
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000322-01	234,458	2.85
Method Blank	EQ2000319-01	83,289	2.89
Lab Control Sample	EQ2000319-02	96,671	2.89
Duplicate Lab Control Sample	EQ2000319-03	110,440	2.90
16EW05-200716	E2000660-002	165,390	2.90
16EW06-200716	E2000660-007	107,494	2.89

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/30/20 16:51

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200730\20200730_021	**Lab Code:**	EQ2000322-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689277
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000322-02	156,395	2.89

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/31/20 11:10

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200731\20200731_007	**Lab Code:**	EQ2000322-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689277
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000322-03	100,756	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/31/20 11:41

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200731\20200731_011	**Lab Code:**	EQ2000322-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689277
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000322-04	90,508	2.87

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group Houston

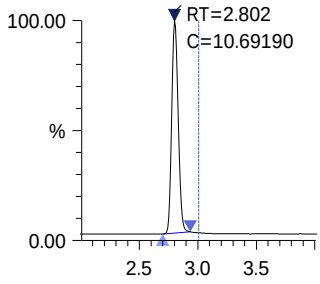
PERCHLORATE7

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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_022.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/20/2020 1:39:32 PM	488934	10.69190	20200720_022	2.802	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/20/2020 1:39:32 PM	380500	1.00000	20200720_022	2.800	25.0000	1.0000	4

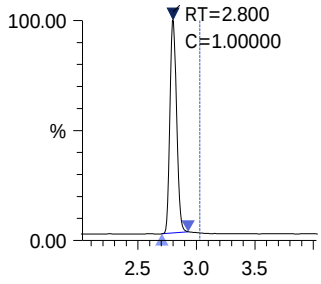
Perchlorate

Conc 10.69190
Area 488934
Q 99.00>83.00 (-) 1.26e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 380500
ISTD 107.00>89.00 (-) 9.71e4



ALS Group Houston

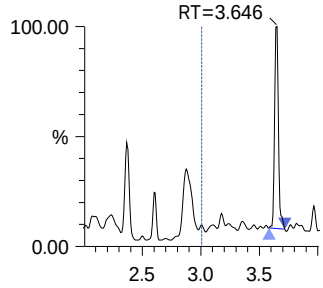
EQ2000302-01

Date acquired: 7/20/2020 1:47:28 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_023.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 3

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-01	7/20/2020 1:47:28 PM	----	----	20200720_023	----	25.0000	1.0000	1
Sodium Perchlorate-18O4_IS	EQ2000302-01	7/20/2020 1:47:28 PM	475788	1.00000	20200720_023	2.866	25.0000	1.0000	1

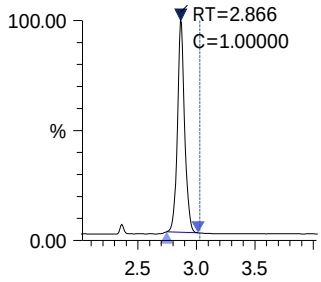
Perchlorate

Conc ----
Area ----
Q 99.00>83.00 (-) 6.94e2



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 475788
ISTD 107.00>89.00 (-) 1.12e5



ALS Group Houston

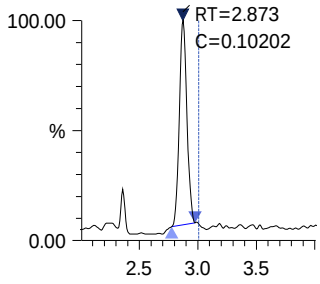
EQ2000302-02

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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_024.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 3

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-02	7/20/2020 1:55:23 PM	5951	0.10202	20200720_024	2.873	25.0000	1.0000	2
Sodium Perchlorate-18O4_IS	EQ2000302-02	7/20/2020 1:55:23 PM	485348	1.00000	20200720_024	2.868	25.0000	1.0000	2

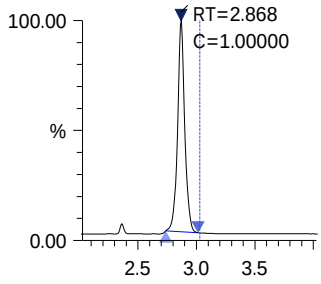
Perchlorate

Conc 0.10202
Area 5951
Q 99.00>83.00 (-) 1.38e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 485348
ISTD 107.00>89.00 (-) 1.15e5



ALS Group Houston

EQ2000302-03

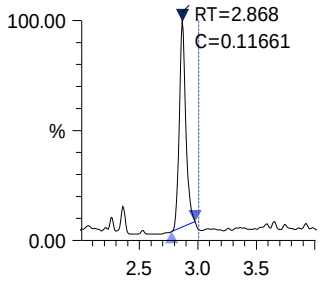
Date acquired: 7/20/2020 2:03:16 PM
Acquired by: System Administrator
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Vial: 3 | Inj. Volume: 25.0000uL | Tray: 3

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-03	7/20/2020 2:03:16 PM	6802	0.11661	20200720_025	2.868	25.0000	1.0000	3
Sodium Perchlorate-18O4_IS	EQ2000302-03	7/20/2020 2:03:16 PM	485451	1.00000	20200720_025	2.866	25.0000	1.0000	3

Perchlorate

Conc 0.11661
Area 6802

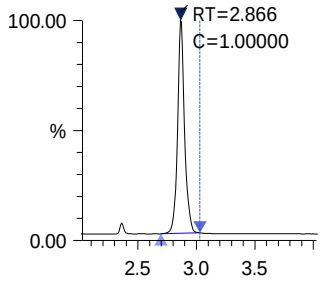
Q 99.00>83.00 (-) 1.83e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 485451

ISTD 107.00>89.00 (-) 1.17e5



ALS Group Houston

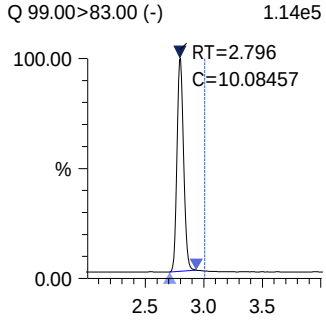
PERCHLORATE7

Date acquired: 7/20/2020 3:22:41 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_033.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/20/2020 3:22:41 PM	453118	10.08457	20200720_033	2.796	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/20/2020 3:22:41 PM	373864	1.00000	20200720_033	2.794	25.0000	1.0000	4

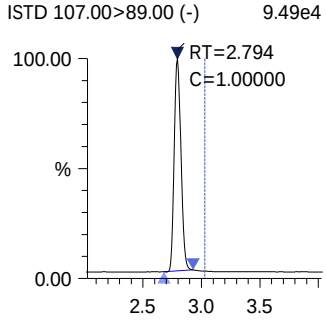
Perchlorate

Conc 10.08457
Area 453118



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 373864



ALS Group Houston

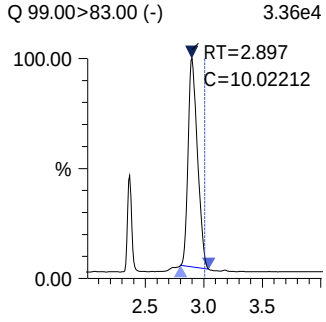
PERCHLORATE7

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Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 1:59:53 PM	181792	10.02212	20200724_020	2.897	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 1:59:53 PM	149874	1.00000	20200724_020	2.897	25.0000	1.0000	4

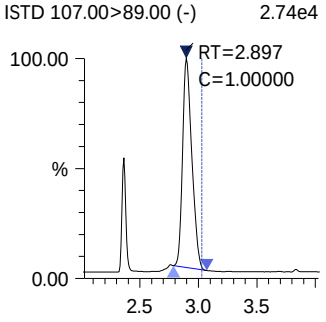
Perchlorate

Conc 10.02212
Area 181792



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 149874



ALS Group Houston

EQ2000302-04X10

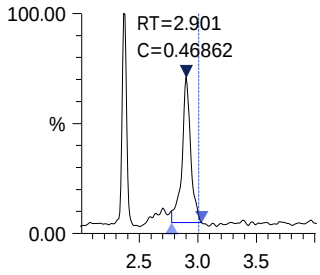
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Vial: 16 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-04X10	7/24/2020 2:07:48 PM	4582	0.46862	20200724_021	2.901	25.0000	1.0000	16
Sodium Perchlorate-18O4_IS	EQ2000302-04X10	7/24/2020 2:07:48 PM	80779	1.00000	20200724_021	2.897	25.0000	1.0000	16

Perchlorate

Conc 0.46862
Area 4582

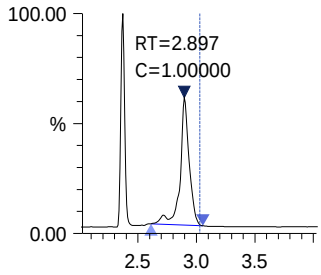
Q 99.00>83.00 (-) 1.33e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 80779

ISTD 107.00>89.00 (-) 2.49e4



ALS Group Houston

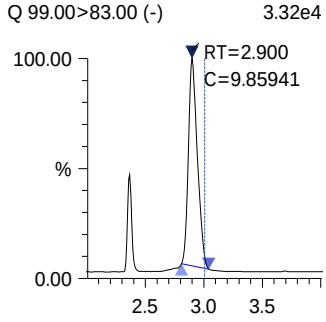
PERCHLORATE7

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Data File: I:\LCMS01\DATA\20200724\20200724_029.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 3:11:02 PM	170004	9.85941	20200724_029	2.900	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 3:11:02 PM	142468	1.00000	20200724_029	2.899	25.0000	1.0000	4

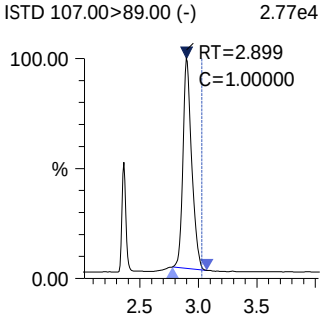
Perchlorate

Conc 9.85941
Area 170004



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 142468



ALS Group Houston

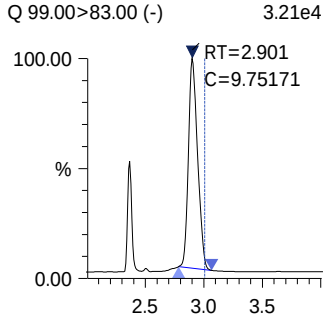
PERCHLORATE7

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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_032.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 3:37:07 PM	169350	9.75171	20200724_032	2.901	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 3:37:07 PM	143487	1.00000	20200724_032	2.899	25.0000	1.0000	4

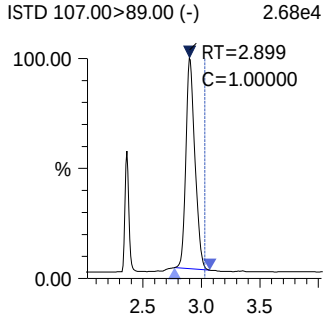
Perchlorate

Conc 9.75171
Area 169350



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 143487



ALS Group Houston

EQ2000302-05X10

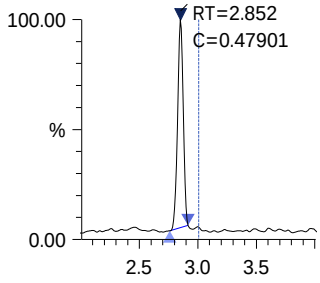
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Data File: I:\LCMS01\DATA\20200724\20200724_033.lcd
Vial: 17 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-05X10	7/24/2020 3:45:36 PM	7062	0.47901	20200724_033	2.852	25.0000	1.0000	17
Sodium Perchlorate-18O4_IS	EQ2000302-05X10	7/24/2020 3:45:36 PM	121804	1.00000	20200724_033	2.850	25.0000	1.0000	17

Perchlorate

Conc 0.47901
Area 7062

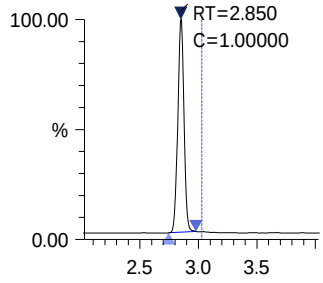
Q 99.00>83.00 (-) 2.13e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 121804

ISTD 107.00>89.00 (-) 3.33e4



ALS Group Houston

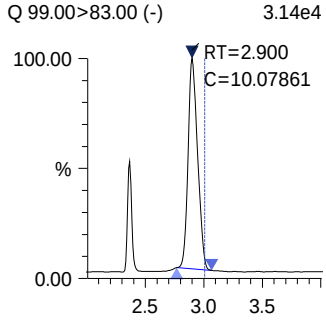
PERCHLORATE7

Date acquired: 7/24/2020 3:53:29 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_034.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 3:53:29 PM	173301	10.07861	20200724_034	2.900	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 3:53:29 PM	142073	1.00000	20200724_034	2.899	25.0000	1.0000	4

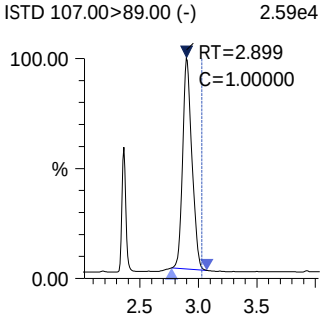
Perchlorate

Conc 10.07861
Area 173301



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 142073



ALS Group Houston

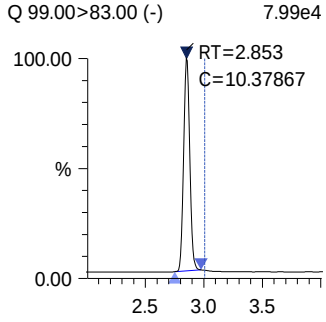
PERCHLORATE7

Date acquired: 7/30/2020 3:40:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200730TEST\20200730_012.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/30/2020 3:40:05 PM	294508	10.37867	20200730_012	2.853	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/30/2020 3:40:05 PM	234458	1.00000	20200730_012	2.851	25.0000	1.0000	4

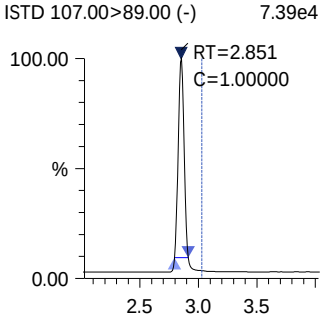
Perchlorate

Conc 10.37867
Area 294508



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 234458



ALS Group Houston

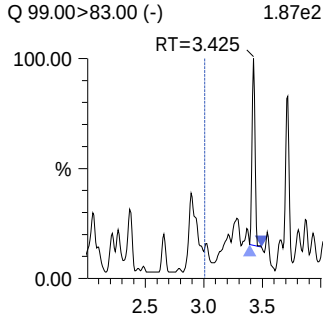
EQ2000319-01

Date acquired: 7/30/2020 3:47:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200730TEST\20200730_013.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000319-01	7/30/2020 3:47:58 PM	----	----	20200730_013	----	25.0000	1.0000	26
Sodium Perchlorate-18O4_IS	EQ2000319-01	7/30/2020 3:47:58 PM	83289	1.00000	20200730_013	2.893	25.0000	1.0000	26

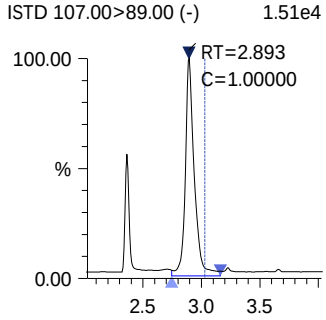
Perchlorate

Conc ----
Area ----



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 83289



ALS Group Houston

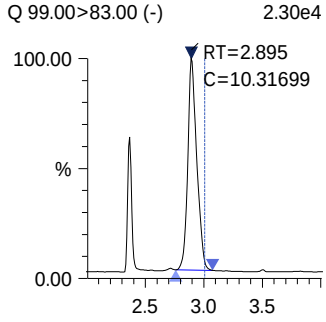
EQ2000319-02

Date acquired: 7/30/2020 3:55:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200730TEST\20200730_014.lcd
Vial: 27 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000319-02	7/30/2020 3:55:53 PM	120709	10.31699	20200730_014	2.895	25.0000	1.0000	27
Sodium Perchlorate-18O4_IS	EQ2000319-02	7/30/2020 3:55:53 PM	96671	1.00000	20200730_014	2.893	25.0000	1.0000	27

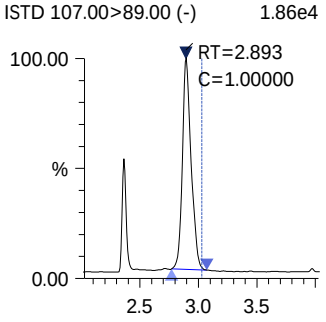
Perchlorate

Conc 10.31699
Area 120709



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 96671



ALS Group Houston

EQ2000319-03

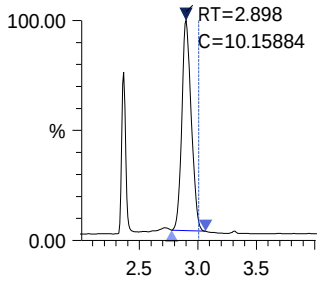
Date acquired: 7/30/2020 4:03:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200730TEST\20200730_015.lcd
Vial: 28 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000319-03	7/30/2020 4:03:48 PM	135787	10.15884	20200730_015	2.898	25.0000	1.0000	28
Sodium Perchlorate-18O4_IS	EQ2000319-03	7/30/2020 4:03:48 PM	110440	1.00000	20200730_015	2.897	25.0000	1.0000	28

Perchlorate

Conc 10.15884
Area 135787

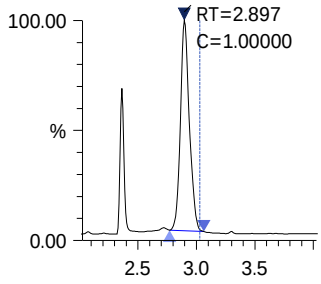
Q 99.00>83.00 (-) 2.48e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 110440

ISTD 107.00>89.00 (-) 2.09e4



ALS Group Houston

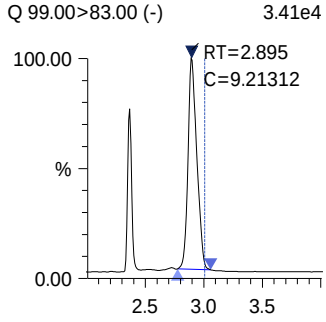
PERCHLORATE7

Date acquired: 7/30/2020 4:51:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200730TEST\20200730_021.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/30/2020 4:51:15 PM	174389	9.21312	20200730_021	2.895	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/30/2020 4:51:15 PM	156395	1.00000	20200730_021	2.894	25.0000	1.0000	4

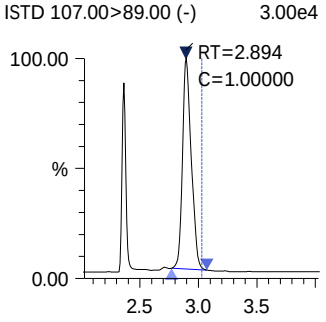
Perchlorate

Conc 9.21312
Area 174389



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 156395



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August 13, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20070744**

Laboratory Results for: **Longhorn Army Ammunition Plant 16 July 2020**

Dear Susan Huang,

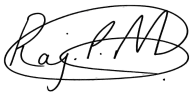
ALS Environmental received 8 sample(s) on Jul 17, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070744

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20070744-01	16EW01-200716	Groundwater		16-Jul-2020 07:20	17-Jul-2020 09:50	☐
HS20070744-02	16EW05-200716	Groundwater		16-Jul-2020 08:10	17-Jul-2020 09:50	☐
HS20070744-03	16EW02-200716	Groundwater		16-Jul-2020 09:50	17-Jul-2020 09:50	☐
HS20070744-04	16EW02-200716-FD	Groundwater		16-Jul-2020 09:50	17-Jul-2020 09:50	☐
HS20070744-05	16IW09-200716	Groundwater		16-Jul-2020 11:05	17-Jul-2020 09:50	☐
HS20070744-06	16RW05-200716	Groundwater		16-Jul-2020 12:00	17-Jul-2020 09:50	☐
HS20070744-07	Trip blank_200716	Water	CG-060320-208	16-Jul-2020 00:00	17-Jul-2020 09:50	☐
HS20070744-08	16EW06-200716	Groundwater		16-Jul-2020 09:05	17-Jul-2020 09:50	☐

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070744

Work Order Comments

- The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.
- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Work Order Comments

- The analysis for Perchlorate were subcontracted to ALS High Res Lab Houston, TX. Final report attached.

The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached.

GC Semivolatiles by Method RSK-175

Batch ID: R365391

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R365414

Sample ID: 16IW09-200716 (HS20070744-05)

- Lowest practical dilution for sample HS20070744-05. Sample has a milky and oily consistency.

Sample ID: 16RW05-200716 (HS20070744-06)

- Lowest practical dilution for sample HS20070744-06. Sample has a very pungent smell.

Sample ID: 16RW05-200716 (HS20070744-06MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS may be due to sample matrix interference.

Batch ID: R365415

Sample ID: 16RW05-200716(HS20070744-06MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS may be due to sample matrix interference.

Wet Chemistry by Method SW9056

Batch ID: 155634,R365440

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: 155696,R365564

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: 155634

Sample ID: 16EW05-200716 (HS20070744-02)

- Sample reported at 10X due to matrix interference

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070744

WetChemistry by Method SW9056

Batch ID: R365322

Sample ID: 16EW01-200716 (HS20070744-01)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: 16EW02-200716 (HS20070744-03)

- Sample ran at 20X due to high concentration of Sulfate

Sample ID: 16EW02-200716-FD (HS20070744-04)

- Sample ran at 20X due to high concentration of Sulfate

Sample ID: 16IW09-200716 (HS20070744-05)

- Sample ran at 5X due to sample matrix
- Sample ran at 20X due to sample matrix

Sample ID: HS20070674-01MS

- MS and MSD are for an unrelated sample (Sulfate)

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070744
Sample ID: 16EW01-200716 Lab ID:HS20070744-01
Collection Date: 16-Jul-2020 07:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	20	U	6.0	20	20	UG/L	20	21-Jul-2020 15:22
1,1-Dichloroethene	**36**		**4.0**	**10**	**20**	**UG/L**	20	21-Jul-2020 15:22
1,2-Dichloroethane	**27**		**4.0**	**10**	**20**	**UG/L**	20	21-Jul-2020 15:22
cis-1,2-Dichloroethene	**6,800**		**40**	**100**	**200**	**UG/L**	200	21-Jul-2020 17:23
Methylene chloride	20	U	8.0	20	40	UG/L	20	21-Jul-2020 15:22
Trichloroethene	**4,700**		**40**	**100**	**200**	**UG/L**	200	21-Jul-2020 17:23
Vinyl chloride	**780**		**4.0**	**10**	**20**	**UG/L**	20	21-Jul-2020 15:22
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*81-118*	*%REC*	*20*	*21-Jul-2020 15:22*
Surr: 1,2-Dichloroethane-d4	*89.6*			**0**	*81-118*	*%REC*	*200*	*21-Jul-2020 17:23*
Surr: 4-Bromofluorobenzene	*97.1*			**0**	*85-114*	*%REC*	*20*	*21-Jul-2020 15:22*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*200*	*21-Jul-2020 17:23*
Surr: Dibromofluoromethane	*91.5*			**0**	*80-119*	*%REC*	*20*	*21-Jul-2020 15:22*
Surr: Dibromofluoromethane	*91.0*			**0**	*80-119*	*%REC*	*200*	*21-Jul-2020 17:23*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*200*	*21-Jul-2020 17:23*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*20*	*21-Jul-2020 15:22*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000603**	J	**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	21-Jul-2020 11:24
Ethene	**0.105**		**0.00234**	**0.0100**	**0.0100**	**mg/L**	10	21-Jul-2020 11:37
Methane	**0.177**		**0.00107**	**0.0100**	**0.00500**	**mg/L**	10	21-Jul-2020 11:37
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**418**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	23-Jul-2020 19:14
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**6.04**		**0.150**	**0.500**	**0.500**	**mg/L**	5	17-Jul-2020 19:43
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	17-Jul-2020 19:43
Sulfate	**3,510**		**20.0**	**50.0**	**50.0**	**mg/L**	100	21-Jul-2020 17:46
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	31-Jul-2020 17:08
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Aug-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070744
Sample ID: 16EW05-200716 Lab ID:HS20070744-02
Collection Date: 16-Jul-2020 08:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	100	U	25	100	250	ug/Kg	50	21-Jul-2020 14:34
1,1-Dichloroethene	100	U	25	100	250	ug/Kg	50	21-Jul-2020 14:34
1,2-Dichloroethane	100	U	30	100	250	ug/Kg	50	21-Jul-2020 14:34
cis-1,2-Dichloroethene	100	U	40	100	250	ug/Kg	50	21-Jul-2020 14:34
Methylene chloride	100	U	50	100	500	ug/Kg	50	21-Jul-2020 14:34
Trichloroethene	100	U	30	100	250	ug/Kg	50	21-Jul-2020 14:34
Vinyl chloride	100	U	40	100	100	ug/Kg	50	21-Jul-2020 14:34
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*71-136*	*%REC*	*50*	*21-Jul-2020 14:34*
Surr: 4-Bromofluorobenzene	*95.9*			**0**	*79-119*	*%REC*	*50*	*21-Jul-2020 14:34*
Surr: Dibromofluoromethane	*90.9*			**0**	*78-119*	*%REC*	*50*	*21-Jul-2020 14:34*
Surr: Toluene-d8	*104*			**0**	*85-116*	*%REC*	*50*	*21-Jul-2020 14:34*
ALKALINITY BY SM2320B		**Method:SM2320B**				Prep:ASTM Leachate / 23-Jul-2020		Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**66.2**	a	**10.0**	**10.0**	**10.0**	**mg/Kg**	1	23-Jul-2020 21:29
Alkalinity, Carbonate (As CaCO3)	10.0	aU	10.0	10.0	10.0	mg/Kg	1	23-Jul-2020 21:29
Alkalinity, Hydroxide (As CaCO3)	10.0	aU	10.0	10.0	10.0	mg/Kg	1	23-Jul-2020 21:29
Alkalinity, Total (As CaCO3)	**66.2**	a	**10.0**	**10.0**	**10.0**	**mg/Kg**	1	23-Jul-2020 21:29
ANIONS BY SW9056A		**Method:SW9056**				Prep:SW9056 / 22-Jul-2020		Analyst: YP
Bromide	**19.8**		**2.99**	**0.995**	**9.95**	**mg/Kg**	10	23-Jul-2020 12:27
Nitrogen, Nitrate (As N)	0.995	U	2.99	0.995	9.95	mg/Kg	10	23-Jul-2020 12:27
Sulfate	**64.7**		**19.9**	**4.98**	**49.8**	**mg/Kg**	10	23-Jul-2020 20:00
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	31-Jul-2020 17:08
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Aug-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070744
Sample ID: 16EW02-200716 Lab ID:HS20070744-03
Collection Date: 16-Jul-2020 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	25	U	7.5	25	25	UG/L	25	21-Jul-2020 15:46
1,1-Dichloroethene	**97**		**5.0**	**12**	**25**	**UG/L**	25	21-Jul-2020 15:46
1,2-Dichloroethane	**43**		**5.0**	**12**	**25**	**UG/L**	25	21-Jul-2020 15:46
cis-1,2-Dichloroethene	**22,000**		**100**	**250**	**500**	**UG/L**	500	21-Jul-2020 17:47
Methylene chloride	25	U	10	25	50	UG/L	25	21-Jul-2020 15:46
Trichloroethene	**37,000**		**100**	**250**	**500**	**UG/L**	500	21-Jul-2020 17:47
Vinyl chloride	**39**		**5.0**	**12**	**25**	**UG/L**	25	21-Jul-2020 15:46
Surr: 1,2-Dichloroethane-d4	*87.3*			**0**	*81-118*	*%REC*	*25*	*21-Jul-2020 15:46*
Surr: 1,2-Dichloroethane-d4	*91.9*			**0**	*81-118*	*%REC*	*500*	*21-Jul-2020 17:47*
Surr: 4-Bromofluorobenzene	*97.5*			**0**	*85-114*	*%REC*	*25*	*21-Jul-2020 15:46*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*85-114*	*%REC*	*500*	*21-Jul-2020 17:47*
Surr: Dibromofluoromethane	*89.3*			**0**	*80-119*	*%REC*	*25*	*21-Jul-2020 15:46*
Surr: Dibromofluoromethane	*92.2*			**0**	*80-119*	*%REC*	*500*	*21-Jul-2020 17:47*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*25*	*21-Jul-2020 15:46*
Surr: Toluene-d8	*99.9*			**0**	*89-112*	*%REC*	*500*	*21-Jul-2020 17:47*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000275**	J	**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	21-Jul-2020 11:47
Ethene	**0.000627**	J	**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	21-Jul-2020 11:47
Methane	**0.00565**		**0.000107**	**0.00100**	**0.000500**	**mg/L**	1	21-Jul-2020 11:47
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**407**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	23-Jul-2020 19:20
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**12.7**		**0.600**	**2.00**	**2.00**	**mg/L**	20	17-Jul-2020 20:37
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	17-Jul-2020 15:11
Sulfate	**1,650**		**4.00**	**10.0**	**10.0**	**mg/L**	20	17-Jul-2020 20:37
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	31-Jul-2020 17:08
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Aug-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070744
Sample ID: 16EW02-200716-FD Lab ID:HS20070744-04
Collection Date: 16-Jul-2020 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	25	U	7.5	25	25	UG/L	25	21-Jul-2020 16:11
1,1-Dichloroethene	**86**		**5.0**	**12**	**25**	**UG/L**	25	21-Jul-2020 16:11
1,2-Dichloroethane	**39**		**5.0**	**12**	**25**	**UG/L**	25	21-Jul-2020 16:11
cis-1,2-Dichloroethene	**21,000**		**100**	**250**	**500**	**UG/L**	500	21-Jul-2020 18:11
Methylene chloride	25	U	10	25	50	UG/L	25	21-Jul-2020 16:11
Trichloroethene	**35,000**		**100**	**250**	**500**	**UG/L**	500	21-Jul-2020 18:11
Vinyl chloride	**28**		**5.0**	**12**	**25**	**UG/L**	25	21-Jul-2020 16:11
Surr: 1,2-Dichloroethane-d4	*89.8*			**0**	*81-118*	*%REC*	*500*	*21-Jul-2020 18:11*
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*81-118*	*%REC*	*25*	*21-Jul-2020 16:11*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*25*	*21-Jul-2020 16:11*
Surr: 4-Bromofluorobenzene	*99.4*			**0**	*85-114*	*%REC*	*500*	*21-Jul-2020 18:11*
Surr: Dibromofluoromethane	*92.5*			**0**	*80-119*	*%REC*	*25*	*21-Jul-2020 16:11*
Surr: Dibromofluoromethane	*90.9*			**0**	*80-119*	*%REC*	*500*	*21-Jul-2020 18:11*
Surr: Toluene-d8	*98.7*			**0**	*89-112*	*%REC*	*25*	*21-Jul-2020 16:11*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*500*	*21-Jul-2020 18:11*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000349**	J	**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	21-Jul-2020 11:56
Ethene	**0.00112**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	21-Jul-2020 11:56
Methane	**0.00634**		**0.000107**	**0.00100**	**0.000500**	**mg/L**	1	21-Jul-2020 11:56
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**411**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	23-Jul-2020 19:27
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**11.9**		**0.600**	**2.00**	**2.00**	**mg/L**	20	17-Jul-2020 20:55
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	17-Jul-2020 15:29
Sulfate	**1,590**		**4.00**	**10.0**	**10.0**	**mg/L**	20	17-Jul-2020 20:55
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	31-Jul-2020 17:08
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Aug-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Sample ID: 16IW09-200716
Collection Date: 16-Jul-2020 11:05

ANALYTICAL REPORT
WorkOrder:HS20070744
Lab ID:HS20070744-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	50	U	15	50	50	UG/L	50	21-Jul-2020 14:10
1,1-Dichloroethene	25	U	10	25	50	UG/L	50	21-Jul-2020 14:10
1,2-Dichloroethane	25	U	10	25	50	UG/L	50	21-Jul-2020 14:10
cis-1,2-Dichloroethene	25	U	10	25	50	UG/L	50	21-Jul-2020 14:10
Methylene chloride	50	U	20	50	100	UG/L	50	21-Jul-2020 14:10
Trichloroethene	25	U	10	25	50	UG/L	50	21-Jul-2020 14:10
Vinyl chloride	25	U	10	25	50	UG/L	50	21-Jul-2020 14:10
Surr: 1,2-Dichloroethane-d4	*87.9*			**0**	*81-118*	*%REC*	*50*	*21-Jul-2020 14:10*
Surr: 4-Bromofluorobenzene	*97.7*			**0**	*85-114*	*%REC*	*50*	*21-Jul-2020 14:10*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*50*	*21-Jul-2020 14:10*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*50*	*21-Jul-2020 14:10*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.0179**		**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	21-Jul-2020 12:08
Ethene	**0.0166**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	21-Jul-2020 12:08
Methane	**3.97**		**0.0214**	**0.200**	**0.100**	**mg/L**	200	21-Jul-2020 12:30
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**428**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	23-Jul-2020 19:33
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**13.4**		**0.150**	**0.500**	**0.500**	**mg/L**	5	17-Jul-2020 15:47
Nitrogen, Nitrate (As N)	2.00	U	0.600	2.00	2.00	mg/L	20	17-Jul-2020 21:13
Sulfate	**4.44**	J	**4.00**	**10.0**	**10.0**	**mg/L**	20	17-Jul-2020 21:13
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	31-Jul-2020 17:08
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Aug-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070744
Sample ID: 16RW05-200716 Lab ID:HS20070744-06
Collection Date: 16-Jul-2020 12:00 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	10	U	3.0	10	10	UG/L	10	21-Jul-2020 13:46
1,1-Dichloroethene	5.0	U	2.0	5.0	10	UG/L	10	21-Jul-2020 13:46
1,2-Dichloroethane	5.0	U	2.0	5.0	10	UG/L	10	21-Jul-2020 13:46
cis-1,2-Dichloroethene	**8.0**	J	**2.0**	**5.0**	**10**	**UG/L**	10	21-Jul-2020 13:46
Methylene chloride	10	U	4.0	10	20	UG/L	10	21-Jul-2020 13:46
Trichloroethene	5.0	U	2.0	5.0	10	UG/L	10	21-Jul-2020 13:46
Vinyl chloride	5.0	U	2.0	5.0	10	UG/L	10	21-Jul-2020 13:46
Surr: 1,2-Dichloroethane-d4	*86.5*			**0**	*81-118*	*%REC*	*10*	*21-Jul-2020 13:46*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*10*	*21-Jul-2020 13:46*
Surr: Dibromofluoromethane	*91.5*			**0**	*80-119*	*%REC*	*10*	*21-Jul-2020 13:46*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*10*	*21-Jul-2020 13:46*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**55.2**		**0.300**	**1.00**	**1.00**	**mg/L**	10	22-Jul-2020 11:17
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	31-Jul-2020 17:08
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Aug-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070744
Sample ID: Trip blank_200716 Lab ID:HS20070744-07
Collection Date: 16-Jul-2020 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	21-Jul-2020 13:22
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Jul-2020 13:22
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	21-Jul-2020 13:22
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Jul-2020 13:22
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	21-Jul-2020 13:22
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	21-Jul-2020 13:22
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	21-Jul-2020 13:22
Surr: 1,2-Dichloroethane-d4	*89.5*			**0**	*81-118*	*%REC*	*1*	*21-Jul-2020 13:22*
Surr: 4-Bromofluorobenzene	*98.6*			**0**	*85-114*	*%REC*	*1*	*21-Jul-2020 13:22*
Surr: Dibromofluoromethane	*91.7*			**0**	*80-119*	*%REC*	*1*	*21-Jul-2020 13:22*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*21-Jul-2020 13:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070744
Sample ID: 16EW06-200716 Lab ID:HS20070744-08
Collection Date: 16-Jul-2020 09:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	100	U	25	100	250	ug/Kg	50	21-Jul-2020 14:58
1,1-Dichloroethene	100	U	25	100	250	ug/Kg	50	21-Jul-2020 14:58
1,2-Dichloroethane	100	U	30	100	250	ug/Kg	50	21-Jul-2020 14:58
cis-1,2-Dichloroethene	**470**		**40**	**100**	**250**	**ug/Kg**	50	21-Jul-2020 14:58
Methylene chloride	**82**	J	**50**	**100**	**500**	**ug/Kg**	50	21-Jul-2020 14:58
Trichloroethene	**40**	J	**30**	**100**	**250**	**ug/Kg**	50	21-Jul-2020 14:58
Vinyl chloride	**370**		**40**	**100**	**100**	**ug/Kg**	50	21-Jul-2020 14:58
Surr: 1,2-Dichloroethane-d4	*86.9*			**0**	*71-136*	*%REC*	*50*	*21-Jul-2020 14:58*
Surr: 4-Bromofluorobenzene	*92.2*			**0**	*79-119*	*%REC*	*50*	*21-Jul-2020 14:58*
Surr: Dibromofluoromethane	*89.1*			**0**	*78-119*	*%REC*	*50*	*21-Jul-2020 14:58*
Surr: Toluene-d8	*102*			**0**	*85-116*	*%REC*	*50*	*21-Jul-2020 14:58*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	31-Jul-2020 17:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

Batch ID: 3827 **Start Date:** 20 Jul 2020 12:35 **End Date:** 20 Jul 2020 12:35
Method: VOLATILES ORGANICS BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20070744-02	1	5.01 (g)	5 (mL)	1	Bulk (5030B)
HS20070744-08	1	4.913 (g)	5 (mL)	1.02	Bulk (5030B)

Batch ID: 155634 **Start Date:** 22 Jul 2020 12:23 **End Date:** 22 Jul 2020 15:00
Method: 9056 ANIONS SOIL PREP **Prep Code:** 9056_S_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070744-02		5.0233 (g)	50 (mL)	9.954

Batch ID: 155696 **Start Date:** 23 Jul 2020 10:00 **End Date:**
Method: ALK LEACH **Prep Code:** ALK LEACH PREP

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070744-02		4.9872 (grams)	50 (mL)	10.03

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 155634 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070744-02	16EW05-200716	16 Jul 2020 08:10		22 Jul 2020 10:23	23 Jul 2020 20:00	10
HS20070744-02	16EW05-200716	16 Jul 2020 08:10		22 Jul 2020 10:23	23 Jul 2020 12:27	10
Batch ID: 155696 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS20070744-02	16EW05-200716	16 Jul 2020 08:10		23 Jul 2020 10:00	23 Jul 2020 21:29	1
Batch ID: R365322 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070744-01	16EW01-200716	16 Jul 2020 07:20			17 Jul 2020 19:43	5
HS20070744-03	16EW02-200716	16 Jul 2020 09:50			17 Jul 2020 20:37	20
HS20070744-03	16EW02-200716	16 Jul 2020 09:50			17 Jul 2020 15:11	1
HS20070744-04	16EW02-200716-FD	16 Jul 2020 09:50			17 Jul 2020 20:55	20
HS20070744-04	16EW02-200716-FD	16 Jul 2020 09:50			17 Jul 2020 15:29	1
HS20070744-05	16IW09-200716	16 Jul 2020 11:05			17 Jul 2020 21:13	20
HS20070744-05	16IW09-200716	16 Jul 2020 11:05			17 Jul 2020 15:47	5
Batch ID: R365391 (1)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS20070744-01	16EW01-200716	16 Jul 2020 07:20			21 Jul 2020 11:37	10
HS20070744-01	16EW01-200716	16 Jul 2020 07:20			21 Jul 2020 11:24	1
HS20070744-03	16EW02-200716	16 Jul 2020 09:50			21 Jul 2020 11:47	1
HS20070744-04	16EW02-200716-FD	16 Jul 2020 09:50			21 Jul 2020 11:56	1
HS20070744-05	16IW09-200716	16 Jul 2020 11:05			21 Jul 2020 12:30	200
HS20070744-05	16IW09-200716	16 Jul 2020 11:05			21 Jul 2020 12:08	1
Batch ID: R365414 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20070744-07	Trip blank_200716	16 Jul 2020 00:00			21 Jul 2020 13:22	1
Batch ID: R365414 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20070744-01	16EW01-200716	16 Jul 2020 07:20			21 Jul 2020 17:23	200
HS20070744-01	16EW01-200716	16 Jul 2020 07:20			21 Jul 2020 15:22	20
HS20070744-03	16EW02-200716	16 Jul 2020 09:50			21 Jul 2020 17:47	500
HS20070744-03	16EW02-200716	16 Jul 2020 09:50			21 Jul 2020 15:46	25
HS20070744-04	16EW02-200716-FD	16 Jul 2020 09:50			21 Jul 2020 18:11	500
HS20070744-04	16EW02-200716-FD	16 Jul 2020 09:50			21 Jul 2020 16:11	25
HS20070744-05	16IW09-200716	16 Jul 2020 11:05			21 Jul 2020 14:10	50
HS20070744-06	16RW05-200716	16 Jul 2020 12:00			21 Jul 2020 13:46	10
Batch ID: R365415 (0)	**Test Name :** VOLATILES ORGANICS BY SW8260C				**Matrix:** Groundwater	
HS20070744-02	16EW05-200716	16 Jul 2020 08:10			21 Jul 2020 14:34	50
HS20070744-08	16EW06-200716	16 Jul 2020 09:05			21 Jul 2020 14:58	50
Batch ID: R365440 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070744-01	16EW01-200716	16 Jul 2020 07:20			21 Jul 2020 17:46	100
HS20070744-06	16RW05-200716	16 Jul 2020 12:00			22 Jul 2020 11:17	10

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365564 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS20070744-01	16EW01-200716	16 Jul 2020 07:20			23 Jul 2020 19:14	1
HS20070744-03	16EW02-200716	16 Jul 2020 09:50			23 Jul 2020 19:20	1
HS20070744-04	16EW02-200716-FD	16 Jul 2020 09:50			23 Jul 2020 19:27	1
HS20070744-05	16IW09-200716	16 Jul 2020 11:05			23 Jul 2020 19:33	1
Batch ID: R366016 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20070744-01	16EW01-200716	16 Jul 2020 07:20			31 Jul 2020 17:08	1
HS20070744-02	16EW05-200716	16 Jul 2020 08:10			31 Jul 2020 17:08	1
HS20070744-03	16EW02-200716	16 Jul 2020 09:50			31 Jul 2020 17:08	1
HS20070744-04	16EW02-200716-FD	16 Jul 2020 09:50			31 Jul 2020 17:08	1
HS20070744-05	16IW09-200716	16 Jul 2020 11:05			31 Jul 2020 17:08	1
HS20070744-06	16RW05-200716	16 Jul 2020 12:00			31 Jul 2020 17:08	1
HS20070744-08	16EW06-200716	16 Jul 2020 09:05			31 Jul 2020 17:08	1
Batch ID: R366700 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20070744-01	16EW01-200716	16 Jul 2020 07:20			13 Aug 2020 12:17	1
HS20070744-02	16EW05-200716	16 Jul 2020 08:10			13 Aug 2020 12:17	1
HS20070744-03	16EW02-200716	16 Jul 2020 09:50			13 Aug 2020 12:17	1
HS20070744-04	16EW02-200716-FD	16 Jul 2020 09:50			13 Aug 2020 12:17	1
HS20070744-05	16IW09-200716	16 Jul 2020 11:05			13 Aug 2020 12:17	1
HS20070744-06	16RW05-200716	16 Jul 2020 12:00			13 Aug 2020 12:17	1

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: R365391 (1) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-200721** Units: **mg/L** Analysis Date: **21-Jul-2020 09:48**
Client ID: Run ID: **FID-4_365391** SeqNo: **5668537** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000250	0.00100								U
Ethene	0.00100	0.00100								U
Methane	0.00100	0.000500								U

LCS Sample ID: **LCS-200721** Units: **mg/L** Analysis Date: **21-Jul-2020 09:30**
Client ID: Run ID: **FID-4_365391** SeqNo: **5668535** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0184	0.00100	0.01804	0	102	75 - 125				
Ethene	0.0183	0.00100	0.0168	0	109	75 - 125				
Methane	0.00911	0.000500	0.009647	0	94.4	75 - 125				

LCSD Sample ID: **LCSD-200721** Units: **mg/L** Analysis Date: **21-Jul-2020 09:40**
Client ID: Run ID: **FID-4_365391** SeqNo: **5668536** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0180	0.00100	0.01804	0	99.9	75 - 125	0.01844	2.23	30	
Ethene	0.0186	0.00100	0.0168	0	111	75 - 125	0.01831	1.64	30	
Methane	0.00885	0.000500	0.009647	0	91.7	75 - 125	0.009109	2.89	30	

DUP Sample ID: **HS20070740-02DUP** Units: **mg/L** Analysis Date: **21-Jul-2020 10:39**
Client ID: Run ID: **FID-4_365391** SeqNo: **5668541** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000277	0.00100					0.0002933	0	30	J
Ethene	0.000995	0.00100					0.0003005	0	30	J
Methane	0.00461	0.000500					0.004764	3.24	30	

The following samples were analyzed in this batch: HS20070744-01 HS20070744-03 HS20070744-04 HS20070744-05

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: R365414 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200721** Units: **UG/L** Analysis Date: **21-Jul-2020 12:58**
Client ID: Run ID: **VOA6_365414** SeqNo: **5669090** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.59*	*1.0*	*50*	*0*	*87.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.36*	*1.0*	*50*	*0*	*98.7*	*85 - 114*				
Surr: Dibromofluoromethane	*45.33*	*1.0*	*50*	*0*	*90.7*	*80 - 119*				
Surr: Toluene-d8	*51.17*	*1.0*	*50*	*0*	*102*	*89 - 112*				

LCS Sample ID: **VLCSW-200721** Units: **UG/L** Analysis Date: **21-Jul-2020 11:46**
Client ID: Run ID: **VOA6_365414** SeqNo: **5669089** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.05	1.0	20	0	100	80 - 119				
1,1-Dichloroethene	22.27	1.0	20	0	111	71 - 131				
1,2-Dichloroethane	20.14	1.0	20	0	101	73 - 128				
cis-1,2-Dichloroethene	20.31	1.0	20	0	102	78 - 123				
Methylene chloride	21.06	2.0	20	0	105	74 - 124				
Trichloroethene	19.54	1.0	20	0	97.7	79 - 123				
Vinyl chloride	21.81	1.0	20	0	109	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.07*	*1.0*	*50*	*0*	*98.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.54*	*1.0*	*50*	*0*	*99.1*	*85 - 114*				
Surr: Dibromofluoromethane	*50.02*	*1.0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*48.67*	*1.0*	*50*	*0*	*97.3*	*89 - 112*				

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: R365414 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20070744-06MS** Units: **UG/L** Analysis Date: **21-Jul-2020 16:35**
Client ID: **16RW05-200716** Run ID: **VOA6_365414** SeqNo: **5669097** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	220.9	10	200	0	110	80 - 119				
1,1-Dichloroethene	266.7	10	200	0	133	71 - 131				S
1,2-Dichloroethane	215.9	10	200	0	108	73 - 128				
cis-1,2-Dichloroethene	240	10	200	7.995	116	78 - 123				
Methylene chloride	218.4	20	200	0	109	74 - 124				
Trichloroethene	250.7	10	200	0	125	79 - 123				S
Vinyl chloride	258.4	10	200	0	129	58 - 137				
Surr: 1,2-Dichloroethane-d4	*442.8*	*10*	*500*	*0*	*88.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*464.8*	*10*	*500*	*0*	*93.0*	*85 - 114*				
Surr: Dibromofluoromethane	*474.8*	*10*	*500*	*0*	*95.0*	*80 - 119*				
Surr: Toluene-d8	*489.5*	*10*	*500*	*0*	*97.9*	*89 - 112*				

MSD Sample ID: **HS20070744-06MSD** Units: **UG/L** Analysis Date: **21-Jul-2020 16:59**
Client ID: **16RW05-200716** Run ID: **VOA6_365414** SeqNo: **5669098** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	221.5	10	200	0	111	80 - 119	220.9	0.289	20	
1,1-Dichloroethene	245	10	200	0	123	71 - 131	266.7	8.49	20	
1,2-Dichloroethane	212.8	10	200	0	106	73 - 128	215.9	1.45	20	
cis-1,2-Dichloroethene	224.3	10	200	7.995	108	78 - 123	240	6.76	20	
Methylene chloride	213.7	20	200	0	107	74 - 124	218.4	2.14	20	
Trichloroethene	227.9	10	200	0	114	79 - 123	250.7	9.55	20	
Vinyl chloride	239.4	10	200	0	120	58 - 137	258.4	7.61	20	
Surr: 1,2-Dichloroethane-d4	*439.4*	*10*	*500*	*0*	*87.9*	*81 - 118*	*442.8*	*0.782*	*20*	
Surr: 4-Bromofluorobenzene	*484.5*	*10*	*500*	*0*	*96.9*	*85 - 114*	*464.8*	*4.15*	*20*	
Surr: Dibromofluoromethane	*455.8*	*10*	*500*	*0*	*91.2*	*80 - 119*	*474.8*	*4.08*	*20*	
Surr: Toluene-d8	*499.6*	*10*	*500*	*0*	*99.9*	*89 - 112*	*489.5*	*2.06*	*20*	

The following samples were analyzed in this batch: HS20070744-01 HS20070744-03 HS20070744-04 HS20070744-05 HS20070744-06 HS20070744-07

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: R365415 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY SW8260C**

MBLK Sample ID: **VBLKM-200721** Units: **ug/Kg** Analysis Date: **21-Jul-2020 12:34**
Client ID: Run ID: **VOA6_365415** SeqNo: **5669176** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	100	250								U
1,1-Dichloroethene	100	250								U
1,2-Dichloroethane	100	250								U
cis-1,2-Dichloroethene	100	250								U
Methylene chloride	100	500								U
Trichloroethene	100	250								U
Vinyl chloride	100	100								U
Surr: Toluene-d8	*2598*	*250*	*2500*	*0*	*104*	*85 - 116*				
Surr: 1,2-Dichloroethane-d4	*2164*	*250*	*2500*	*0*	*86.6*	*71 - 136*				
Surr: 4-Bromofluorobenzene	*2404*	*250*	*2500*	*0*	*96.2*	*79 - 119*				
Surr: Dibromofluoromethane	*2267*	*250*	*2500*	*0*	*90.7*	*78 - 119*				

LCS Sample ID: **VLCSW-200721** Units: **UG/L** Analysis Date: **21-Jul-2020 11:46**
Client ID: Run ID: **VOA6_365415** SeqNo: **5669110** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.05	1.0	20	0	100	80 - 119				
1,1-Dichloroethene	22.27	1.0	20	0	111	71 - 131				
1,2-Dichloroethane	20.14	1.0	20	0	101	73 - 128				
cis-1,2-Dichloroethene	20.31	1.0	20	0	102	78 - 123				
Methylene chloride	21.06	2.0	20	0	105	74 - 124				
Trichloroethene	19.54	1.0	20	0	97.7	79 - 123				
Vinyl chloride	21.81	1.0	20	0	109	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.07*	*1.0*	*50*	*0*	*98.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.54*	*1.0*	*50*	*0*	*99.1*	*85 - 114*				
Surr: Dibromofluoromethane	*50.02*	*1.0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*48.67*	*1.0*	*50*	*0*	*97.3*	*89 - 112*				

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: R365415 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY SW8260C**

MS Sample ID: **HS20070744-06MS** Units: **UG/L** Analysis Date: **21-Jul-2020 16:35**
Client ID: **16RW05-200716** Run ID: **VOA6_365415** SeqNo: **5669112** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	220.9	10	200	0	110	80 - 119				
1,1-Dichloroethene	266.7	10	200	0	133	71 - 131				S
1,2-Dichloroethane	215.9	10	200	0	108	73 - 128				
cis-1,2-Dichloroethene	240	10	200	7.995	116	78 - 123				
Methylene chloride	218.4	20	200	0	109	74 - 124				
Trichloroethene	250.7	10	200	0	125	79 - 123				S
Vinyl chloride	258.4	10	200	0	129	58 - 137				
Surr: 1,2-Dichloroethane-d4	*442.8*	*10*	*500*	*0*	*88.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*464.8*	*10*	*500*	*0*	*93.0*	*85 - 114*				
Surr: Dibromofluoromethane	*474.8*	*10*	*500*	*0*	*95.0*	*80 - 119*				
Surr: Toluene-d8	*489.5*	*10*	*500*	*0*	*97.9*	*89 - 112*				

MSD Sample ID: **HS20070744-06MSD** Units: **UG/L** Analysis Date: **21-Jul-2020 16:59**
Client ID: **16RW05-200716** Run ID: **VOA6_365415** SeqNo: **5669113** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	221.5	10	200	0	111	80 - 119	220.9	0.289	20	
1,1-Dichloroethene	245	10	200	0	123	71 - 131	266.7	8.49	20	
1,2-Dichloroethane	212.8	10	200	0	106	73 - 128	215.9	1.45	20	
cis-1,2-Dichloroethene	224.3	10	200	7.995	108	78 - 123	240	6.76	20	
Methylene chloride	213.7	20	200	0	107	74 - 124	218.4	2.14	20	
Trichloroethene	227.9	10	200	0	114	79 - 123	250.7	9.55	20	
Vinyl chloride	239.4	10	200	0	120	58 - 137	258.4	7.61	20	
Surr: 1,2-Dichloroethane-d4	*439.4*	*10*	*500*	*0*	*87.9*	*81 - 118*	*442.8*	*0.782*	*20*	
Surr: 4-Bromofluorobenzene	*484.5*	*10*	*500*	*0*	*96.9*	*85 - 114*	*464.8*	*4.15*	*20*	
Surr: Dibromofluoromethane	*455.8*	*10*	*500*	*0*	*91.2*	*80 - 119*	*474.8*	*4.08*	*20*	
Surr: Toluene-d8	*499.6*	*10*	*500*	*0*	*99.9*	*89 - 112*	*489.5*	*2.06*	*20*	

The following samples were analyzed in this batch: HS20070744-02 HS20070744-08

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: 155634 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-155634** Units: **mg/Kg** Analysis Date: **23-Jul-2020 08:01**
Client ID: Run ID: **ICS-Integrion_365482** SeqNo: **5670749** PrepDate: **22-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	1.00								U
Nitrogen, Nitrate (As N)	0.100	1.00								U
Sulfate	0.500	5.00								U

LCS Sample ID: **LCS-155634** Units: **mg/Kg** Analysis Date: **23-Jul-2020 08:19**
Client ID: Run ID: **ICS-Integrion_365482** SeqNo: **5670750** PrepDate: **22-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	43.06	1.00	40	0	108	80 - 120				
Nitrogen, Nitrate (As N)	39.5	1.00	40	0	98.7	80 - 120				
Sulfate	198.7	5.00	200	0	99.4	80 - 120				

MS Sample ID: **HS20070737-02MS** Units: **mg/Kg** Analysis Date: **23-Jul-2020 03:11**
Client ID: Run ID: **ICS-Integrion_365482** SeqNo: **5670735** PrepDate: **22-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	22.08	0.987	19.74	0	112	80 - 120				
Nitrogen, Nitrate (As N)	20.06	0.987	19.74	0.2903	100	80 - 120				
Sulfate	103.4	4.93	98.69	5.716	99.0	80 - 120				

MSD Sample ID: **HS20070737-02MSD** Units: **mg/Kg** Analysis Date: **23-Jul-2020 03:29**
Client ID: Run ID: **ICS-Integrion_365482** SeqNo: **5670736** PrepDate: **22-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	21.91	0.966	19.31	0	113	80 - 120	22.08	0.783	20	
Nitrogen, Nitrate (As N)	19.73	0.966	19.31	0.2903	101	80 - 120	20.06	1.64	20	
Sulfate	102.6	4.83	96.55	5.716	100	80 - 120	103.4	0.783	20	

The following samples were analyzed in this batch: HS20070744-02

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: 155696 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **MBLK-155696** Units: **mg/Kg** Analysis Date: **23-Jul-2020 21:05**
Client ID: Run ID: **ManTech01_365565** SeqNo: **5672338** PrepDate: **23-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	10.0	10.0								U
Alkalinity, Carbonate (As CaCO3)	10.0	10.0								U
Alkalinity, Hydroxide (As CaCO3)	10.0	10.0								U
Alkalinity, Total (As CaCO3)	10.0	10.0								U

LCS Sample ID: **LCS-155696** Units: **mg/Kg** Analysis Date: **23-Jul-2020 21:14**
Client ID: Run ID: **ManTech01_365565** SeqNo: **5672339** PrepDate: **23-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	10680	10.0	10000	0	107	80 - 120				
Alkalinity, Total (As CaCO3)	10700	10.0	10000	0	107	80 - 120				

LCSD Sample ID: **LCSD-155696** Units: **mg/Kg** Analysis Date: **23-Jul-2020 21:24**
Client ID: Run ID: **ManTech01_365565** SeqNo: **5672340** PrepDate: **23-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	10760	10.0	10000	0	108	80 - 120	10680	0.728	20	
Alkalinity, Total (As CaCO3)	10780	10.0	10000	0	108	80 - 120	10700	0.823	20	

DUP Sample ID: **HS20070744-02DUP** Units: **mg/Kg** Analysis Date: **23-Jul-2020 21:34**
Client ID: **16EW05-200716** Run ID: **ManTech01_365565** SeqNo: **5672342** PrepDate: **23-Jul-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	59.7	10.1					66.17	10.3	20	
Alkalinity, Carbonate (As CaCO3)	10.1	10.1					0	0	20	U
Alkalinity, Hydroxide (As CaCO3)	10.1	10.1					0	0	20	U
Alkalinity, Total (As CaCO3)	59.7	10.1					66.17	10.3	20	

The following samples were analyzed in this batch: HS20070744-02

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: R365322 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-071620** Units: **mg/L** Analysis Date: **17-Jul-2020 23:20**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.2163	0.500								J

LCS Sample ID: **LCS-071620** Units: **mg/L** Analysis Date: **17-Jul-2020 23:38**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.398	0.100	4	0	110	80 - 120				
Nitrogen, Nitrate (As N)	3.944	0.100	4	0	98.6	80 - 120				
Sulfate	19.55	0.500	20	0	97.7	80 - 120				

MS Sample ID: **HS20070674-01MS** Units: **mg/L** Analysis Date: **16-Jul-2020 21:40**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666946** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	7.228	0.100	2	5.197	102	80 - 120				
Nitrogen, Nitrate (As N)	2.258	0.100	2	0	113	80 - 120				
Sulfate	140.3	0.500	10	136.2	40.4	80 - 120				SEO

MS Sample ID: **HS20070313-01MS** Units: **mg/L** Analysis Date: **17-Jul-2020 05:31**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5667080** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	23.97	1.00	20	2.829	106	80 - 120				
Nitrogen, Nitrate (As N)	26.54	1.00	20	7.536	95.0	80 - 120				
Sulfate	195.6	5.00	100	101	94.6	80 - 120				

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: R365322 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS20070674-01MSD** Units: **mg/L** Analysis Date: **16-Jul-2020 21:58**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5666947** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	7.292	0.100	2	5.197	105	80 - 120	7.228	0.893	20	
Nitrogen, Nitrate (As N)	2.261	0.100	2	0	113	80 - 120	2.258	0.124	20	
Sulfate	142.2	0.500	10	136.2	59.2	80 - 120	140.3	1.33	20	SEO

MSD Sample ID: **HS20070313-01MSD** Units: **mg/L** Analysis Date: **17-Jul-2020 05:49**
Client ID: Run ID: **ICS-Integrion_365322** SeqNo: **5667081** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	23.89	1.00	20	2.829	105	80 - 120	23.97	0.33	20	
Nitrogen, Nitrate (As N)	26.46	1.00	20	7.536	94.6	80 - 120	26.54	0.302	20	
Sulfate	196.7	5.00	100	101	95.7	80 - 120	195.6	0.539	20	

The following samples were analyzed in this batch: HS20070744-01 HS20070744-03 HS20070744-04 HS20070744-05

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: R365440 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-072120** Units: **mg/L** Analysis Date: **21-Jul-2020 09:47**
Client ID: Run ID: **ICS-Integrion_365440** SeqNo: **5669559** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS-072120** Units: **mg/L** Analysis Date: **21-Jul-2020 10:05**
Client ID: Run ID: **ICS-Integrion_365440** SeqNo: **5669560** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.398	0.100	4	0	110	80 - 120				
Sulfate	19.89	0.500	20	0	99.5	80 - 120				

MS Sample ID: **HS20070674-03MS** Units: **mg/L** Analysis Date: **21-Jul-2020 13:32**
Client ID: Run ID: **ICS-Integrion_365440** SeqNo: **5669566** PrepDate: DF: **200**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	458.2	20.0	400	0	115	80 - 120				
Sulfate	10650	100	2000	8830	90.9	80 - 120				O

MSD Sample ID: **HS20070674-03MSD** Units: **mg/L** Analysis Date: **21-Jul-2020 13:50**
Client ID: Run ID: **ICS-Integrion_365440** SeqNo: **5669567** PrepDate: DF: **200**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	457	20.0	400	0	114	80 - 120	458.2	0.262	20	
Sulfate	10610	100	2000	8830	88.7	80 - 120	10650	0.407	20	O

The following samples were analyzed in this batch: HS20070744-01 HS20070744-06

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070744

QC BATCH REPORT

Batch ID: R365564 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW1-200723** Units: **mg/L** Analysis Date: **23-Jul-2020 17:40**
Client ID: Run ID: **ManTech01_365564** SeqNo: **5672305** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **LCS1-200723** Units: **mg/L** Analysis Date: **23-Jul-2020 17:49**
Client ID: Run ID: **ManTech01_365564** SeqNo: **5672306** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1055	5.00	1000	0	106	85 - 115				

LCSD Sample ID: **LCSD1-200723** Units: **mg/L** Analysis Date: **23-Jul-2020 17:58**
Client ID: Run ID: **ManTech01_365564** SeqNo: **5672307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1080	5.00	1000	0	108	85 - 115	1055	2.3	20	

DUP Sample ID: **HS20071060-02DUP** Units: **mg/L** Analysis Date: **23-Jul-2020 18:11**
Client ID: Run ID: **ManTech01_365564** SeqNo: **5672309** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	144.6	5.00					143.8	0.513	20	

The following samples were analyzed in this batch: HS20070744-01 HS20070744-03 HS20070744-04 HS20070744-05

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: **HS20070744**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
Date	
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
Maryland	343, 2019-2020	30-Sep-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 13-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070744

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20070744-01	16EW01-200716	Login	7/17/2020 12:23:10 PM	PMG	WET044
HS20070744-01	16EW01-200716	Login	7/17/2020 12:23:10 PM	PMG	Sub
HS20070744-01	16EW01-200716	Login	7/17/2020 12:23:10 PM	PMG	VOA184
HS20070744-01	16EW01-200716	Login	7/17/2020 12:23:10 PM	PMG	RSK009
HS20070744-01	16EW01-200716	Login	7/17/2020 12:23:10 PM	PMG	Sub

ALS Houston, US Date: 13-Aug-20

Sample Receipt Checklist

Work Order ID: HS20070744 **Date/Time Received:** **17-Jul-2020 09:50**

Client Name: CBI-Houston **Received by:** **Paresh M. Giga**

Completed By:	/S/ Paresh M. Giga	17-Jul-2020 12:37	**Reviewed by:**	/S/ RJ Modashia	17-Jul-2020 15:46
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **GW/Water** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑	
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑	
Chain of custody present?	Yes ☑	No ☐	1 Page(s)	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:none	
Samplers name present on COC?	Yes ☐	No ☑		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		
Temperature(s)/Thermometer(s):	1.1C U/c		IR25	
Cooler(s)/Kit(s):	44383			
Date/Time sample(s) sent to storage:	7/17/2020 12:50			
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	
pH adjusted?	Yes ☐	No ☐	N/A ☑	
pH adjusted by:				

Login Notes: Extra sample received not on chain.
16EW06-200715 7/16/2020 @ 0905.
Logged in for VOC & Perchlorate

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No.: 501032

Job: **LHAAP 16 JULY 2020_ALS**

Prepared By: Scott Beesinger

P.O. Number:

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Perchlorate by SW6850	Metals (arsenic, chromium, manganese, nickel, thallium) by SW6020				Remark: (Preserv etc.)
16EW01-200720	WG	7/16/20/0720		10	X	X	X	X	X	X					
16EW05-200720	WG	7/16/20/0810		10	X	X	X	X	X	X					
16EW02-200720	WG	7/16/20/0950		10	X	X	X	X	X	X					
16EW02-200720-FD	WG	7/16/20/0950		10	X	X	X	X	X	X					
16IW09-200720	WG	7/16/20/1105		10	X	X	X	X	X	X					
16RW05-200720	WG	7/16/20/1200		7	X	X			X	X					
TRIP BLANK	W	7/16/20		2	X										

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	7/16/20	1430		7/17/20	09:30						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

VIC.

44383 1.1°

#21

CH-20

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant 16 July 2020

HS20070744

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44383

CUSTODY SEAL

Date: 7/16/20 Time: 1430
Name: Scott Beesinger
Company: BHMTG

Seal Broken By:
Date: 07/17/20

44383 JUL 17 2020

Must Deliver Next Business Day
Time and Tempature Sensitive!

44383

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINGER
APT|M
1203-B EAST GRAND AVE.
PMB202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 23JUN20
ACTWGT: 1.00 LB MAN
CAD: 9001307CAFE3211
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP 16 - B072394 - RJ
RMA:

FedEx Express

FedEx.
TRK# 0221 1891 8877 8347

FRI - 17 JUL 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

FID 162785 16JUL20 GGGA 5E0C3/C6A6/05A2

July 31, 2020 Service Request No:E2000660

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

Laboratory Results for: HS20070744

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 17, 2020
For your reference, these analyses have been assigned our service request number **E2000660.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	ALS Houston	**Service Request No.:**	E2000660
Project:	HS20070744	**Date Received:**	07/15/20
Sample Matrix:	W		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seven samples were received for analysis at ALS Environmental in Houston on 07/15/20.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2000302: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch. MS and MSD was performed on an unrelated sample, LCS/LCSD recoveries are within QC limits.

EQ2000319: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD. The LSC and DLCS recoveries are within QC limits.

DOD Certification is held for the method/matrix/analytes provided in this report.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: ALS Environmental - US **Service Request:**E2000660
Project: HS20070744

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2000660-001	16EW01-200716	7/16/2020	0720
E2000660-002	16EW05-200716	7/16/2020	0810
E2000660-003	16EW02-200716	7/16/2020	0950
E2000660-004	16EW02-200716-FD	7/16/2020	0950
E2000660-005	16IW09-200716	7/16/2020	1105
E2000660-006	16RW05-200716	7/16/2020	1200
E2000660-007	16EW06-200716	7/16/2020	0905

Service Request Summary

Folder #: **E2000660**
Client Name: ALS Environmental - US
Project Name: HS20070744
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/17/20
Internal Due Date: 7/31/2020
QAP: LAB QAP
Qualifier Set: HRMS Qualifier Set
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: HS20070744
EDD: No EDD Specified

7 125 mL-Plastic Bottle HDPE NM CLEAR Unpreserved
Location: EHRMS-WIC 4D
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2000660-001	16EW01-200716	Ground Water	07/16/20 0720	II
E2000660-002	16EW05-200716	Misc. Solid	07/16/20 0810	II
E2000660-003	16EW02-200716	Ground Water	07/16/20 0950	II
E2000660-004	16EW02-200716-FD	Ground Water	07/16/20 0950	II
E2000660-005	16IW09-200716	Ground Water	07/16/20 1105	II
E2000660-006	16RW05-200716	Ground Water	07/16/20 1200	II
E2000660-007	16EW06-200716	Misc. Solid	07/16/20 0905	II

Service Request Summary

Folder #:	**E2000660**
Client Name:	ALS Environmental - US
Project Name:	HS20070744
Project Number:	

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA

Phone Number:	281-530-5656
Cell Number:	
Fax Number:	281-530-5887
E-mail:	rj.modashia@alsglobal.com

Project Chemist:	Corey Grandits
Originating Lab:	HOUSTON
Logged By:	CGRANDITS
Date Received:	07/17/20
Internal Due Date:	7/31/2020
QAP:	LAB QAP
Qualifier Set:	HRMS Qualifier Set
Formset:	Lab Standard
Merged?:	N
Report to MDL?:	Y
P.O. Number:	HS20070744
EDD:	No EDD Specified

7 125 mL-Plastic Bottle HDPE NM CLEAR Unpreserved

Location: EHRMS-WIC 4D

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	7	Level II due 7/31,level IV on 8/7 Labeled as E2000649

Data Qualifiers

HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.

E Estimated value. The reported concentration is above the calibration range of the instrument.

H Sample extracted and/or analyzed out of suggested holding time.

J Estimated value. The reported concentration is below the MRL.

K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.

P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.

Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.

S Signal saturated detector. Result reported from dilution.

U Compound was analyzed for, but was not detected (ND).

X See Case Narrative.

Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.

i The MDL/MRL have been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

10450 Stancliff Rd, Houston, TX 77099 | 281-530-5656 | www.alsglobal.com

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01 2020	11/30/2021
Arkansas Department of Environmental Quality	20-030-0	3/26/2021
Department of Defense	A2LA 2897.01	11/30/2021
Hawaii Department of Health	2020	4/30/2021
Illinois Environmental Protection Agency	2000322020-4	5/9/2021
Louisiana Department of Health and Hospitals	LA028-2020	12/31/2020
Maine Department of Health and Human Services	2020016	6/5/2022
Minnesota Department of Health	1785988	12/31/2020
Nebraska Department of Health and Human Services	NE-OS-25-13 (2020)	4/30/2021
New Hampshire Environmental Laboratory Accreditation Program	209420	4/24/2021
New York Department of Health	11707	3/31/2021
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Tennessee Department of Environment and Concervation	04016-2020	4/30/2021
Texas Commision on Environmental Quality	T104704231-20-26	4/30/2021
United States Department of Agriculture	P330-19-00299	10/10/2022
Washington Department of Health	C819	11/14/2020

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14306**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20070744
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20070744-01**	**16EW01-200720**	**Groundwater**	**16 Jul 2020 07:20**
	SUB_Perch-6850			31 Jul 2020
2.	**HS20070744-02**	**16EW05-200720**	**Groundwater**	**16 Jul 2020 08:10**
	SUB_Perch-6850			31 Jul 2020
3.	**HS20070744-03**	**16EW02-200720**	**Groundwater**	**16 Jul 2020 09:50**
	SUB_Perch-6850			31 Jul 2020
4.	**HS20070744-04**	**16EW02-200720-FD**	**Groundwater**	**16 Jul 2020 09:50**
	SUB_Perch-6850			31 Jul 2020
5.	**HS20070744-05**	**16IW09-200720**	**Groundwater**	**16 Jul 2020 11:05**
	SUB_Perch-6850			31 Jul 2020
6.	**HS20070744-06**	**16RW05-200720**	**Groundwater**	**16 Jul 2020 12:00**
	SUB_Perch-6850			31 Jul 2020
7.	**HS20070744-08**	**16EW06-200715**	**Groundwater**	**16 Jul 2020 09:05**
	SUB_Perch-6850			31 Jul 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14306**

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	
Received By:		Date/Time:	7/17/20 1331
Cooler ID(s):		Temperature(s):	

ALS Environmental

Cooler Receipt Form

Project Chemist CH

Client/Project ALS-US-H

Thermometer ID 1023

Date/Time Received: 7/10/20 Initials: CH Date/Time Logged in: 7/10/20 Initials CH

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ⊘ ALS Courier ○ Client

2. Samples received in: ⊘ Cooler ○ Box ○ Envelope ○ Other

3. Were custody seals on coolers? ○ Yes ⊘ No If yes, how many and where?

Were they intact? ○ Yes ○ No ⊘ N/A

Were they signed and dated? ○ Yes ○ No ⊘ N/A

4. Packing Material: ○ Inserts ⊘ Baggies ○ Bubble Wrap ○ Gel Packs ⊘ Wet Ice ○ Sleeves ○ Other

5. Foreign or Regulated Soil? ○ Yes ○ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
-		7/10/20	1331	CH	1.4	☒
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ⊘ Yes ○ No

7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ⊘ Yes ○ No

8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ⊘ Yes ○ No

9. Were appropriate bottles/containers and volumes received for the requested tests? ⊘ Yes ○ No

10. Did sample labels and tags agree with custody documents? ⊘ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label:

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 361870 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 7/20/20 10:39

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000626-001	LH18/24-SP650_070920-BIX	.01	6850/ClO4 DOD			Water	10mL	
2	E2000627-001	50WW08-200708	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2000627-002	50WW29-200708	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2000627-003	50WW05-200708	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2000627-004	50WW14-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2000627-005	50WW13-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
7	E2000627-006	50WW11-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
8	E2000627-007	50WW11-200709-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
9	E2000627-008	50WW06-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
10	E2000627-009	50WW12-200709	.01	6850/ClO4 DOD			Ground Water	10mL	
11	E2000638-001	LH18/24-SP650_071420-BIX	.01	6850/ClO4 DOD			Ground Water	10mL	
12	E2000639-001	LH18/24-SP650_071420-BIX	.01	6850/ClO4 DOD			Ground Water	10mL	
13	E2000640-001	LH18/24-SP140_071420	.01	6850/ClO4 DOD			Ground Water	10mL	
14	E2000660-001	16EW01-200716	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2000660-003	16EW02-200716	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2000660-004	16EW02-200716-FD	.01	6850/ClO4 DOD			Ground Water	10mL	
17	E2000660-005	16IW09-200716	.01	6850/ClO4 DOD			Ground Water	10mL	
18	E2000660-006	16RW05-200716	.01	6850/ClO4 DOD			Ground Water	10mL	
19	EQ2000302-01	MB		6850/ClO4 DOD			Liquid	10mL	
20	EQ2000302-02	LCS		6850/ClO4 DOD			Liquid	10mL	
21	EQ2000302-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
22	EQ2000302-04	50WW14-200709 MS	.01	6850/ClO4 DOD			Liquid	10mL	
23	EQ2000302-05	50WW14-200709 DMS	.01	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4 Inventory ID 202037 Logbook Ref: Sodium Perchlorate Expires On: 05/22/2021

E2000626-001	100.00µL	E2000627-001	100.00µL	E2000627-002	100.00µL	E2000627-003	100.00µL	E2000627-004	100.00µL	E2000627-005	100.00µL
E2000627-006	100.00µL	E2000627-007	100.00µL	E2000627-008	100.00µL	E2000627-009	100.00µL	E2000638-001	100.00µL	E2000639-001	100.00µL
E2000640-001	100.00µL	E2000660-001	100.00µL	E2000660-003	100.00µL	E2000660-004	100.00µL	E2000660-005	100.00µL	E2000660-006	100.00µL
EQ2000302-02	100.00µL	EQ2000302-03	100.00µL	EQ2000302-04	100.00µL	EQ2000302-05	100.00µL				

Name: Perchlorate Intermediate Stock1 Inventory ID 209764 Logbook Ref: Perchlorate Int. Stock1 51820 Expires On: 11/18/2020

EQ2000302-02	1.00µL	EQ2000302-03	1.00µL	EQ2000302-04	10.00µL	EQ2000302-05	10.00µL

Preparation Information Benchsheet

Prep Run#: 361870 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 7/20/20 10:39

Preparation Steps

Step: Preparation
Started: 7/20/20 10:39
Finished: 7/20/20 14:00
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Preparation Information Benchsheet

Prep Run#: 362576 **Prep WorkFlow:** Gen CLO4 **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 7/30/20 08:49

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000660-002	16EW05-200716	.01	6850/ClO4 DOD			Misc. Solid	0.958g	
2	E2000660-007	16EW06-200716	.01	6850/ClO4 DOD			Misc. Solid	1.002g	
3	E2000678-001	C3-8	.01	6850/ClO4 DOD			Soil	1.058g	
4	E2000678-002	C7-1	.01	6850/ClO4 DOD			Soil	1.015g	
5	EQ2000319-01	MB		6850/ClO4 DOD			Solid	1.032g	
6	EQ2000319-02	LCS		6850/ClO4 DOD			Solid	1.012g	
7	EQ2000319-03	DLCS		6850/ClO4 DOD			Solid	1.012g	

Spiking Solutions

Name: Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4 Inventory ID 202037 Logbook Ref: Sodium Perchlorate Expires On: 05/22/2021

E2000660-002 100.00µL E2000660-007 100.00µL E2000678-001 100.00µL E2000678-002 100.00µL EQ2000319-01 100.00µL EQ2000319-02 100.00µL
EQ2000319-03 100.00µL

Name: Perchlorate Intermediate Stock1 Inventory ID 209764 Logbook Ref: Perchlorate Int. Stock1 51820 Expires On: 11/18/2020

EQ2000319-02 100.00µL EQ2000319-03 100.00µL

Preparation Steps

Step: Extraction
Started: 7/30/20 08:49
Finished: 7/30/20 15:15
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0720
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 15:18
Sample Name:	16EW01-200716	**Units:**	µg/L
Lab Code:	E2000660-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_030	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**28.4**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0810
Sample Matrix:	Misc. Solid	**Date Received:**	7/17/20
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 16:11
Sample Name:	16EW05-200716	**Units:**	µg/Kg
Lab Code:	E2000660-002	**Basis:**	Basis Adjustment Factor Missing

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_016	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**0.160**		1.04	0.783	0.314	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0950
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 16:01
Sample Name:	16EW02-200716	**Units:**	µg/L
Lab Code:	E2000660-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_035	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**16.2**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0950
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 16:09
Sample Name:	16EW02-200716-FD	**Units:**	µg/L
Lab Code:	E2000660-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_036	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**9.34**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 1105
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 16:17
Sample Name:	16IW09-200716	**Units:**	µg/L
Lab Code:	E2000660-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_037	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	2

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**0.184**		0.200	0.100	0.0500	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 1200
Sample Matrix:	Ground Water	**Date Received:**	7/17/20
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 16:25
Sample Name:	16RW05-200716	**Units:**	µg/L
Lab Code:	E2000660-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_038	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**1.77**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	7/16/20 0905
Sample Matrix:	Misc. Solid	**Date Received:**	7/17/20
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 16:19
Sample Name:	16EW06-200716	**Units:**	µg/Kg
Lab Code:	E2000660-007	**Basis:**	Basis Adjustment Factor Missing

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_017	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**0**		0.998	0.750	0.300	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/20/20 13:47
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2000302-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688323
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200720\20200720_023	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	ND		0.100	0.0500	0.0250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Misc. Solid	**Date Received:**	NA
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 15:47
Sample Name:	Method Blank	**Units:**	µg/Kg
Lab Code:	EQ2000319-01	**Basis:**	Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_013	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	ND		0.969	0.750	0.300	

Accuracy & Precision

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston TX 77099
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www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744
Sample Matrix: Ground Water

Service Request: E2000660
Date Analyzed: 7/20/20

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 361870

	Lab Control Sample EQ2000302-02			Duplicate Lab Control Sample EQ2000302-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.102	0.100	102	0.117	0.100	117	84 - 119	13	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/20/20 13:55
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000302-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688323
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200720\20200720_024	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**0.102**		0.100	0.0500	0.0250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/20/20 14:03
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000302-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688323
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200720\20200720_025	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**0.117**		0.100	0.0500	0.0250	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/30/20
Sample Matrix:	Misc. Solid		

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Units:**	µg/Kg
Prep Method:	Method	**Basis:**	Dry
		Extraction Lot:	362576

	Lab Control Sample EQ2000319-02			Duplicate Lab Control Sample EQ2000319-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	102	98.8	103	100	98.8	102	84 - 121	2	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Misc. Solid	**Date Received:**	NA
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 15:55
Sample Name:	Lab Control Sample	**Units:**	µg/Kg
Lab Code:	EQ2000319-02	**Basis:**	Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_014	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**102**		0.988	0.750	0.300	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Misc. Solid	**Date Received:**	NA
		Date Extracted:	7/30/20
		Date Analyzed:	7/30/20 16:03
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/Kg
Lab Code:	EQ2000319-03	**Basis:**	Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	689277
Prep Method:	Method	**Extraction Lot:**	362576
Data File Name:	I:\LCMS01\DATA\20200730\20200730_015	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**100**		0.988	0.750	0.300	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Analyzed:	7/24/20

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	Batch QC	**Units:**	µg/L
Lab Code:	E2000627-004	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		Batch QCMS				Batch QCDMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2000302-04				EQ2000302-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	3.69	4.69	1.00	99	4.79	1.00	110	84 - 119	2	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 14:07
Sample Name:	Batch QC	**Units:**	µg/L
Lab Code:	EQ2000302-04	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_021	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**4.69**		1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
		Date Extracted:	7/20/20
		Date Analyzed:	7/24/20 15:45
Sample Name:	Batch QC	**Units:**	µg/L
Lab Code:	EQ2000302-05	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Analysis Lot:**	688371
Prep Method:	Method	**Extraction Lot:**	361870
Data File Name:	I:\LCMS01\DATA\20200724\20200724_033	**Instrument Name:**	E-LCMS-01
		Dilution Factor:	10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	**4.79**		1.00	0.500	0.250	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20200720

1st Review: Kneir
2nd Review: Hvan

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/20/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000014

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200720_006	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200720_007	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200720_008	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200720_009	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200720_016	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200720_011	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200720_012	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200720_013	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200720_014	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200720_015	Perchlorate6850b.lcm	1x	☒	3100807-07
11	PERCHLORATEICV		20200720_017	Perchlorate6850b.lcm	1x	☒	3100807-08
12	IB		20200720_018	Perchlorate6850b.lcm	1x	☒	
13	IB		20200720_019	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200720_020	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200720_021	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200720_022	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-01		20200720_023	Perchlorate6850b.lcm	1x	☒	
18	EQ2000302-02		20200720_024	Perchlorate6850b.lcm	1x	☒	
19	EQ2000302-03		20200720_025	Perchlorate6850b.lcm	1x	☒	
20	EQ2000302-04		20200720_026	Perchlorate6850b.lcm	1x	☒	
21	EQ2000302-05		20200720_027	Perchlorate6850b.lcm	1x	☒	
22	E2000626-001		20200720_028	Perchlorate6850b.lcm	1x	☒	
23	E2000627-001		20200720_029	Perchlorate6850b.lcm	1x	☒	
24	E2000627-002		20200720_030	Perchlorate6850b.lcm	1x	☒	
25	E2000627-003		20200720_031	Perchlorate6850b.lcm	1x	☒	
26	E2000627-004		20200720_032	Perchlorate6850b.lcm	1x	☒	
27	PERCHLORATE7		20200720_033	Perchlorate6850b.lcm	1x	☒	3100807-04
28	E2000627-005		20200720_034	Perchlorate6850b.lcm	1x	☒	
29	E2000627-006		20200720_035	Perchlorate6850b.lcm	1x	☒	
30	E2000627-007		20200720_036	Perchlorate6850b.lcm	1x	☒	
31	E2000627-008		20200720_037	Perchlorate6850b.lcm	1x	☒	
32	E2000627-009		20200720_038	Perchlorate6850b.lcm	1x	☒	
33	E2000638-001		20200720_039	Perchlorate6850b.lcm	1x	☒	
34	E2000639-001		20200720_040	Perchlorate6850b.lcm	1x	☒	
35	E2000640-001		20200720_041	Perchlorate6850b.lcm	1x	☒	
36	PERCHLORATE7		20200720_042	Perchlorate6850b.lcm	1x	☒	3100807-04
37	EQ2000303-01		20200720_043	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-02		20200720_044	Perchlorate6850b.lcm	1x	☒	
39	EQ2000303-03		20200720_045	Perchlorate6850b.lcm	1x	☒	
40	E2000641-001		20200720_046	Perchlorate6850b.lcm	1x	☒	
41	E2000641-002		20200720_047	Perchlorate6850b.lcm	1x	☒	
42	E2000641-003		20200720_048	Perchlorate6850b.lcm	1x	☒	
43	E2000641-004		20200720_049	Perchlorate6850b.lcm	1x	☒	
44	E2000641-005		20200720_050	Perchlorate6850b.lcm	1x	☒	
45	E2000641-006		20200720_051	Perchlorate6850b.lcm	1x	☒	
46	E2000641-007		20200720_052	Perchlorate6850b.lcm	1x	☒	
47	PERCHLORATE7		20200720_053	Perchlorate6850b.lcm	1x	☒	3100807-04
48	E2000641-008		20200720_054	Perchlorate6850b.lcm	1x	☒	
49	E2000641-009		20200720_055	Perchlorate6850b.lcm	1x	☒	
50	E2000648-001		20200720_056	Perchlorate6850b.lcm	1x	☒	
51	E2000648-002		20200720_057	Perchlorate6850b.lcm	1x	☒	
52	E2000648-003		20200720_058	Perchlorate6850b.lcm	1x	☒	

Initial Calibration - Detailed Report

Calibration ID: EC2000014 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2000014-01	PERCHLORATE1	20200720_006	07/20/2020 10:09
02	EC2000014-02	PERCHLORATE2	20200720_007	07/20/2020 10:17
03	EC2000014-03	PERCHLORATE3	20200720_008	07/20/2020 10:24
04	EC2000014-04	PERCHLORATE4	20200720_009	07/20/2020 10:32
06	EC2000014-06	PERCHLORATE6	20200720_011	07/20/2020 10:48
07	EC2000014-07	PERCHLORATE7	20200720_012	07/20/2020 10:56
08	EC2000014-08	PERCHLORATE8	20200720_013	07/20/2020 11:04
09	EC2000014-09	PERCHLORATE9	20200720_014	07/20/2020 11:12
10	EC2000014-10	PERCHLORATE10	20200720_015	07/20/2020 11:20
05	EC2000014-05	PERCHLORATE5	20200720_016	07/20/2020 12:28

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 3.545** **Average RF = 0.121**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1239	02	0.5000	0.1227	03	0.7000	0.1244	04	1.0000	0.1237
05	2.0000	0.1208	06	5.0000	0.1169	07	10.0000	0.1279	08	20.0000	0.1185
09	30.0000	0.1182	10	50.0000	0.1134						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.102	2.3	02	0.5000	0.507	1.4	03	0.7000	0.719	2.7
04	1.0000	1.02	2.2	05	2.0000	2.00	-0.2	06	5.0000	4.83	-3.4
07	10.0000	10.6	5.7	08	20.0000	19.6	-2.1	09	30.0000	29.3	-2.3
10	50.0000	46.8	-6.3								

Initial Calibration Verification Summary Report

Calibration ID:	EC2000014	**Instrument ID:**	E-LCMS-01
Datafile ID:	20200720_017	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2000014-11	T	Average RF	10	10.475	ng/mL	4.8	<= 15

ALS Group Houston

PERCHLORATE1

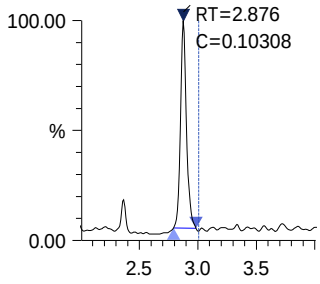
Date acquired: 7/20/2020 10:09:08 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_006.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE1	7/20/2020 10:09:08 AM	5665	0.10308	20200720_006	2.876	25.0000	1.0000	5
Sodium Perchlorate-18O4_IS	PERCHLORATE1	7/20/2020 10:09:08 AM	457293	1.00000	20200720_006	2.874	25.0000	1.0000	5

Perchlorate

Conc 0.10308
Area 5665

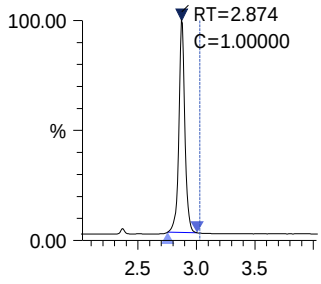
Q 99.00>83.00 (-) 1.65e3



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 457293

ISTD 107.00>89.00 (-) 1.28e5



ALS Group Houston

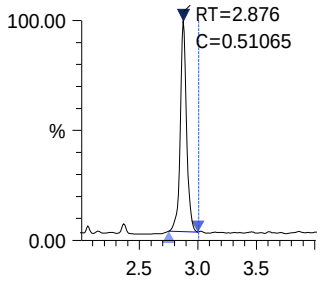
PERCHLORATE2

Date acquired: 7/20/2020 10:17:03 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_007.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE2	7/20/2020 10:17:03 AM	28211	0.51065	20200720_007	2.876	25.0000	1.0000	6
Sodium Perchlorate-18O4_IS	PERCHLORATE2	7/20/2020 10:17:03 AM	459674	1.00000	20200720_007	2.873	25.0000	1.0000	6

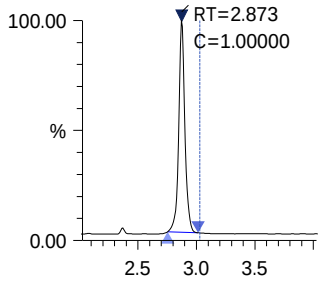
Perchlorate

Conc 0.51065
Area 28211
Q 99.00>83.00 (-) 7.64e3



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 459674
ISTD 107.00>89.00 (-) 1.26e5



ALS Group Houston

PERCHLORATE3

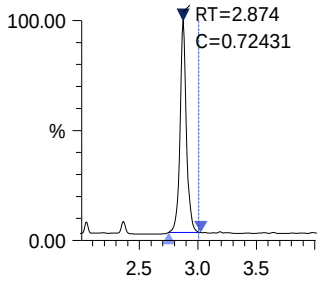
Date acquired: 7/20/2020 10:24:56 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_008.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE3	7/20/2020 10:24:56 AM	40510	0.72431	20200720_008	2.874	25.0000	1.0000	7
Sodium Perchlorate-18O4_IS	PERCHLORATE3	7/20/2020 10:24:56 AM	465371	1.00000	20200720_008	2.874	25.0000	1.0000	7

Perchlorate

Conc 0.72431
Area 40510

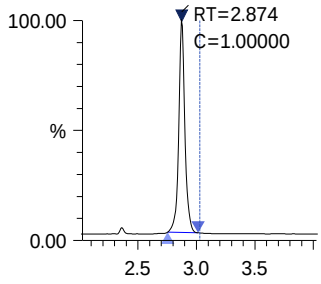
Q 99.00>83.00 (-) 1.08e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 465371

ISTD 107.00>89.00 (-) 1.27e5



ALS Group Houston

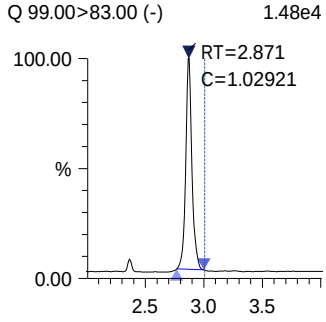
PERCHLORATE4

Date acquired: 7/20/2020 10:32:48 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_009.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE4	7/20/2020 10:32:48 AM	54285	1.02921	20200720_009	2.871	25.0000	1.0000	8
Sodium Perchlorate-18O4_IS	PERCHLORATE4	7/20/2020 10:32:48 AM	438869	1.00000	20200720_009	2.869	25.0000	1.0000	8

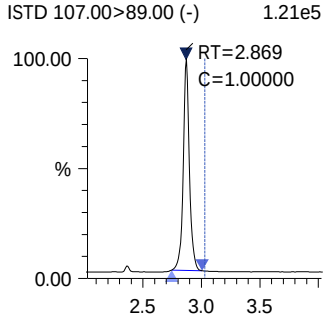
Perchlorate

Conc 1.02921
Area 54285



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 438869



ALS Group Houston

PERCHLORATE6

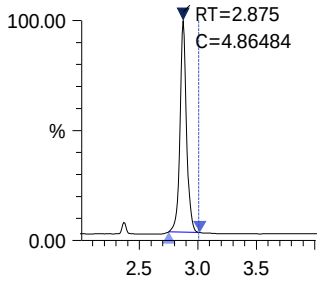
Date acquired: 7/20/2020 10:48:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_011.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE6	7/20/2020 10:48:37 AM	249126	4.86484	20200720_011	2.875	25.0000	1.0000	10
Sodium Perchlorate-18O4_IS	PERCHLORATE6	7/20/2020 10:48:37 AM	426098	1.00000	20200720_011	2.873	25.0000	1.0000	10

Perchlorate

Conc 4.86484
Area 249126

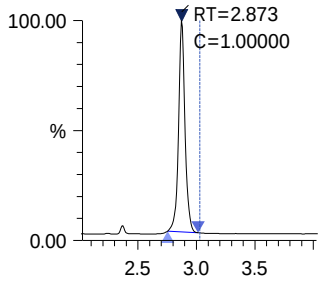
Q 99.00>83.00 (-) 6.50e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 426098

ISTD 107.00>89.00 (-) 1.12e5



ALS Group Houston

PERCHLORATE7

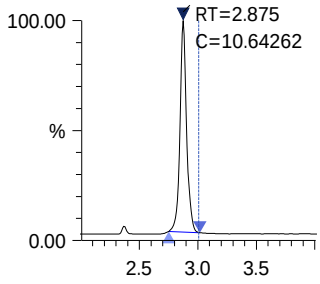
Date acquired: 7/20/2020 10:56:33 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_012.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/20/2020 10:56:33 AM	453181	10.64262	20200720_012	2.875	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/20/2020 10:56:33 AM	354309	1.00000	20200720_012	2.873	25.0000	1.0000	4

Perchlorate

Conc 10.64262
Area 453181

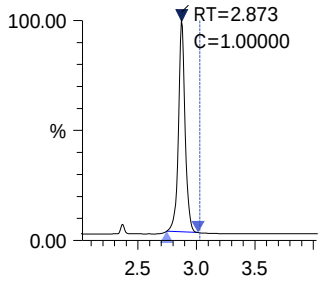
Q 99.00>83.00 (-) 1.16e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 354309

ISTD 107.00>89.00 (-) 9.03e4



ALS Group Houston

PERCHLORATE8

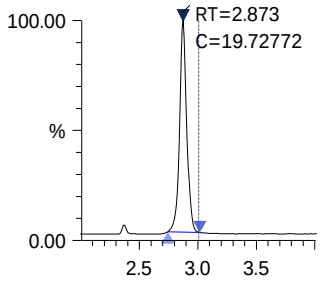
Date acquired: 7/20/2020 11:04:29 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_013.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE8	7/20/2020 11:04:29 AM	811652	19.72772	20200720_013	2.873	25.0000	1.0000	11
Sodium Perchlorate-18O4_IS	PERCHLORATE8	7/20/2020 11:04:29 AM	342336	1.00000	20200720_013	2.872	25.0000	1.0000	11

Perchlorate

Conc 19.72772
Area 811652

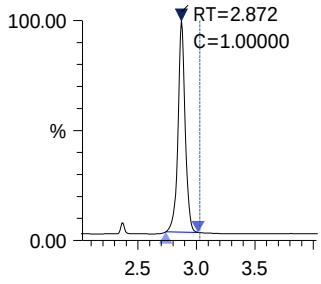
Q 99.00>83.00 (-) 1.93e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 342336

ISTD 107.00>89.00 (-) 8.10e4



ALS Group Houston

PERCHLORATE9

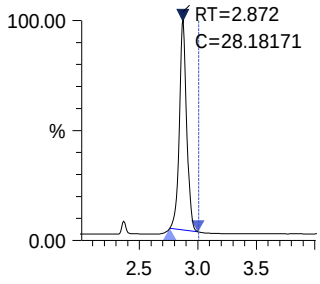
Date acquired: 7/20/2020 11:12:22 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_014.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE9	7/20/2020 11:12:22 AM	1067782	28.18171	20200720_014	2.872	25.0000	1.0000	12
Sodium Perchlorate-18O4_IS	PERCHLORATE9	7/20/2020 11:12:22 AM	315264	1.00000	20200720_014	2.871	25.0000	1.0000	12

Perchlorate

Conc 28.18171
Area 1067782

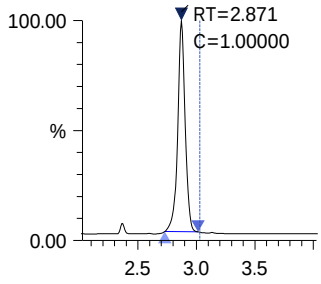
Q 99.00>83.00 (-) 2.52e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 315264

ISTD 107.00>89.00 (-) 7.16e4



ALS Group Houston

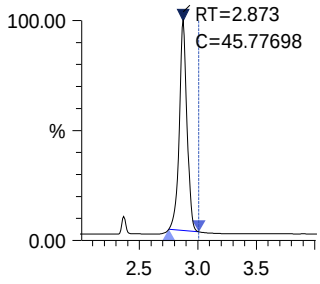
PERCHLORATE10

Date acquired: 7/20/2020 11:20:14 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_015.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE10	7/20/2020 11:20:14 AM	1515028	45.77698	20200720_015	2.873	25.0000	1.0000	13
Sodium Perchlorate-18O4_IS	PERCHLORATE10	7/20/2020 11:20:14 AM	275380	1.00000	20200720_015	2.872	25.0000	1.0000	13

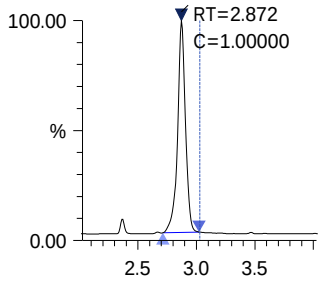
Perchlorate

Conc 45.77698
Area 1515028
Q 99.00>83.00 (-) 3.39e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 275380
ISTD 107.00>89.00 (-) 5.90e4



ALS Group Houston

PERCHLORATE5

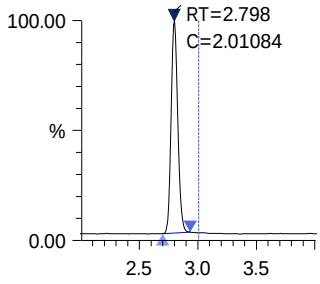
Date acquired: 7/20/2020 12:28:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_016.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE5	7/20/2020 12:28:05 PM	119859	2.01084	20200720_016	2.798	25.0000	1.0000	9
Sodium Perchlorate-18O4_IS	PERCHLORATE5	7/20/2020 12:28:05 PM	495966	1.00000	20200720_016	2.795	25.0000	1.0000	9

Perchlorate

Conc 2.01084
Area 119859

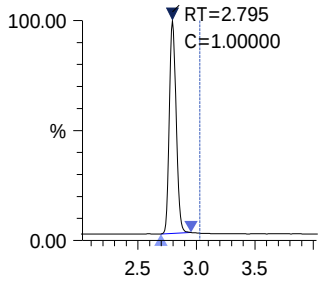
Q 99.00>83.00 (-) 3.02e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 495966

ISTD 107.00>89.00 (-) 1.24e5



ALS Group Houston

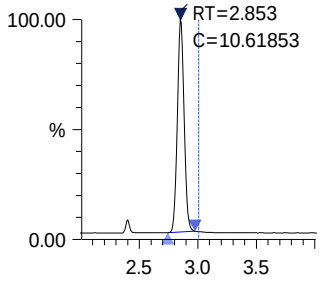
PERCHLORATEICV

Date acquired: 7/20/2020 12:52:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_017.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATEICV	7/20/2020 12:52:26 PM	490921	10.61853	20200720_017	2.853	25.0000	1.0000	14
Sodium Perchlorate-18O4_IS	PERCHLORATEICV	7/20/2020 12:52:26 PM	384686	1.00000	20200720_017	2.851	25.0000	1.0000	14

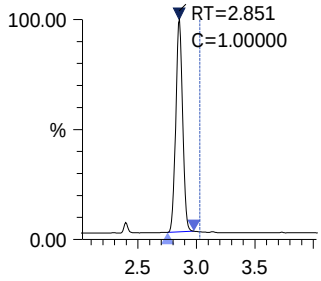
Perchlorate

Conc 10.61853
Area 490921
Q 99.00>83.00 (-) 1.21e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 384686
ISTD 107.00>89.00 (-) 9.52e4



20200724

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200724_005	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200724_006	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200724_007	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200724_008	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200724_009	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200724_010	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200724_011	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200724_012	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200724_013	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200724_014	Perchlorate6850b.lcm	1x	☒	3100807-07
11	IB		20200724_015	Perchlorate6850b.lcm	1x	☒	
12	PERCHLORATEICV		20200724_016	Perchlorate6850b.lcm	1x	☒	3100807-08
13	IB		20200724_017	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200724_018	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200724_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200724_020	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-04X10		20200724_021	Perchlorate6850b.lcm	10x	☒	
18	EQ2000302-05X10DNU		20200724_022	Perchlorate6850b.lcm	10x	☒	
19	E2000626-001X2		20200724_023	Perchlorate6850b.lcm	2x	☒	
20	E2000627-001X10		20200724_024	Perchlorate6850b.lcm	10x	☒	
21	E2000627-005X100		20200724_025	Perchlorate6850b.lcm	100x	☒	
22	E2000627-006X100		20200724_026	Perchlorate6850b.lcm	100x	☒	
23	E2000627-009X1000		20200724_027	Perchlorate6850b.lcm	1000x	☒	
24	E2000640-001X200		20200724_028	Perchlorate6850b.lcm	200x	☒	
25	PERCHLORATE7		20200724_029	Perchlorate6850b.lcm	1x	☒	3100807-04
26	E2000660-001X10		20200724_030	Perchlorate6850b.lcm	10x	☒	
27	E2000627-004X10		20200724_031	Perchlorate6850b.lcm	10x	☒	
28	PERCHLORATE7		20200724_032	Perchlorate6850b.lcm	1x	☒	3100807-04
29	EQ2000302-05X10		20200724_033	Perchlorate6850b.lcm	10x	☒	
30	PERCHLORATE7		20200724_034	Perchlorate6850b.lcm	1x	☒	3100807-04
31	E2000660-003X10		20200724_035	Perchlorate6850b.lcm	10x	☒	
32	E2000660-004X10		20200724_036	Perchlorate6850b.lcm	10x	☒	
33	E2000660-005X2		20200724_037	Perchlorate6850b.lcm	2x	☒	
34	E2000660-006X10		20200724_038	Perchlorate6850b.lcm	10x	☒	
35	PERCHLORATE7		20200724_039	Perchlorate6850b.lcm	1x	☒	3100807-04
36	EQ2000303-01		20200724_040	Perchlorate6850b.lcm	1x	☒	
37	EQ2000303-02		20200724_041	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-03		20200724_042	Perchlorate6850b.lcm	1x	☒	
39	E2000641-001X20		20200724_043	Perchlorate6850b.lcm	20x	☒	
40	E2000641-002X20		20200724_044	Perchlorate6850b.lcm	20x	☒	
41	E2000641-003X10		20200724_045	Perchlorate6850b.lcm	10x	☒	
42	E2000641-004X20		20200724_046	Perchlorate6850b.lcm	20x	☒	
43	E2000641-005X10		20200724_047	Perchlorate6850b.lcm	10x	☒	
44	E2000641-006X10		20200724_048	Perchlorate6850b.lcm	10x	☒	
45	E2000641-007X10		20200724_049	Perchlorate6850b.lcm	10x	☒	
46	PERCHLORATE7		20200724_050	Perchlorate6850b.lcm	1x	☒	3100807-04
47	E2000641-008X10		20200724_051	Perchlorate6850b.lcm	10x	☒	
48	E2000641-009X10		20200724_052	Perchlorate6850b.lcm	10x	☒	
49	E2000648-001X10		20200724_053	Perchlorate6850b.lcm	10x	☒	
50	E2000648-002X10		20200724_054	Perchlorate6850b.lcm	10x	☒	
51	E2000648-003X20		20200724_055	Perchlorate6850b.lcm	20x	☒	
52	E2000648-005X10		20200724_056	Perchlorate6850b.lcm	10x	☒	

Initial Calibration - Detailed Report

Calibration ID: EC2000016 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2000016-01	PERCHLORATE1	20200724_005	07/24/2020 11:48
02	EC2000016-02	PERCHLORATE2	20200724_006	07/24/2020 11:56
03	EC2000016-03	PERCHLORATE3	20200724_007	07/24/2020 12:04
04	EC2000016-04	PERCHLORATE4	20200724_008	07/24/2020 12:11
05	EC2000016-05	PERCHLORATE5	20200724_009	07/24/2020 12:19
06	EC2000016-06	PERCHLORATE6	20200724_010	07/24/2020 12:27
07	EC2000016-07	PERCHLORATE7	20200724_011	07/24/2020 12:35
08	EC2000016-08	PERCHLORATE8	20200724_012	07/24/2020 12:43
09	EC2000016-09	PERCHLORATE9	20200724_013	07/24/2020 12:51
10	EC2000016-10	PERCHLORATE10	20200724_014	07/24/2020 12:59

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 4.659** **Average RF = 0.121**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1283	02	0.5000	0.13	03	0.7000	0.1207	04	1.0000	0.1251
05	2.0000	0.1211	06	5.0000	0.1202	07	10.0000	0.1211	08	20.0000	0.1168
09	30.0000	0.1121	10	50.0000	0.1148						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.106	6.0	02	0.5000	0.537	7.4	03	0.7000	0.698	-0.3
04	1.0000	1.03	3.4	05	2.0000	2.00	0.1	06	5.0000	4.97	-0.7
07	10.0000	10.0	0.1	08	20.0000	19.3	-3.5	09	30.0000	27.8	-7.3
10	50.0000	47.4	-5.1								

Initial Calibration Verification Summary Report

Calibration ID:	EC2000016	**Instrument ID:**	E-LCMS-01
Datafile ID:	20200724_016	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2000016-11	T	Average RF	10	9.867	ng/mL	-1.3	<= 15

ALS Group Houston

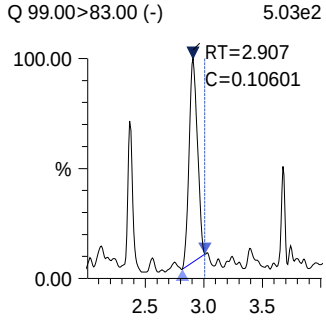
PERCHLORATE1

Date acquired: 7/24/2020 11:48:19 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_005.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE1	7/24/2020 11:48:19 AM	2348	0.10601	20200724_005	2.907	25.0000	1.0000	5
Sodium Perchlorate-18O4_IS	PERCHLORATE1	7/24/2020 11:48:19 AM	183001	1.00000	20200724_005	2.903	25.0000	1.0000	5

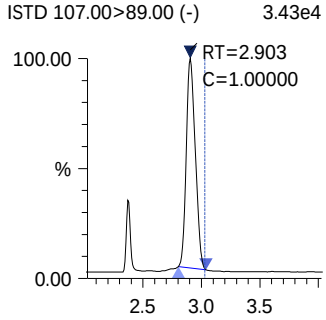
Perchlorate

Conc 0.10601
Area 2348



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 183001



ALS Group Houston

PERCHLORATE2

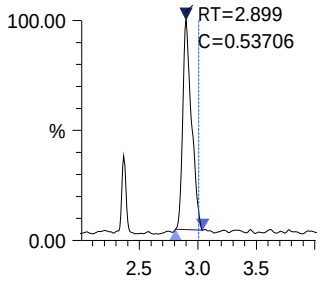
Date acquired: 7/24/2020 11:56:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_006.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE2	7/24/2020 11:56:11 AM	11773	0.53706	20200724_006	2.899	25.0000	1.0000	6
Sodium Perchlorate-18O4_IS	PERCHLORATE2	7/24/2020 11:56:11 AM	181125	1.00000	20200724_006	2.898	25.0000	1.0000	6

Perchlorate

Conc 0.53706
Area 11773

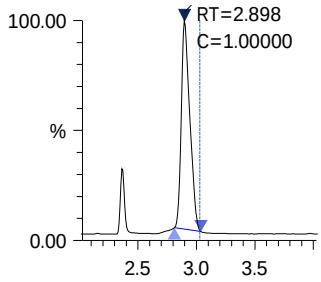
Q 99.00>83.00 (-) 2.32e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 181125

ISTD 107.00>89.00 (-) 3.62e4



ALS Group Houston

PERCHLORATE3

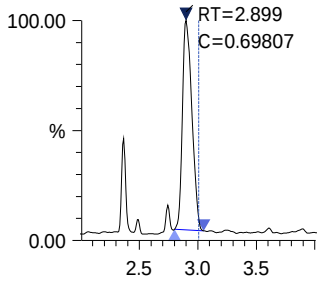
Date acquired: 7/24/2020 12:04:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_007.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE3	7/24/2020 12:04:05 PM	15258	0.69807	20200724_007	2.899	25.0000	1.0000	7
Sodium Perchlorate-18O4_IS	PERCHLORATE3	7/24/2020 12:04:05 PM	180602	1.00000	20200724_007	2.896	25.0000	1.0000	7

Perchlorate

Conc 0.69807
Area 15258

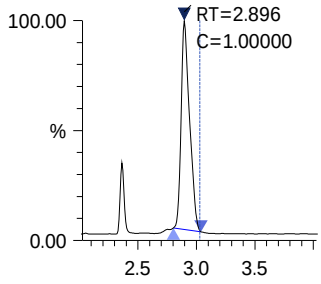
Q 99.00>83.00 (-) 2.79e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 180602

ISTD 107.00>89.00 (-) 3.65e4



ALS Group Houston

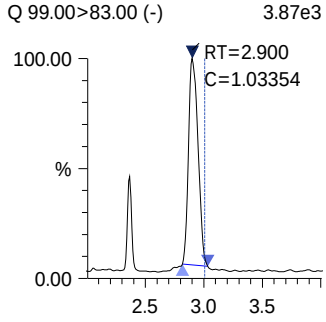
PERCHLORATE4

Date acquired: 7/24/2020 12:11:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_008.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE4	7/24/2020 12:11:58 PM	20922	1.03354	20200724_008	2.900	25.0000	1.0000	8
Sodium Perchlorate-18O4_IS	PERCHLORATE4	7/24/2020 12:11:58 PM	167260	1.00000	20200724_008	2.902	25.0000	1.0000	8

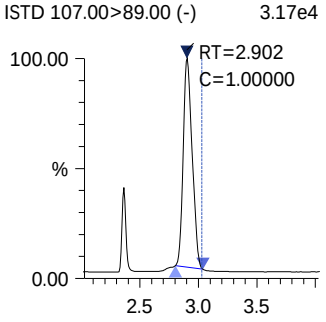
Perchlorate

Conc 1.03354
Area 20922



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 167260



ALS Group Houston

PERCHLORATE5

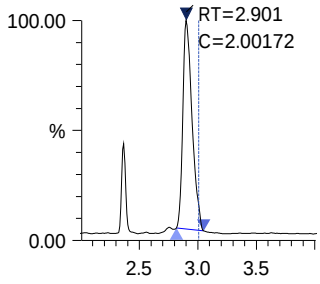
Date acquired: 7/24/2020 12:19:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_009.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE5	7/24/2020 12:19:50 PM	39343	2.00172	20200724_009	2.901	25.0000	1.0000	9
Sodium Perchlorate-18O4_IS	PERCHLORATE5	7/24/2020 12:19:50 PM	162397	1.00000	20200724_009	2.899	25.0000	1.0000	9

Perchlorate

Conc 2.00172
Area 39343

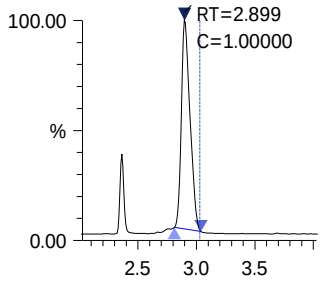
Q 99.00>83.00 (-) 7.39e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 162397

ISTD 107.00>89.00 (-) 3.19e4



ALS Group Houston

PERCHLORATE6

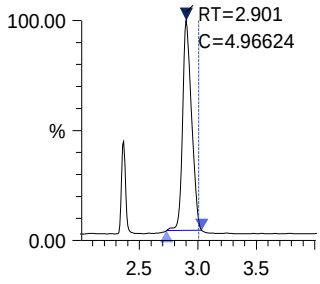
Date acquired: 7/24/2020 12:27:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_010.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE6	7/24/2020 12:27:42 PM	102216	4.96624	20200724_010	2.901	25.0000	1.0000	10
Sodium Perchlorate-18O4_IS	PERCHLORATE6	7/24/2020 12:27:42 PM	170060	1.00000	20200724_010	2.900	25.0000	1.0000	10

Perchlorate

Conc 4.96624
Area 102216

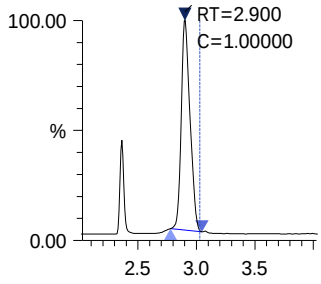
Q 99.00>83.00 (-) 1.97e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 170060

ISTD 107.00>89.00 (-) 3.28e4



ALS Group Houston

PERCHLORATE7

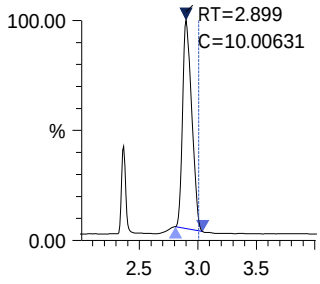
Date acquired: 7/24/2020 12:35:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_011.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 12:35:33 PM	187110	10.00631	20200724_011	2.899	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 12:35:33 PM	154502	1.00000	20200724_011	2.897	25.0000	1.0000	4

Perchlorate

Conc 10.00631
Area 187110

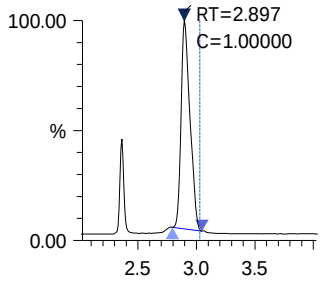
Q 99.00>83.00 (-) 3.54e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 154502

ISTD 107.00>89.00 (-) 2.97e4



ALS Group Houston

PERCHLORATE8

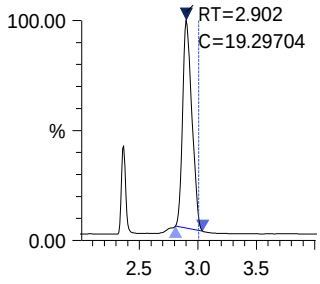
Date acquired: 7/24/2020 12:43:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_012.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE8	7/24/2020 12:43:26 PM	349524	19.29704	20200724_012	2.902	25.0000	1.0000	11
Sodium Perchlorate-18O4_IS	PERCHLORATE8	7/24/2020 12:43:26 PM	149657	1.00000	20200724_012	2.900	25.0000	1.0000	11

Perchlorate

Conc 19.29704
Area 349524

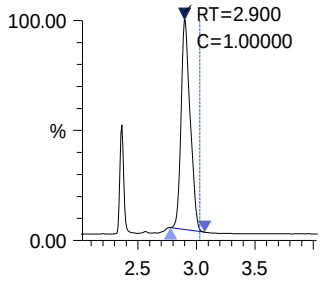
Q 99.00>83.00 (-) 6.58e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 149657

ISTD 107.00>89.00 (-) 2.78e4



ALS Group Houston

PERCHLORATE9

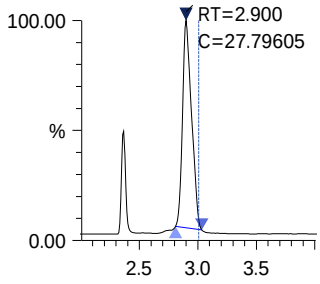
Date acquired: 7/24/2020 12:51:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_013.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE9	7/24/2020 12:51:22 PM	465757	27.79605	20200724_013	2.900	25.0000	1.0000	12
Sodium Perchlorate-18O4_IS	PERCHLORATE9	7/24/2020 12:51:22 PM	138448	1.00000	20200724_013	2.898	25.0000	1.0000	12

Perchlorate

Conc 27.79605
Area 465757

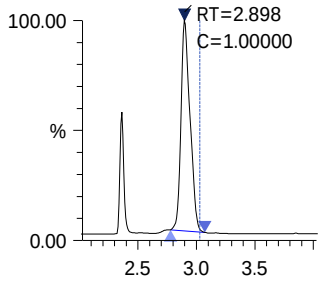
Q 99.00>83.00 (-) 9.05e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 138448

ISTD 107.00>89.00 (-) 2.59e4



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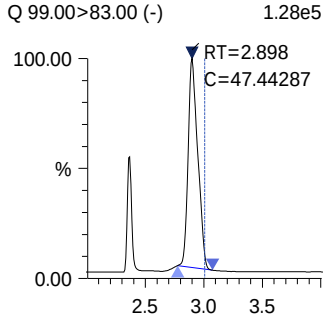
PERCHLORATE10

Date acquired: 7/24/2020 12:59:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_014.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE10	7/24/2020 12:59:14 PM	708682	47.44287	20200724_014	2.898	25.0000	1.0000	13
Sodium Perchlorate-18O4_IS	PERCHLORATE10	7/24/2020 12:59:14 PM	123422	1.00000	20200724_014	2.896	25.0000	1.0000	13

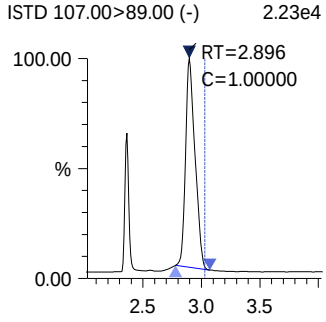
Perchlorate

Conc 47.44287
Area 708682



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 123422



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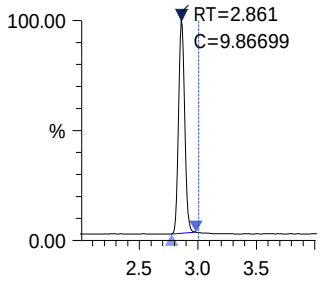
PERCHLORATEICV

Date acquired: 7/24/2020 1:28:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_016.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATEICV	7/24/2020 1:28:19 PM	231631	9.86699	20200724_016	2.861	25.0000	1.0000	14
Sodium Perchlorate-18O4_IS	PERCHLORATEICV	7/24/2020 1:28:19 PM	193964	1.00000	20200724_016	2.859	25.0000	1.0000	14

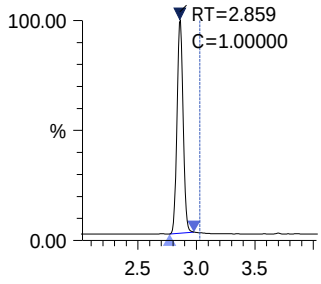
Perchlorate

Conc 9.86699
Area 231631
Q 99.00>83.00 (-) 6.30e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 193964
ISTD 107.00>89.00 (-) 5.33e4



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20200720

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/20/2020
Cal. Std. xp: 11/18/2020
ICAL ID: **EC2000014**

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200720_006	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200720_007	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200720_008	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200720_009	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200720_016	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200720_011	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200720_012	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200720_013	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200720_014	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200720_015	Perchlorate6850b.lcm	1x	☒	3100807-07
11	PERCHLORATEICV		20200720_017	Perchlorate6850b.lcm	1x	☒	3100807-08
12	IB		20200720_018	Perchlorate6850b.lcm	1x	☒	
13	IB		20200720_019	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200720_020	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200720_021	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200720_022	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-01		20200720_023	Perchlorate6850b.lcm	1x	☒	
18	EQ2000302-02		20200720_024	Perchlorate6850b.lcm	1x	☒	
19	EQ2000302-03		20200720_025	Perchlorate6850b.lcm	1x	☒	
20	EQ2000302-04		20200720_026	Perchlorate6850b.lcm	1x	☒	
21	EQ2000302-05		20200720_027	Perchlorate6850b.lcm	1x	☒	
22	E2000626-001		20200720_028	Perchlorate6850b.lcm	1x	☒	
23	E2000627-001		20200720_029	Perchlorate6850b.lcm	1x	☒	
24	E2000627-002		20200720_030	Perchlorate6850b.lcm	1x	☒	
25	E2000627-003		20200720_031	Perchlorate6850b.lcm	1x	☒	
26	E2000627-004		20200720_032	Perchlorate6850b.lcm	1x	☒	
27	PERCHLORATE7		20200720_033	Perchlorate6850b.lcm	1x	☒	3100807-04
28	E2000627-005		20200720_034	Perchlorate6850b.lcm	1x	☒	
29	E2000627-006		20200720_035	Perchlorate6850b.lcm	1x	☒	
30	E2000627-007		20200720_036	Perchlorate6850b.lcm	1x	☒	
31	E2000627-008		20200720_037	Perchlorate6850b.lcm	1x	☒	
32	E2000627-009		20200720_038	Perchlorate6850b.lcm	1x	☒	
33	E2000638-001		20200720_039	Perchlorate6850b.lcm	1x	☒	
34	E2000639-001		20200720_040	Perchlorate6850b.lcm	1x	☒	
35	E2000640-001		20200720_041	Perchlorate6850b.lcm	1x	☒	
36	PERCHLORATE7		20200720_042	Perchlorate6850b.lcm	1x	☒	3100807-04
37	EQ2000303-01		20200720_043	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-02		20200720_044	Perchlorate6850b.lcm	1x	☒	
39	EQ2000303-03		20200720_045	Perchlorate6850b.lcm	1x	☒	
40	E2000641-001		20200720_046	Perchlorate6850b.lcm	1x	☒	
41	E2000641-002		20200720_047	Perchlorate6850b.lcm	1x	☒	
42	E2000641-003		20200720_048	Perchlorate6850b.lcm	1x	☒	
43	E2000641-004		20200720_049	Perchlorate6850b.lcm	1x	☒	
44	E2000641-005		20200720_050	Perchlorate6850b.lcm	1x	☒	
45	E2000641-006		20200720_051	Perchlorate6850b.lcm	1x	☒	
46	E2000641-007		20200720_052	Perchlorate6850b.lcm	1x	☒	
47	PERCHLORATE7		20200720_053	Perchlorate6850b.lcm	1x	☒	3100807-04
48	E2000641-008		20200720_054	Perchlorate6850b.lcm	1x	☒	
49	E2000641-009		20200720_055	Perchlorate6850b.lcm	1x	☒	
50	E2000648-001		20200720_056	Perchlorate6850b.lcm	1x	☒	
51	E2000648-002		20200720_057	Perchlorate6850b.lcm	1x	☒	
52	E2000648-003		20200720_058	Perchlorate6850b.lcm	1x	☒	

20200724

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200724_005	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200724_006	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200724_007	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200724_008	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200724_009	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200724_010	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200724_011	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200724_012	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200724_013	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200724_014	Perchlorate6850b.lcm	1x	☒	3100807-07
11	IB		20200724_015	Perchlorate6850b.lcm	1x	☒	
12	PERCHLORATEICV		20200724_016	Perchlorate6850b.lcm	1x	☒	3100807-08
13	IB		20200724_017	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200724_018	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200724_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200724_020	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-04X10		20200724_021	Perchlorate6850b.lcm	10x	☒	
18	EQ2000302-05X10DNU		20200724_022	Perchlorate6850b.lcm	10x	☒	
19	E2000626-001X2		20200724_023	Perchlorate6850b.lcm	2x	☒	
20	E2000627-001X10		20200724_024	Perchlorate6850b.lcm	10x	☒	
21	E2000627-005X100		20200724_025	Perchlorate6850b.lcm	100x	☒	
22	E2000627-006X100		20200724_026	Perchlorate6850b.lcm	100x	☒	
23	E2000627-009X1000		20200724_027	Perchlorate6850b.lcm	1000x	☒	
24	E2000640-001X200		20200724_028	Perchlorate6850b.lcm	200x	☒	
25	PERCHLORATE7		20200724_029	Perchlorate6850b.lcm	1x	☒	3100807-04
26	E2000660-001X10		20200724_030	Perchlorate6850b.lcm	10x	☒	
27	E2000627-004X10		20200724_031	Perchlorate6850b.lcm	10x	☒	
28	PERCHLORATE7		20200724_032	Perchlorate6850b.lcm	1x	☒	3100807-04
29	EQ2000302-05X10		20200724_033	Perchlorate6850b.lcm	10x	☒	
30	PERCHLORATE7		20200724_034	Perchlorate6850b.lcm	1x	☒	3100807-04
31	E2000660-003X10		20200724_035	Perchlorate6850b.lcm	10x	☒	
32	E2000660-004X10		20200724_036	Perchlorate6850b.lcm	10x	☒	
33	E2000660-005X2		20200724_037	Perchlorate6850b.lcm	2x	☒	
34	E2000660-006X10		20200724_038	Perchlorate6850b.lcm	10x	☒	
35	PERCHLORATE7		20200724_039	Perchlorate6850b.lcm	1x	☒	3100807-04
36	EQ2000303-01		20200724_040	Perchlorate6850b.lcm	1x	☒	
37	EQ2000303-02		20200724_041	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-03		20200724_042	Perchlorate6850b.lcm	1x	☒	
39	E2000641-001X20		20200724_043	Perchlorate6850b.lcm	20x	☒	
40	E2000641-002X20		20200724_044	Perchlorate6850b.lcm	20x	☒	
41	E2000641-003X10		20200724_045	Perchlorate6850b.lcm	10x	☒	
42	E2000641-004X20		20200724_046	Perchlorate6850b.lcm	20x	☒	
43	E2000641-005X10		20200724_047	Perchlorate6850b.lcm	10x	☒	
44	E2000641-006X10		20200724_048	Perchlorate6850b.lcm	10x	☒	
45	E2000641-007X10		20200724_049	Perchlorate6850b.lcm	10x	☒	
46	PERCHLORATE7		20200724_050	Perchlorate6850b.lcm	1x	☒	3100807-04
47	E2000641-008X10		20200724_051	Perchlorate6850b.lcm	10x	☒	
48	E2000641-009X10		20200724_052	Perchlorate6850b.lcm	10x	☒	
49	E2000648-001X10		20200724_053	Perchlorate6850b.lcm	10x	☒	
50	E2000648-002X10		20200724_054	Perchlorate6850b.lcm	10x	☒	
51	E2000648-003X20		20200724_055	Perchlorate6850b.lcm	20x	☒	
52	E2000648-005X10		20200724_056	Perchlorate6850b.lcm	10x	☒	

20200730

1st Review: Kneir
2nd Review: Hvan

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	null		20200730_001	Perchlorate6850b.lcm	1x	☒	
2	null		20200730_002	Perchlorate6850b.lcm	1x	☒	
3	IB		20200730_003	Perchlorate6850b.lcm	1x	☒	
4	IB		20200730_004	Perchlorate6850b.lcm	1x	☒	
5	LODV		20200730_005	Perchlorate6850b.lcm	1x	☒	
6	ICS		20200730_006	Perchlorate6850b.lcm	1x	☒	
7	PERCHLORATE7		20200730_007	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE7		20200730_012	Perchlorate6850b.lcm	1x	☒	3100807-04
9	EQ2000319-01		20200730_013	Perchlorate6850b.lcm	1x	☒	
10	EQ2000319-02		20200730_014	Perchlorate6850b.lcm	1x	☒	
11	EQ2000319-03		20200730_015	Perchlorate6850b.lcm	1x	☒	
12	E2000660-002		20200730_016	Perchlorate6850b.lcm	1x	☒	
13	E2000660-007		20200730_017	Perchlorate6850b.lcm	1x	☒	
14	E2000678-001		20200730_018	Perchlorate6850b.lcm	1x	☒	
15	E2000678-002		20200730_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200730_021	Perchlorate6850b.lcm	1x	☒	3100807-04
17	E2000678-001X2		20200730_022	Perchlorate6850b.lcm	2x	☒	
18	E2000539-004X50000		20200730_023	Perchlorate6850b.lcm	50000x	☒	
19	PERCHLORATE7		20200730_025	Perchlorate6850b.lcm	1x	☒	3100807-04
20	EQ2000317-01		20200730_026	Perchlorate6850b.lcm	1x	☒	
21	EQ2000317-02		20200730_027	Perchlorate6850b.lcm	1x	☒	
22	EQ2000317-03		20200730_028	Perchlorate6850b.lcm	1x	☒	
23	E2000657-001		20200730_029	Perchlorate6850b.lcm	1x	☒	
24	E2000657-002		20200730_030	Perchlorate6850b.lcm	1x	☒	
25	E2000657-003		20200730_031	Perchlorate6850b.lcm	1x	☒	
26	E2000657-004		20200730_032	Perchlorate6850b.lcm	1x	☒	
27	E2000657-005		20200730_033	Perchlorate6850b.lcm	1x	☒	
28	PERCHLORATE7		20200730_034	Perchlorate6850b.lcm	1x	☒	3100807-04
29	E2000657-006		20200730_035	Perchlorate6850b.lcm	1x	☒	
30	E2000669-001		20200730_036	Perchlorate6850b.lcm	1x	☒	
31	E2000671-001		20200730_037	Perchlorate6850b.lcm	1x	☒	
32	E2000671-002		20200730_038	Perchlorate6850b.lcm	1x	☒	
33	E2000671-003		20200730_039	Perchlorate6850b.lcm	1x	☒	
34	E2000671-004		20200730_040	Perchlorate6850b.lcm	1x	☒	
35	E2000671-005		20200730_041	Perchlorate6850b.lcm	1x	☒	
36	E2000671-006		20200730_042	Perchlorate6850b.lcm	1x	☒	
37	E2000671-007		20200730_043	Perchlorate6850b.lcm	1x	☒	
38	E2000672-001		20200730_044	Perchlorate6850b.lcm	1x	☒	
39	PERCHLORATE7		20200730_045	Perchlorate6850b.lcm	1x	☒	3100807-04
40	E2000689-001		20200730_046	Perchlorate6850b.lcm	1x	☒	
41	EQ2000318-01		20200730_047	Perchlorate6850b.lcm	1x	☒	
42	EQ2000318-02		20200730_048	Perchlorate6850b.lcm	1x	☒	
43	EQ2000318-03		20200730_049	Perchlorate6850b.lcm	1x	☒	
44	EQ2000318-04		20200730_050	Perchlorate6850b.lcm	1x	☒	
45	EQ2000318-05		20200730_051	Perchlorate6850b.lcm	1x	☒	
46	E2000680-001		20200730_052	Perchlorate6850b.lcm	1x	☒	
47	E2000680-002		20200730_053	Perchlorate6850b.lcm	1x	☒	
48	E2000680-003		20200730_054	Perchlorate6850b.lcm	1x	☒	
49	E2000680-004		20200730_055	Perchlorate6850b.lcm	1x	☒	
50	PERCHLORATE7		20200730_056	Perchlorate6850b.lcm	1x	☒	3100807-04
51	E2000680-005		20200730_057	Perchlorate6850b.lcm	1x	☒	
52	E2000680-006		20200730_058	Perchlorate6850b.lcm	1x	☒	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/20/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	7/20/20
File ID:	I:\LCMS01\DATA\20200720\20200720_022	**Calibration ID:**	EC2000014
		Analysis Lot:	688323
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1210	0.1285	6.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/20/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200720\20200720_033

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1212	0.1	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/20/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	7/20/20
File ID:	I:\LCMS01\DATA\20200720\20200720_042	**Calibration ID:**	EC2000014
		Analysis Lot:	688323
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.4	0.1210	0.1247	3.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/22/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200722\20200722_016

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1215	0.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/22/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	7/20/20
File ID:	I:\LCMS01\DATA\20200722\20200722_024	**Calibration ID:**	EC2000014
		Analysis Lot:	688323
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.89	0.1210	0.1189	-1.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/23/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200723\20200723_007

Calibration Date: 7/20/20
Calibration ID: EC2000014
Analysis Lot: 688323
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1214	0.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/23/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	7/20/20
File ID:	I:\LCMS01\DATA\20200723\20200723_017	**Calibration ID:**	EC2000014
		Analysis Lot:	688323
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.34	0.1210	0.1122	-7.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_020

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.0	0.1210	0.1213	0.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_029

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.86	0.1210	0.1193	-1.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_032

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.75	0.1210	0.1180	-2.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_034

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1220	0.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	7/24/20
File ID:	I:\LCMS01\DATA\20200724\20200724_039	**Calibration ID:**	EC2000016
		Analysis Lot:	688371
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.0	0.1210	0.1214	0.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	7/24/20
File ID:	I:\LCMS01\DATA\20200724\20200724_050	**Calibration ID:**	EC2000016
		Analysis Lot:	688371
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.68	0.1210	0.1172	-3.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/24/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200724\20200724_060

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 688371
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1210	0.1226	1.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/30/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	7/24/20
File ID:	I:\LCMS01\DATA\20200730\20200730_012	**Calibration ID:**	EC2000016
		Analysis Lot:	689277
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.4	0.1210	0.1256	3.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/30/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200730\20200730_021

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689277
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.21	0.1210	0.1115	-7.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/31/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200731\20200731_007

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689277
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.05	0.1210	0.1095	-9.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070744

Service Request: E2000660
Date Analyzed: 7/31/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200731\20200731_011

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689277
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	8.90	0.1210	0.1077	-11.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/20/20 13:39

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200720\20200720_022	**Lab Code:**	EQ2000310-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-01	380,500	2.80
Method Blank	EQ2000302-01	475,788	2.87
Lab Control Sample	EQ2000302-02	485,348	2.87
Duplicate Lab Control Sample	EQ2000302-03	485,451	2.87

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/20/20 15:22

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200720\20200720_033	**Lab Code:**	EQ2000310-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-02	373,864	2.79

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/20/20 16:55

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200720\20200720_042	**Lab Code:**	EQ2000310-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-03	224,958	2.91

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/22/20 19:13

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200722\20200722_016	**Lab Code:**	EQ2000310-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-04	223,422	2.95

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/22/20 20:16

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200722\20200722_024	**Lab Code:**	EQ2000310-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-05	232,812	2.95

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/23/20 11:41

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200723\20200723_007	**Lab Code:**	EQ2000310-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-06	202,016	2.92

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/23/20 13:00

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200723\20200723_017	**Lab Code:**	EQ2000310-07
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688323
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	403,151	2.86
	Upper Limit ==>	604,727	4.86
	Lower Limit ==>	201,576	0.86
Associated Analyses			
Continuing Calibration Verification	EQ2000310-07	202,415	2.91

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 13:59

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_020	**Lab Code:**	EQ2000311-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-01	149,874	2.90
Batch QCMS	EQ2000302-04	80,779	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 15:11

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_029	**Lab Code:**	EQ2000311-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-02	142,468	2.90
16EW01-200716	E2000660-001	100,818	2.89
Batch QC	E2000627-004	214,190	2.85

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 15:37

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_032	**Lab Code:**	EQ2000311-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-03	143,487	2.90
Batch QCDMS	EQ2000302-05	121,804	2.85

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 15:53

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_034	**Lab Code:**	EQ2000311-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-04	142,073	2.90
16EW02-200716	E2000660-003	120,778	2.90
16EW02-200716-FD	E2000660-004	123,973	2.90
16IW09-200716	E2000660-005	107,123	2.89
16RW05-200716	E2000660-006	145,435	2.89

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 16:33

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_039	**Lab Code:**	EQ2000311-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-05	142,477	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 17:59

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_050	**Lab Code:**	EQ2000311-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-06	128,840	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/24/20 19:18

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200724\20200724_060	**Lab Code:**	EQ2000311-07
Instrument ID:	E-LCMS-01	**Analysis Lot:**	688371
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000311-07	129,501	2.90

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/30/20 15:40

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200730\20200730_012	**Lab Code:**	EQ2000322-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689277
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000322-01	234,458	2.85
Method Blank	EQ2000319-01	83,289	2.89
Lab Control Sample	EQ2000319-02	96,671	2.89
Duplicate Lab Control Sample	EQ2000319-03	110,440	2.90
16EW05-200716	E2000660-002	165,390	2.90
16EW06-200716	E2000660-007	107,494	2.89

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/30/20 16:51

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200730\20200730_021	**Lab Code:**	EQ2000322-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689277
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000322-02	156,395	2.89

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/31/20 11:10

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200731\20200731_007	**Lab Code:**	EQ2000322-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689277
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000322-03	100,756	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000660
Project:	HS20070744	**Date Analyzed:**	7/31/20 11:41

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200731\20200731_011	**Lab Code:**	EQ2000322-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689277
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000322-04	90,508	2.87

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group Houston

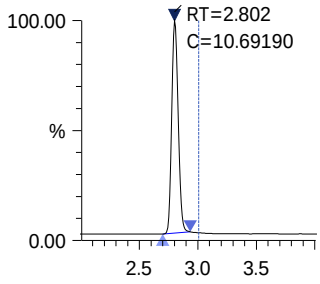
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_022.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/20/2020 1:39:32 PM	488934	10.69190	20200720_022	2.802	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/20/2020 1:39:32 PM	380500	1.00000	20200720_022	2.800	25.0000	1.0000	4

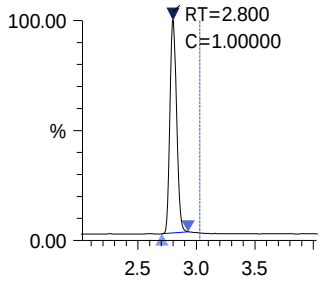
Perchlorate

Conc 10.69190
Area 488934
Q 99.00>83.00 (-) 1.26e5



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 380500
ISTD 107.00>89.00 (-) 9.71e4



ALS Group Houston

EQ2000302-01

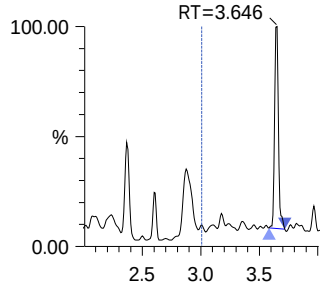
Date acquired: 7/20/2020 1:47:28 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_023.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 3

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-01	7/20/2020 1:47:28 PM	----	----	20200720_023	----	25.0000	1.0000	1
Sodium Perchlorate-18O4_IS	EQ2000302-01	7/20/2020 1:47:28 PM	475788	1.00000	20200720_023	2.866	25.0000	1.0000	1

Perchlorate

Conc ----
Area ----

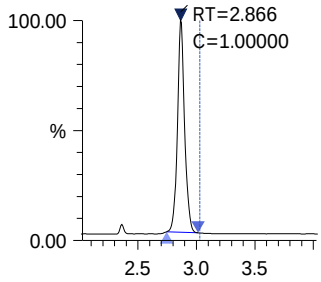
Q 99.00>83.00 (-) 6.94e2



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 475788

ISTD 107.00>89.00 (-) 1.12e5



ALS Group Houston

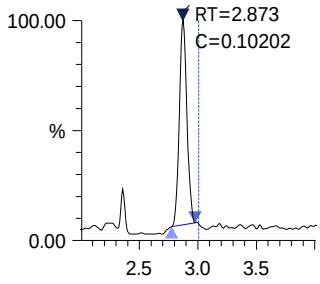
EQ2000302-02

Date acquired: 7/20/2020 1:55:23 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_024.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 3

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-02	7/20/2020 1:55:23 PM	5951	0.10202	20200720_024	2.873	25.0000	1.0000	2
Sodium Perchlorate-18O4_IS	EQ2000302-02	7/20/2020 1:55:23 PM	485348	1.00000	20200720_024	2.868	25.0000	1.0000	2

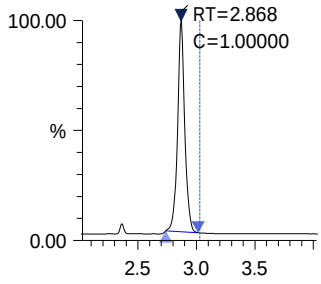
Perchlorate

Conc 0.10202
Area 5951
Q 99.00>83.00 (-) 1.38e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 485348
ISTD 107.00>89.00 (-) 1.15e5



ALS Group Houston

EQ2000302-03

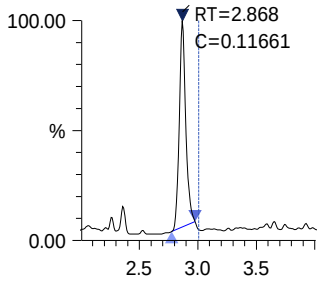
Date acquired: 7/20/2020 2:03:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_025.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 3

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-03	7/20/2020 2:03:16 PM	6802	0.11661	20200720_025	2.868	25.0000	1.0000	3
Sodium Perchlorate-18O4_IS	EQ2000302-03	7/20/2020 2:03:16 PM	485451	1.00000	20200720_025	2.866	25.0000	1.0000	3

Perchlorate

Conc 0.11661
Area 6802

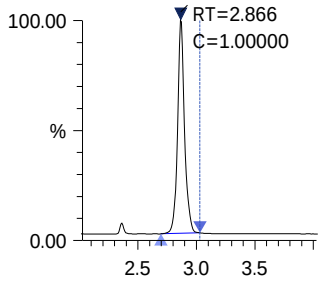
Q 99.00>83.00 (-) 1.83e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 485451

ISTD 107.00>89.00 (-) 1.17e5



ALS Group Houston

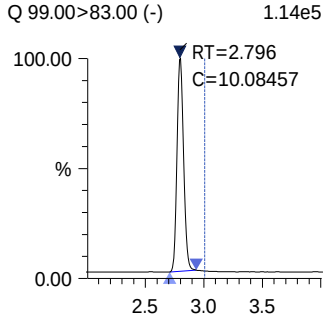
PERCHLORATE7

Date acquired: 7/20/2020 3:22:41 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200720\20200720_033.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/20/2020 3:22:41 PM	453118	10.08457	20200720_033	2.796	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/20/2020 3:22:41 PM	373864	1.00000	20200720_033	2.794	25.0000	1.0000	4

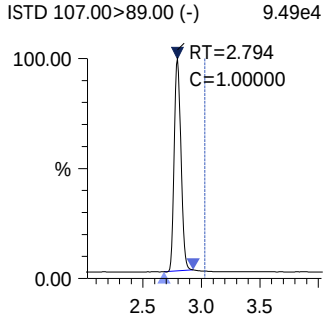
Perchlorate

Conc 10.08457
Area 453118



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 373864



ALS Group Houston

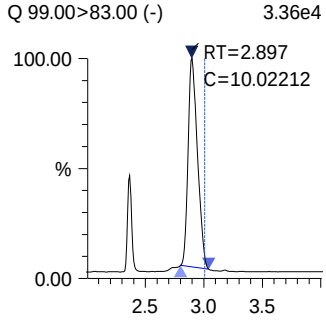
PERCHLORATE7

Date acquired: 7/24/2020 1:59:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_020.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 1:59:53 PM	181792	10.02212	20200724_020	2.897	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 1:59:53 PM	149874	1.00000	20200724_020	2.897	25.0000	1.0000	4

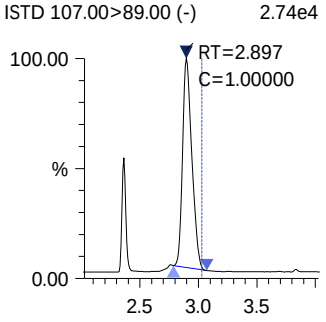
Perchlorate

Conc 10.02212
Area 181792



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 149874



ALS Group Houston

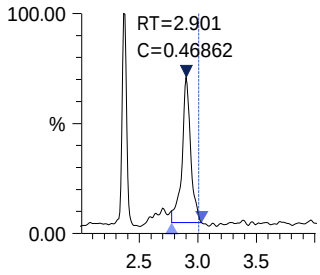
EQ2000302-04X10

Date acquired: 7/24/2020 2:07:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_021.lcd
Vial: 16 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-04X10	7/24/2020 2:07:48 PM	4582	0.46862	20200724_021	2.901	25.0000	1.0000	16
Sodium Perchlorate-18O4_IS	EQ2000302-04X10	7/24/2020 2:07:48 PM	80779	1.00000	20200724_021	2.897	25.0000	1.0000	16

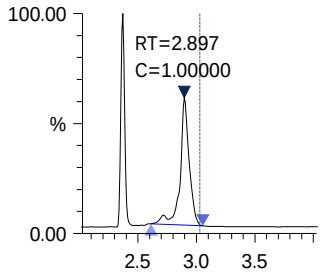
Perchlorate

Conc 0.46862
Area 4582
Q 99.00>83.00 (-) 1.33e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 80779
ISTD 107.00>89.00 (-) 2.49e4



ALS Group Houston

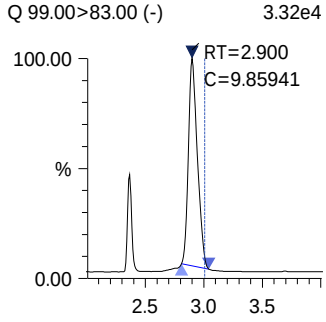
PERCHLORATE7

Date acquired: 7/24/2020 3:11:02 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_029.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 3:11:02 PM	170004	9.85941	20200724_029	2.900	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 3:11:02 PM	142468	1.00000	20200724_029	2.899	25.0000	1.0000	4

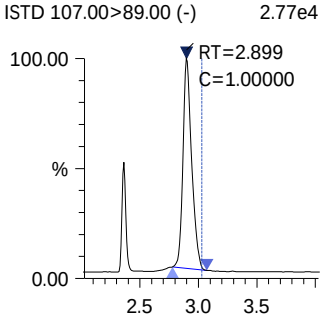
Perchlorate

Conc 9.85941
Area 170004



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 142468



ALS Group Houston

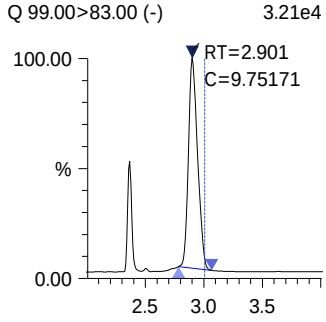
PERCHLORATE7

Date acquired: 7/24/2020 3:37:07 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_032.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 3:37:07 PM	169350	9.75171	20200724_032	2.901	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 3:37:07 PM	143487	1.00000	20200724_032	2.899	25.0000	1.0000	4

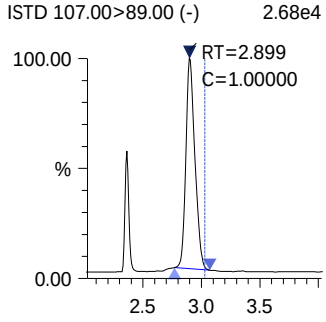
Perchlorate

Conc 9.75171
Area 169350



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 143487



ALS Group Houston

EQ2000302-05X10

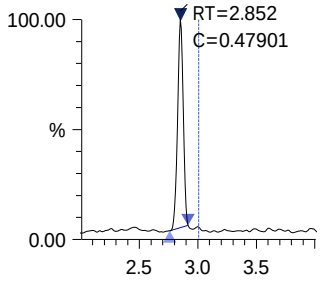
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_033.lcd
Vial: 17 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000302-05X10	7/24/2020 3:45:36 PM	7062	0.47901	20200724_033	2.852	25.0000	1.0000	17
Sodium Perchlorate-18O4_IS	EQ2000302-05X10	7/24/2020 3:45:36 PM	121804	1.00000	20200724_033	2.850	25.0000	1.0000	17

Perchlorate

Conc 0.47901
Area 7062

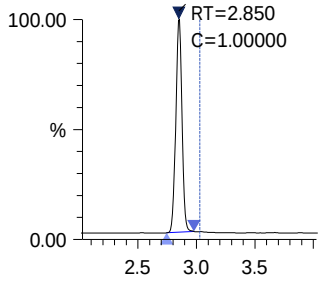
Q 99.00>83.00 (-) 2.13e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 121804

ISTD 107.00>89.00 (-) 3.33e4



ALS Group Houston

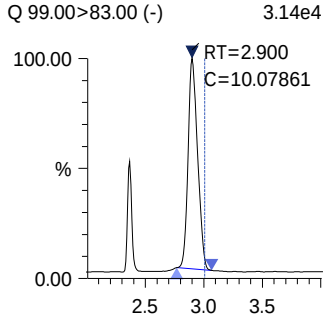
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Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 3:53:29 PM	173301	10.07861	20200724_034	2.900	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 3:53:29 PM	142073	1.00000	20200724_034	2.899	25.0000	1.0000	4

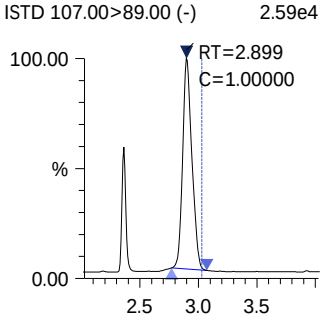
Perchlorate

Conc 10.07861
Area 173301



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 142073



ALS Group Houston

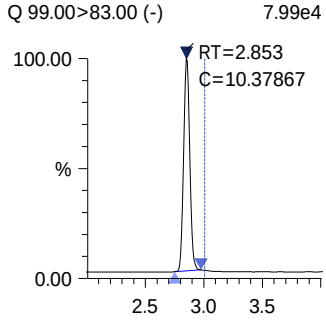
PERCHLORATE7

Date acquired: 7/30/2020 3:40:05 PM
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Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/30/2020 3:40:05 PM	294508	10.37867	20200730_012	2.853	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/30/2020 3:40:05 PM	234458	1.00000	20200730_012	2.851	25.0000	1.0000	4

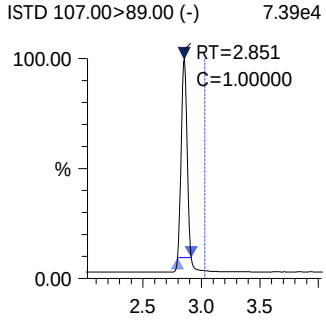
Perchlorate

Conc 10.37867
Area 294508



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 234458



ALS Group Houston

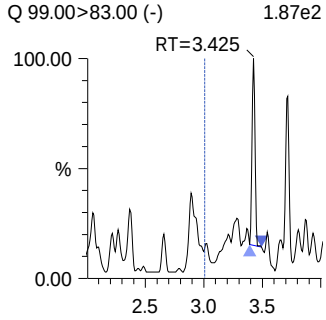
EQ2000319-01

Date acquired: 7/30/2020 3:47:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200730TEST\20200730_013.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000319-01	7/30/2020 3:47:58 PM	----	----	20200730_013	----	25.0000	1.0000	26
Sodium Perchlorate-18O4_IS	EQ2000319-01	7/30/2020 3:47:58 PM	83289	1.00000	20200730_013	2.893	25.0000	1.0000	26

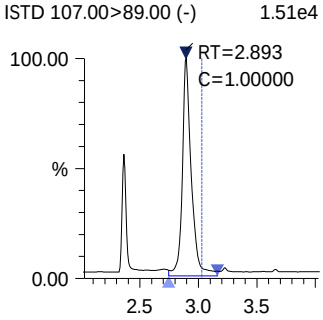
Perchlorate

Conc ----
Area ----



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 83289



ALS Group Houston

EQ2000319-02

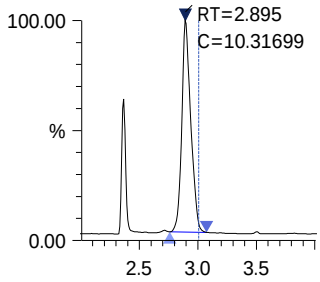
Date acquired: 7/30/2020 3:55:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200730TEST\20200730_014.lcd
Vial: 27 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000319-02	7/30/2020 3:55:53 PM	120709	10.31699	20200730_014	2.895	25.0000	1.0000	27
Sodium Perchlorate-18O4_IS	EQ2000319-02	7/30/2020 3:55:53 PM	96671	1.00000	20200730_014	2.893	25.0000	1.0000	27

Perchlorate

Conc 10.31699
Area 120709

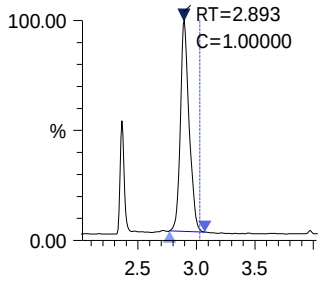
Q 99.00>83.00 (-) 2.30e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 96671

ISTD 107.00>89.00 (-) 1.86e4



ALS Group Houston

EQ2000319-03

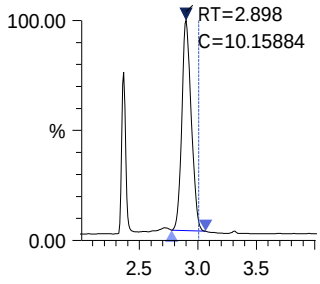
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Data File: I:\LCMS01\DATA\20200730TEST\20200730_015.lcd
Vial: 28 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000319-03	7/30/2020 4:03:48 PM	135787	10.15884	20200730_015	2.898	25.0000	1.0000	28
Sodium Perchlorate-18O4_IS	EQ2000319-03	7/30/2020 4:03:48 PM	110440	1.00000	20200730_015	2.897	25.0000	1.0000	28

Perchlorate

Conc 10.15884
Area 135787

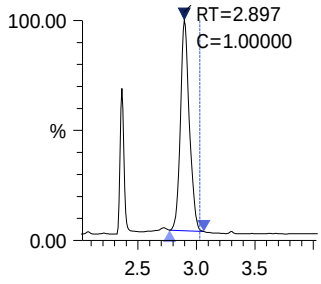
Q 99.00>83.00 (-) 2.48e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 110440

ISTD 107.00>89.00 (-) 2.09e4



ALS Group Houston

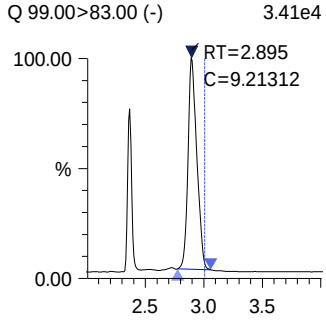
PERCHLORATE7

Date acquired: 7/30/2020 4:51:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200730TEST\20200730_021.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/30/2020 4:51:15 PM	174389	9.21312	20200730_021	2.895	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/30/2020 4:51:15 PM	156395	1.00000	20200730_021	2.894	25.0000	1.0000	4

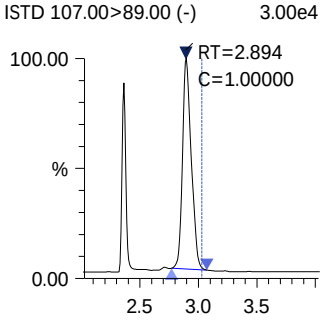
Perchlorate

Conc 9.21312
Area 174389



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 156395



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August 12, 2020

Analytical Report for Service Request No: K2006158

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS20070744

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 22, 2020
For your reference, these analyses have been assigned our service request number **K2006158.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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Client: ALS Environmental - US
Project: HS20070744
Sample Matrix: Ground Water

Service Request: K2006158
Date Received: 07/22/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Six ground water samples were received for analysis at ALS Environmental on 07/22/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

Method SM 5310 C: Sample 16EW05-200716 could not be analyzed for Total Organic Carbon due to the nature of the matrix. The sample appears to be a grease of some kind and was not amenable to analysis by any techniques available to the laboratory.

Approved by Kelley Lovejoy Date 08/12/2020

Chain of Custody

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1200158

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14305**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS20070744
TSR: Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20070744-01**	**16EW01-200720**	**Groundwater**	**16 Jul 2020 07:20**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			31 Jul 2020
2.	**HS20070744-02**	**16EW05-200720**	**Groundwater**	**16 Jul 2020 08:10**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			31 Jul 2020
3.	**HS20070744-03**	**16EW02-200720**	**Groundwater**	**16 Jul 2020 09:50**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			31 Jul 2020
4.	**HS20070744-04**	**16EW02-200720-FD**	**Groundwater**	**16 Jul 2020 09:50**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			31 Jul 2020
5.	**HS20070744-05**	**16IW09-200720**	**Groundwater**	**16 Jul 2020 11:05**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			31 Jul 2020
6.	**HS20070744-06**	**16RW05-200720**	**Groundwater**	**16 Jul 2020 12:00**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			31 Jul 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

K2006158

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14305**

Relinquished By: J. [illegible] Date/Time: 7/20/20 18:00

Received By: [signature] Date/Time: 7/22/20 0730

Cooler ID(s): Temperature(s):

PC Kelly

Cooler Receipt and Preservation Form

Client MV. Hinston Service Request K20 0 6158

Received: 7/29/20 Opened: 7/29/20 By: BR Unloaded: 7/29/20 By: CG

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ NA
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2-front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID (NA)	Tracking Number NA	Filed
#1=NA #2=0.3	0.7	0.9	1.4	1.1	1201		189188785051	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Did not check pH on HS200707744-02 due to nature of sample.

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2006158
Project:	HS20070744	**Date Collected:**	07/16/20
Sample Matrix:	Ground Water	**Date Received:**	07/22/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16EW01-200716	K2006158-001	**13.7**	0.50	0.20	0.07	1	08/08/20 12:03	
16EW02-200716	K2006158-003	**8.37**	0.50	0.20	0.07	1	08/08/20 12:03	
16EW02-200716-FD	K2006158-004	**8.30**	0.50	0.20	0.07	1	08/08/20 12:03	
16IW09-200716	K2006158-005	**1840**	20	8	3	40	08/08/20 12:03	
16RW05-200716	K2006158-006	**416**	10	4	2	20	08/08/20 12:03	
Method Blank	K2006158-MB	ND U	0.50	0.20	0.07	1	08/08/20 12:03	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006158
Project	HS20070744	**Date Collected:**	07/16/20
Sample Matrix:	Ground Water	**Date Received:**	07/22/20
		Date Analyzed:	08/08/20

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	16EW01-200716	**Units:**	mg/L
Lab Code:	K2006158-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K2006158-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	13.7	13.6	13.7	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006158
Project:	HS20070744	**Date Collected:**	07/16/20
Sample Matrix:	Ground Water	**Date Received:**	07/22/20
		Date Analyzed:	08/8/20
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	16EW01-200716	**Units:**	mg/L
Lab Code:	K2006158-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K2006158-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	13.7	41.1	25.0	109	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006158
Project:	HS20070744	**Date Analyzed:**	08/08/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	690270

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2006158-LCS	25.9	25.0	103	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2006158
Project: HS20070744

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	690270	KQ2010960-03	08/08/20 12:03	25.0	25.5	102	90-110
CCV2	690270	KQ2010960-04	08/08/20 12:03	25.0	26.1	104	90-110
CCV3	690270	KQ2010960-05	08/08/20 12:03	25.0	25.0	100	90-110
CCV4	690270	KQ2010960-06	08/08/20 12:03	25.0	24.4	98	90-110
CCV5	690270	KQ2010960-07	08/08/20 12:03	25.0	24.9	99	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2006158
Project: HS20070744

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	690270	KQ2010960-08	08/08/20 12:03	0.50	0.20	0.07	ND	U
CCB2	690270	KQ2010960-09	08/08/20 12:03	0.50	0.20	0.07	ND	U
CCB3	690270	KQ2010960-10	08/08/20 12:03	0.50	0.20	0.07	ND	U
CCB4	690270	KQ2010960-11	08/08/20 12:03	0.50	0.20	0.07	ND	U
CCB5	690270	KQ2010960-12	08/08/20 12:03	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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www.alsglobal.com

Work Request # 6047 6158 6197 6297 6333 6206 6308

Tier: IV IV II II IV IV I

Date Analyzed: 8.8.20 6321 II 6497 II

Analyst: MC

Analysis: TOC/DOC

Run # 690270/690271 690269

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA MRL
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

6206-1MS low Rec Matrix

6047-5 has matrix issues raised MRL

6497-4 needs DIL
5 needs rerun

Final Approved by: _____ Date: 8/10/20

DOREPORT

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690270 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006047-001	Carbon, Total Organic	N/A		Water	3.67 mg/L	10 mL	18.4 mg/L	5	0.4	2.5			8/8/20 12:03:00	N	IV
K2006047-002	Carbon, Total Organic	N/A		Water	13.40 mg/L	10 mL	67.0 mg/L	5	0.4	2.5			8/8/20 12:03:00	N	IV
K2006047-003	Carbon, Total Organic	N/A		Water	18.64 mg/L	10 mL	18.6 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006047-004	Carbon, Total Organic	N/A		Water	5.58 mg/L	10 mL	5.58 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006047-005	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	5.0 mg/L U	10	0.7	5.0			8/8/20 12:03:00	N	IV
K2006047-006	Carbon, Total Organic	N/A		Water	2.56 mg/L	10 mL	2.56 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006158-001	Carbon, Total Organic	N/A		Ground Water	13.70 mg/L	10 mL	13.7 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006158-003	Carbon, Total Organic	N/A		Ground Water	8.37 mg/L	10 mL	8.37 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006158-004	Carbon, Total Organic	N/A		Ground Water	8.30 mg/L	10 mL	8.30 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006158-005	Carbon, Total Organic	N/A		Ground Water	46.07 mg/L	10 mL	1840 mg/L	40	3	20			8/8/20 12:03:00	N	IV
K2006158-006	Carbon, Total Organic	N/A		Ground Water	20.80 mg/L	10 mL	416 mg/L	20	2	10			8/8/20 12:03:00	N	IV
K2006197-002	Carbon, Total Organic	N/A		Water	16.68 mg/L	10 mL	16.7 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-001	Carbon, Total Organic	N/A		Wastewater	2.11 mg/L	10 mL	2.11 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-002	Carbon, Total Organic	N/A		Wastewater	0.95 mg/L	10 mL	0.95 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-003	Carbon, Total Organic	N/A		Wastewater	0.11 mg/L	10 mL	0.11 mg/L J	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-004	Carbon, Total Organic	N/A		Wastewater	4.21 mg/L	10 mL	4.21 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006333-001	Carbon, Total Organic	N/A		Ground Water	4.16 mg/L	10 mL	4.16 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006333-002	Carbon, Total Organic	N/A		Ground Water	4.33 mg/L	10 mL	4.33 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-01	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-02	Carbon, Total Organic	LCS		Water	25.85 mg/L	10 mL	25.9 mg/L	1	0.07	0.50	103		8/8/20 12:03:00	N	IV
KQ2010960-03	Carbon, Total Organic	CCV		Water	25.52 mg/L	10 mL	25.5 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-04	Carbon, Total Organic	CCV		Water	26.08 mg/L	10 mL	26.1 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-05	Carbon, Total Organic	CCV		Water	25.01 mg/L	10 mL	25.0 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-06	Carbon, Total Organic	CCV		Water	24.38 mg/L	10 mL	24.4 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-07	Carbon, Total Organic	CCV		Water	24.86 mg/L	10 mL	24.9 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010960-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-11	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010960-12	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690270 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2010960-13	Carbon, Total Organic	DUP	K2006158-001	Ground Water	13.63 mg/L	10 mL	13.6 mg/L	1	0.07	0.50		<1	8/8/20 12:03:00	N	IV
KQ2010960-14	Carbon, Total Organic	MS	K2006158-001	Ground Water	41.06 mg/L	10 mL	41.1 mg/L	1	0.07	0.50	109		8/8/20 12:03:00	N	IV
KQ2010960-15	Carbon, Total Organic	DUP	K2006297-004	Wastewater	4.18 mg/L	10 mL	4.18 mg/L	1	0.07	0.50		<1	8/8/20 12:03:00	N	II
KQ2010960-16	Carbon, Total Organic	MS	K2006297-004	Wastewater	32.03 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	111		8/8/20 12:03:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690271 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006206-001	Carbon, Total Organic	N/A		Water	1.10 mg/L	10 mL	1.10 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006206-002	Carbon, Total Organic	N/A		Water	1.16 mg/L	10 mL	1.16 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006308-001	Carbon, Total Organic	N/A		Drinking Water	0.76 mg/L	10 mL	0.76 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	I
K2006321-001	Carbon, Total Organic	N/A		Water	0.75 mg/L	10 mL	0.75 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006321-002	Carbon, Total Organic	N/A		Water	4.37 mg/L	10 mL	8.7 mg/L	2	0.2	1.0			8/8/20 12:03:00	N	II
K2006321-003	Carbon, Total Organic	N/A		Water	4.10 mg/L	10 mL	4.10 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006321-004	Carbon, Total Organic	N/A		Water	8.76 mg/L	10 mL	8.76 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006321-005	Carbon, Total Organic	N/A		Water	2.70 mg/L	10 mL	2.70 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006321-006	Carbon, Total Organic	N/A		Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006497-002	Carbon, Total Organic	N/A		Ground Water	4.55 mg/L	10 mL	4.55 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006497-003	Carbon, Total Organic	N/A		Ground Water	4.57 mg/L	10 mL	4.57 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006497-004.R01	Carbon, Total Organic	N/A		Ground Water	112.94 mg/L	10 mL	113 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
K2006497-005.R01	Carbon, Total Organic	N/A		Ground Water	6.54 mg/L	10 mL	6.54 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-01	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-05	Carbon, Total Organic	LCS		Water	24.91 mg/L	10 mL	24.9 mg/L	1	0.07	0.50	100		8/8/20 12:03:00	N	IV
KQ2010974-06	Carbon, Total Organic	DLCS		Water	25.04 mg/L	10 mL	25.0 mg/L	1	0.07	0.50	100	<1	8/8/20 12:03:00	N	IV
KQ2010974-07	Carbon, Total Organic	CCV		Water	25.01 mg/L	10 mL	25.0 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010974-08	Carbon, Total Organic	CCV		Water	24.38 mg/L	10 mL	24.4 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010974-09	Carbon, Total Organic	CCV		Water	24.86 mg/L	10 mL	24.9 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010974-10	Carbon, Total Organic	CCV		Water	26.16 mg/L	10 mL	26.2 mg/L	1					8/8/20 12:03:00	N	IV
KQ2010974-12	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-13	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-14	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV
KQ2010974-15	Carbon, Total Organic	DUP	K2006206-001	Water	1.13 mg/L	10 mL	1.13 mg/L	1	0.07	0.50		2	8/8/20 12:03:00	N	IV
KQ2010974-16	Carbon, Total Organic	MS	K2006206-001	Water	14.69 mg/L	10 mL	14.7 mg/L	1	0.07	0.50	54*		8/8/20 12:03:00	N	IV
KQ2010974-17	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690269 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006297-001	Carbon, Dissolved Organic (DOC)	N/A		Wastewater	2.11 mg/L	10 mL	2.11 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-002	Carbon, Dissolved Organic (DOC)	N/A		Wastewater	0.95 mg/L	10 mL	0.95 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-003	Carbon, Dissolved Organic (DOC)	N/A		Wastewater	0.11 mg/L	10 mL	0.11 mg/L J	1	0.07	0.50			8/8/20 12:03:00	N	II
K2006297-004	Carbon, Dissolved Organic (DOC)	N/A		Wastewater	4.21 mg/L	10 mL	4.21 mg/L	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-01	Carbon, Dissolved Organic (DOC)	DUP	K2006297-004	Wastewater	4.18 mg/L	10 mL	4.18 mg/L	1	0.07	0.50		<1	8/8/20 12:03:00	N	II
KQ2010959-02	Carbon, Dissolved Organic (DOC)	MS	K2006297-004	Wastewater	32.03 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	111		8/8/20 12:03:00	N	II
KQ2010959-03	Carbon, Dissolved Organic (DOC)	CCV		Wastewater	25.01 mg/L	10 mL	25.0 mg/L	1					8/8/20 12:03:00	N	II
KQ2010959-04	Carbon, Dissolved Organic (DOC)	CCV		Wastewater	24.38 mg/L	10 mL	24.4 mg/L	1					8/8/20 12:03:00	N	II
KQ2010959-05	Carbon, Dissolved Organic (DOC)	CCV		Wastewater	24.86 mg/L	10 mL	24.9 mg/L	1					8/8/20 12:03:00	N	II
KQ2010959-06	Carbon, Dissolved Organic (DOC)	CCB		Wastewater	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-07	Carbon, Dissolved Organic (DOC)	CCB		Wastewater	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-08	Carbon, Dissolved Organic (DOC)	CCB		Wastewater	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-09	Carbon, Dissolved Organic (DOC)	MB		Wastewater	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/8/20 12:03:00	N	II
KQ2010959-10	Carbon, Dissolved Organic (DOC)	LCS		Wastewater	25.23 mg/L	10 mL	25.2 mg/L	1	0.07	0.50	101		8/8/20 12:03:00	N	II
KQ2010959-11	Carbon, Dissolved Organic (DOC)	DLCS		Wastewater	25.11 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100	<1	8/8/20 12:03:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

TOC : 690270
TOC : 690271
TOC : ~~690290~~ MK 8-10-20
DOC 690269

Schedule: 080820

Version: 13
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/08/09 13:02 - Sunday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2006047-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2006047-002 5X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2006047-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2006047-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2006047-005 10X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2006047-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2006158-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2006158-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2006158-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2006158-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2006158-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2006158-005 40X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2006158-006 20X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2006333-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2006333-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
22	Sample	K2006297-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2006297-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2006297-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2006297-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2006297-004D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2006297-004MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2006197-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2006297-001*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K2006297-002*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K2006297-003*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K2006297-004*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2006297-004D*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K2006297-004S*	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K2006308-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K2006321-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K2006321-002 2X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K2006321-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready

Schedule: 080820

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
41	Sample	K2006321-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K2006321-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K2006321-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K2006206-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K2006206-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K2006206-1MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K2006206-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	~~K2006280-001~~	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
49	Sample	K2006280-001D	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
50	Sample	K2006280-001S NR	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
51	Sample	K2006280-002	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
52	Sample	~~K2006280-003~~	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
53	Sample	K2006497-001	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
54	Sample	K2006497-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K2006497-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K2006497-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K2006497-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K2006497-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K2006330-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K2006330-001D NR	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
63	Sample	K2006330-001MS	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
64	Sample	K2006330-002	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
65	Sample	K2006330-003	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
68	Sample	K2006257-001	CAS_salt_010711 (CAS_salt_010711)	2	False	Ready
B	Check Standard	[TOC] CCV 25ppm_salt [25ppm salt]	CAS_salt (CAS_salt_0811a)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 080820
Saturday, August 08, 2020 12:03 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/08/10 07:53 - Monday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	080820	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v9) Fusion1 (Fusion1) (v13)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/08/08 12:03

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.44	27.20	13.76	49.74	07:57
2	TC Clean	9.84	22.99	13.15	49.66	07:18
3	TC Clean	1.63	14.75	13.12	49.68	07:03
4	TC Clean	0.84	13.84	12.99	49.66	07:00

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/08/08 12:37

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.08	12.88	12.96	49.75	08:00
2	TC Clean	4.72	17.45	12.72	49.65	07:16
3	TC Clean	1.01	14.02	13.01	49.67	07:02

4	TC Clean	0.80	13.73	12.93	49.67	07:00

Sample Type: Clean From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/08/08 13:11

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.26	12.71	12.97	49.75	07:58
2	TC Clean	4.82	17.53	12.71	49.59	07:16
3	TC Clean	1.11	14.03	12.92	49.64	07:00
4	TC Clean	1.03	13.85	12.82	49.65	07:01

Sample Type: Blank (Creating v1430) From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/08/08 13:45

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.39	12.48	12.87	49.76	07:59
2	TC Clean	5.34	17.95	12.61	49.61	07:19
3	TC Clean	1.82	14.75	12.92	49.59	07:02
4	TC Clean	1.25	14.03	12.79	49.61	07:01
5	Reagent Blank	5.96	18.76	12.79	49.60	08:10
6	Acid Blank	0.56	13.15	12.59	49.74	08:01

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.2354 ppm	0.0000 ppm	0.0000%	2020/08/08 14:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2354	2.3545	10.95	23.83	12.88	49.78	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.5238 ppm (PASS)	0.0000 ppm	0%	2020/08/08 14:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.5238	255.2379	188.94	201.71	12.77	49.74	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/08 15:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.98	21.82	12.84	49.72	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/08 15:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.70	21.47	12.77	49.71	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	12.4067 ppm (PASS)	0.0000 ppm	0%	2020/08/08 15:35

NR

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25 ppm	1	12.4067	124.0671	96.92	109.68	12.76	49.68	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.6496 ppm	0.0000 ppm	0.0000%	2020/08/08 15:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6496	6.4957	13.86	26.57	12.71	49.62	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.8527 ppm (PASS)	0.0000 ppm	0%	2020/08/08 16:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.8527	258.5266	191.24	203.85	12.61	49.64	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	K2006047-001	3.6735 ppm	0.1980 ppm	5.3900%	2020/08/08 16:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8134	38.1344	36.05	48.77	12.72	49.62	10:29
2	TOC	3.5335	35.3346	34.09	46.79	12.70	49.62	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K2006047-002 5X	13.4025 ppm	0.0162 ppm	0.1200%	2020/08/08 16:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.3910	133.9101	103.24	116.08	12.85	49.73	10:26
2	TOC	13.4140	134.1396	103.40	116.38	12.98	49.64	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K2006047-003	18.6383 ppm	0.2445 ppm	1.3100%	2020/08/08 17:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.8112	188.1124	141.26	154.11	12.85	49.79	10:29
2	TOC	18.4654	184.6541	138.83	151.84	13.01	49.68	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K2006047-004	5.5848 ppm	0.1138 ppm	2.0400%	2020/08/08 17:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.6652	56.6523	49.04	61.94	12.90	49.74	10:29
2	TOC	5.5043	55.0429	47.91	60.86	12.95	49.70	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K2006047-005 10X	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/08 18:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	-771.14	-758.07	13.07	49.70	10:26
2	TOC	0.0000	0.0000	-527.65	-514.52	13.13	49.68	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2006047-006	2.5618 ppm	0.6570 ppm	25.6500%	2020/08/08 18:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0264	30.2639	30.53	43.62	13.09	49.71	10:29

2	TOC	2.0972	20.9722	24.01	37.09	13.08	49.81	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	K2006158-001	13.7039 ppm	0.0665 ppm	0.4900%	2020/08/08 19:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.7510	137.5096	105.76	118.84	13.08	49.66	10:28
2	TOC	13.6569	136.5688	105.10	117.97	12.87	49.66	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.0793 ppm (PASS)	0.0000 ppm	0%	2020/08/08 19:36

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.0793	260.7933	192.83	205.61	12.78	49.77	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0449 ppm (PASS)	0.0000 ppm	0%	2020/08/08 19:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0449	0.4490	10.21	23.03	12.82	49.62	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 9

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	10	TOC	K2006158-001D	13.6259 ppm	0.3394 ppm	2.4900%	2020/08/08 20:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.8659	138.6586	106.57	119.68	13.12	49.58	10:28
2	TOC	13.3859	133.8588	103.20	116.19	12.99	49.54	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K2006158-001MS	41.0625 ppm	0.3763 ppm	0.9200%	2020/08/08 20:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	41.3286	413.2855	299.21	312.31	13.10	49.51	10:27
2	TOC	40.7964	407.9639	295.48	308.63	13.15	49.48	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K2006158-003	8.3734 ppm	0.2055 ppm	2.4500%	2020/08/08 21:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.5188	85.1876	69.06	82.12	13.06	49.49	10:29
2	TOC	8.2281	82.2809	67.02	79.91	12.89	49.49	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2006158-004	8.2953 ppm	0.0755 ppm	0.9100%	2020/08/08 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.3487	83.4869	67.86	80.81	12.95	49.50	10:25
2	TOC	8.2419	82.4192	67.12	80.14	13.02	49.50	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2006158-005 40X	46.0666 ppm	0.3094 ppm	0.6700%	2020/08/08 21:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	45.8478	458.4784	330.92	343.86	12.94	49.51	10:30
2	TOC	46.2853	462.8534	333.98	347.14	13.16	49.54	10:25

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K2006158-006 20X	20.8042 ppm	0.6440 ppm	3.1000%	2020/08/08 22:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.2596	212.5963	158.43	171.47	13.03	49.55	10:28
2	TOC	20.3488	203.4885	152.04	165.18	13.14	49.54	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	RB	0.8427 ppm	0.1281 ppm	15.2000%	2020/08/08 22:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7521	7.5207	14.58	27.53	12.95	49.53	10:26
2	TOC	0.9333	9.3325	15.85	28.76	12.91	49.58	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K2006333-001	4.1567 ppm	0.1343 ppm	3.2300%	2020/08/08 23:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2517	42.5165	39.12	52.03	12.91	49.59	10:27
2	TOC	4.0618	40.6177	37.79	51.00	13.21	49.61	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K2006333-002	4.3346 ppm	0.1227 ppm	2.8300%	2020/08/08 23:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.4213	44.2130	40.32	53.25	12.94	49.64	10:29
2	TOC	4.2478	42.4781	39.10	52.25	13.15	49.60	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	RB	0.1913 ppm	0.0489 ppm	25.5500%	2020/08/09 00:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1568	1.5676	10.40	23.59	13.19	49.64	10:29
2	TOC	0.2259	2.2590	10.88	23.96	13.08	49.63	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.0089 ppm (PASS)	0.0000 ppm	0%	2020/08/09 00:46

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0089	250.0888	185.32	198.36	13.04	49.58	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/09 01:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.80	22.72	12.92	49.54	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/09 01:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.16	22.32	13.17	49.50	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC)	CAS_salt_010711	CAS_salt_010711

(v1430)	(v4)	(v38)

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.2283 ppm (PASS)	0.0000 ppm	0%	2020/08/09 01:30

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.2283	252.2827	186.86	199.88	13.01	49.48	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.1138 ppm (PASS)	0.0000 ppm	0%	2020/08/09 01:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1138	251.1380	186.06	199.23	13.17	49.48	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K2006297-001	2.1105 ppm	0.0374 ppm	1.7700%	2020/08/09 01:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1370	21.3699	24.29	37.63	13.34	49.47	10:28
2	TOC	2.0841	20.8410	23.92	37.17	13.25	49.48	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K2006297-002	0.9452 ppm	0.0011 ppm	0.1200%	2020/08/09 02:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9459	9.4594	15.94	29.10	13.17	49.52	10:26
2	TOC	0.9444	9.4437	15.92	28.99	13.07	49.54	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K2006297-003	0.1083 ppm	0.0214 ppm	19.7300%	2020/08/09 02:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1234	1.2340	10.17	23.36	13.19	49.56	10:26
2	TOC	0.0932	0.9318	9.95	23.02	13.07	49.58	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2006297-004	4.2067 ppm	0.0302 ppm	0.7200%	2020/08/09 03:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2281	42.2813	38.96	52.02	13.06	49.65	10:26
2	TOC	4.1854	41.8537	38.66	51.79	13.13	49.71	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K2006297-004D	4.1821 ppm	0.0028 ppm	0.0700%	2020/08/09 03:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1801	41.8009	38.62	51.85	13.22	49.69	10:27
2	TOC	4.1841	41.8408	38.65	51.88	13.23	49.81	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K2006297-004MS	32.0297 ppm	0.4198 ppm	1.3100%	2020/08/09 04:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.7329	317.3288	231.90	245.22	13.32	49.79	10:26
2	TOC	32.3266	323.2662	236.07	249.38	13.31	49.79	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC)	CAS_salt_010711	CAS_salt_010711

(v1430) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K2006197-001 MK 8/10/20	16.6761 ppm	0.0755 ppm	0.4500%	2020/08/09 04:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.6227	166.2274	125.91	139.14	13.23	49.84	10:30
2	TOC	16.7295	167.2951	126.66	140.11	13.46	49.87	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.3841 ppm (PASS)	0.0000 ppm	0%	2020/08/09 05:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3841	243.8406	180.94	194.23	13.29	49.90	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/09 05:30

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.46	21.79	13.33	49.93	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K2006297-001*	1.8964 ppm	0.0291 ppm	1.5400%	2020/08/09 05:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9170	19.1703	22.75	36.13	13.38	49.93	10:27
2	TOC	1.8758	18.7583	22.46	35.91	13.46	49.97	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K2006297-002*	1.4987 ppm	0.0616 ppm	4.1100%	2020/08/09 06:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4551	14.5515	19.51	32.81	13.30	49.99	10:27
2	TOC	1.5423	15.4225	20.12	33.48	13.36	49.97	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K2006297-003*	0.1828 ppm	0.1654 ppm	90.5000%	2020/08/09 06:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0658	0.6581	9.76	23.16	13.40	49.97	10:28
2	TOC	0.2997	2.9974	11.40	24.83	13.43	49.96	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2006297-004*	4.0275 ppm	0.0781 ppm	1.9400%	2020/08/09 07:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9722	39.7225	37.16	50.64	13.48	49.95	10:27
2	TOC	4.0827	40.8273	37.94	51.35	13.41	49.96	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2006297-004D*	4.0559 ppm	0.0077 ppm	0.1900%	2020/08/09 07:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0505	40.5051	37.71	51.12	13.41	49.92	10:25
2	TOC	4.0613	40.6134	37.79	51.33	13.54	49.89	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC)	CAS_salt_010711	CAS_salt_010711

(v1430) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K2006297-004S*	30.5388 ppm	0.0734 ppm	0.2400%	2020/08/09 08:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	30.4869	304.8694	223.16	236.50	13.34	49.92	10:24
2	TOC	30.5907	305.9072	223.89	237.09	13.20	49.89	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K2006308-001	0.7625 ppm	0.0787 ppm	10.3200%	2020/08/09 08:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8182	8.1821	15.04	28.47	13.43	49.90	10:28
2	TOC	0.7069	7.0688	14.26	27.66	13.40	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K2006321-001	0.7486 ppm	0.0339 ppm	4.5200%	2020/08/09 09:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7726	7.7259	14.72	28.07	13.35	49.97	10:29
2	TOC	0.7247	7.2470	14.38	27.66	13.28	49.99	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K2006321-002 2X	4.3676 ppm	0.0081 ppm	0.1800%	2020/08/09 09:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.3618	43.6185	39.90	53.10	13.20	50.01	10:31
2	TOC	4.3733	43.7325	39.98	53.00	13.02	50.01	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K2006321-003	4.0969 ppm	0.1642 ppm	4.0100%	2020/08/09 09:57

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	4.2130	42.1302	38.85	52.04	13.19	50.01	10:28
2	TOC	3.9808	39.8080	37.22	50.43	13.21	50.02	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8551 ppm (PASS)	0.0000 ppm	0%	2020/08/09 10:25

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8551	248.5506	184.25	197.11	12.86	50.01	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/09 10:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.76	21.69	12.93	50.00	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/09 10:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.94	21.07	13.13	49.99	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.9081 ppm (PASS)	0.0000 ppm	0%	2020/08/09 11:09

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.9081	249.0809	184.62	197.61	12.99	49.99	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Check Standard --> LCS From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.0424 ppm (PASS)	0.0000 ppm	0%	2020/08/09 11:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0424	250.4238	185.56	198.49	12.93	49.94	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	41	TOC	K2006321-004	8.7645 ppm	0.1527 ppm	1.7400%	2020/08/09 11:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.8724	88.7244	71.54	84.63	13.09	49.92	10:26
2	TOC	8.6565	86.5647	70.02	82.90	12.88	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	42	TOC	K2006321-005	2.7017 ppm	0.0034 ppm	0.1300%	2020/08/09 12:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7041	27.0408	28.27	41.07	12.80	49.90	10:25

2	TOC	2.6992	26.9923	28.24	41.15	12.92	49.88	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	43	TOC	K2006321-006	0.5873 ppm	0.0357 ppm	6.0800%	2020/08/09 12:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5620	5.6204	13.24	26.35	13.10	49.89	10:26
2	TOC	0.6125	6.1251	13.60	26.50	12.90	49.86	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	44	TOC	K2006206-001	1.0991 ppm	0.0640 ppm	5.8200%	2020/08/09 13:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1444	11.4438	17.33	30.11	12.79	49.83	10:28
2	TOC	1.0539	10.5386	16.69	29.74	13.05	49.84	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	45	TOC	K2006206-001D	1.1268 ppm	0.0070 ppm	0.6200%	2020/08/09 13:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1219	11.2185	17.17	30.13	12.96	49.83	10:28
2	TOC	1.1317	11.3169	17.24	30.21	12.97	49.76	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	K2006206-1MS	14.6942 ppm	0.0219 ppm	0.1500%	2020/08/09 13:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.6787	146.7871	112.27	125.21	12.94	49.77	10:29
2	TOC	14.7096	147.0965	112.49	125.36	12.87	49.66	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC)	CAS_salt_010711	CAS_salt_010711

(v1430) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	K2006206-002	1.1638 ppm	0.0607 ppm	5.2100%	2020/08/09 14:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2067	12.0668	17.76	30.75	12.98	49.75	10:28
2	TOC	1.1209	11.2086	17.16	30.26	13.10	49.76	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9271 ppm (PASS)	0.0000 ppm	0%	2020/08/09 14:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9271	249.2705	184.75	197.76	13.01	49.70	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/09 15:10

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.49	21.43	12.93	49.80	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	54	TOC	K2006497-002	4.5500 ppm	0.1081 ppm	2.3700%	2020/08/09 15:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6264	46.2643	41.75	54.68	12.93	49.65	10:26
2	TOC	4.4736	44.7361	40.68	53.75	13.07	49.71	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	55	TOC	K2006497-003	4.5664 ppm	0.0456 ppm	1.0000%	2020/08/09 15:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.5986	45.9863	41.56	54.51	12.95	49.81	10:27
2	TOC	4.5342	45.3420	41.11	54.18	13.08	49.66	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	56	TOC	K2006497-004	112.9375 ppm	9.2415 ppm	8.1800%	2020/08/09 16:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	119.4722	1194.7218	847.38	860.33	12.96	49.73	10:25
2	TOC	106.4027	1064.0272	755.70	769.59	13.89	49.60	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	K2006497-005	6.5386 ppm	2.1962 ppm	33.5900%	2020/08/09 16:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.0915	80.9152	66.06	79.76	13.70	49.66	10:31
2	TOC	4.9857	49.8567	44.27	57.47	13.20	49.76	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.1637 ppm (PASS)	0.0000 ppm	0%	2020/08/09 17:17

Pos	Base Analysis	ID	Rep	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run

	Type		#							Time
B	TOC	25 ppm	1	26.1637	261.6372	193.43	206.42	13.00	49.63	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	25.7284 ppm (PASS)	0.0000 ppm	0%	2020/08/09 17:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	0 ppm	1	25.7284	257.2836	190.37	203.33	12.96	49.69	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB	0.5261 ppm	0.0000 ppm	0.0000%	2020/08/09 17:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5261	5.2612	12.99	25.90	12.91	49.67	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.2861 ppm (PASS)	0.0000 ppm	0%	2020/08/09 18:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.2861	252.8615	187.27	200.30	13.03	49.64	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 13

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K2006497-006	49.0737 ppm	0.2470 ppm	0.5000%	2020/08/09 18:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	49.2483	492.4835	354.77	367.74	12.97	49.75	10:27
2	TOC	48.8991	488.9909	352.32	365.28	12.96	49.61	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	K2006330-001	2.2567 ppm	0.1489 ppm	6.6000%	2020/08/09 18:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3619	23.6194	25.87	38.89	13.02	49.67	10:26
2	TOC	2.1514	21.5139	24.39	37.12	12.73	49.82	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.3004 (IC) (v1430)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25ppm_salt From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25ppm_salt [25ppm salt]	22.5000 / 27.5000 (90% / 110%)	23.5306 ppm (PASS)	0.0000 ppm	0%	2020/08/09 19:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25ppm salt	1	23.5306	235.3063	187.46	200.62	13.15	49.68	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt (v5)	CAS_salt_0811a (v2)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 13

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.1418 ppm (PASS)	0.0000 ppm	0%	2020/08/09 19:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.1418	1.4183	10.89	23.95	13.06	49.75	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1429	1.3370	0.3660	0.0000	0.0000	0.0000	2020/08/05 18:45	Fusion1 (Fusion1)
v1430	1.9877	0.5570	0.0000	0.0000	0.0000	2020/08/08 14:36	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v38
Ver Creation: 2020/06/13 16:40
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 7.015x + 9.892
r^2 value: TOC: r^2 = 0.99974

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	9.5750	0.0000		2020/06/13 15:13
0.500 ppm	12.9010	0.5000		2020/06/13 15:28
1.0 ppm	15.6320	1.0000		2020/06/13 15:42
5.0 ppm	43.2510	5.0000		2020/06/13 15:56
10 ppm	82.4040	10.0000		2020/06/13 16:11
25 ppm	188.6880	25.0000		2020/06/13 16:25
50 ppm	358.6500	50.0000		2020/06/13 16:39

Name: CAS_salt_0811a (TOC)

Version: v2
Ver Creation: 2010/08/11 19:18
Comment:
Operator: Gen Chem Lab (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 7.576x + 9.202
r^2 value: TOC: r^2 = 0.99983

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0	10.4200	0.0000		2010/08/11 17:57
0.500 ppm	15.3130	0.5000		2010/08/11 18:11
1.000 ppm	17.5920	1.0000		2010/08/11 18:24
5.000 ppm	44.4730	5.0000		2010/08/11 18:37
10.000 ppm	83.3970	10.0000		2010/08/11 18:51
25.000 ppm	197.1510	25.0000		2010/08/11 19:04
50.000 ppm	389.2430	50.0000		2010/08/11 19:17

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Name: CAS_salt (TOC)

Version: v5 Operator: Gen Chem Lab (Fusion1)
Ver Creation: 2013/02/04 11:50
Comment: This method is designed to use the Non-Purgeable Organic Carbon (NPOC) method for TOC analysis on

waste water type samples.

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	7
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	7
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/08/09 19:42

ALS Environmental

StarLIMS Run: 690270/690271/690269

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 19-GEN-8-15-C 50 ppm LCS: 19-GEN-8-31I 25.0 ppm

ICAL Date: 6/16/2020

ICAL ID: 19-GEN-8-22-G

ICS ID: 19-GEN-8-4-G

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 19-GEN-8-15-B 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-32J

21 % H3PO4: 19-GEN-08-32I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: MV	Date Analyzed: 8-8-20
Reviewed By: JL	Date Reviewed: 8/10/20

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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August 07, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20070985**

Laboratory Results for: **Longhorn Army Ammunition Plant 16 July 2020**

Dear Susan Huang,

ALS Environmental received 8 sample(s) on Jul 22, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070985

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20070985-01	16RW11-200721	Groundwater		21-Jul-2020 07:25	22-Jul-2020 09:55	☐
HS20070985-02	16IW20-200721	Groundwater		21-Jul-2020 08:10	22-Jul-2020 09:55	☐
HS20070985-03	16WW40-200721	Groundwater		21-Jul-2020 09:00	22-Jul-2020 09:55	☐
HS20070985-04	16WW12-200721	Groundwater		21-Jul-2020 09:50	22-Jul-2020 09:55	☐
HS20070985-05	16WW25-200721	Groundwater		21-Jul-2020 10:40	22-Jul-2020 09:55	☐
HS20070985-06	16WW26-200721	Groundwater		21-Jul-2020 11:30	22-Jul-2020 09:55	☐
HS20070985-07	16RW02-200721	Groundwater		21-Jul-2020 12:25	22-Jul-2020 09:55	☐
HS20070985-08	Trip Blank-200721	Water	CG-111519-35	21-Jul-2020 00:00	22-Jul-2020 09:55	☐

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070985

Work Order Comments

- Analysis of Perchlorate was performed by ALS Houston TX, High Resolution. Laboratory. Final report attached.
- The analysis for TOC was subcontracted to ALS Environmental in Kelso WA. Final report attached.

GC Semivolatiles by Method RSK-175

Batch ID: R365789

Sample ID: 16WW25-200721 (HS20070985-05DUP)

- The RPD between the sample and its duplicate was outside the control limit. Ethene

GCMS Volatiles by Method SW8260

Batch ID: R365643

Sample ID: 16RW11-200721(HS20070985-01MS)

- The recovery of the Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS/MSD may be due to sample matrix interference. cis-1,2-Dichloroethene and Trichloroethene

Wet Chemistry by Method SW9056

Batch ID: R365767

Sample ID: HS20071033-03MS

- MS and MSD are for an unrelated sample (Sulfate)

WetChemistry by Method SM2320B

Batch ID: R365564

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R365836

Sample ID: 16WW12-200721 (HS20070985-04)

- Sample ran at 5X due to high concentration of Sulfate

Sample ID: 16WW40-200721 (HS20070985-03)

- Sample ran at 5X due to high concentration of Sulfate

Batch ID: R365508

Sample ID: 16IW20-200721 (HS20070985-02MS)

- The MS recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Bromide,Sulfate)

Sample ID: 16WW25-200721 (HS20070985-05)

- Sample ran at 5X due to high concentration of Sulfate

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20070985

WetChemistry by Method SW9056

Batch ID: R365767

Sample ID: HS20071147-05MS

- MS and MSD are for an unrelated sample (Sulfate)

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Sample ID: 16RW11-200721
Collection Date: 21-Jul-2020 07:25

ANALYTICAL REPORT
WorkOrder:HS20070985
Lab ID:HS20070985-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	24-Jul-2020 13:53
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 13:53
1,2-Dichloroethane	**1.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 13:53
cis-1,2-Dichloroethene	**60**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 13:53
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-Jul-2020 13:53
Trichloroethene	**8.9**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 13:53
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 13:53
Surr: 1,2-Dichloroethane-d4	*90.9*			**0**	*81-118*	*%REC*	*1*	*24-Jul-2020 13:53*
Surr: 4-Bromofluorobenzene	*99.1*			**0**	*85-114*	*%REC*	*1*	*24-Jul-2020 13:53*
Surr: Dibromofluoromethane	*93.1*			**0**	*80-119*	*%REC*	*1*	*24-Jul-2020 13:53*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*24-Jul-2020 13:53*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	05-Aug-2020 16:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070985
Sample ID: 16IW20-200721 Lab ID:HS20070985-02
Collection Date: 21-Jul-2020 08:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	24-Jul-2020 15:30
1,1-Dichloroethene	**3.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 15:30
1,2-Dichloroethane	**4.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 15:30
cis-1,2-Dichloroethene	**170**		**2.0**	**5.0**	**10**	**UG/L**	10	24-Jul-2020 16:42
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-Jul-2020 15:30
Trichloroethene	**280**		**2.0**	**5.0**	**10**	**UG/L**	10	24-Jul-2020 16:42
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 15:30
Surr: 1,2-Dichloroethane-d4	*92.0*			**0**	*81-118*	*%REC*	*1*	*24-Jul-2020 15:30*
Surr: 1,2-Dichloroethane-d4	*95.8*			**0**	*81-118*	*%REC*	*10*	*24-Jul-2020 16:42*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*85-114*	*%REC*	*1*	*24-Jul-2020 15:30*
Surr: 4-Bromofluorobenzene	*89.7*			**0**	*85-114*	*%REC*	*10*	*24-Jul-2020 16:42*
Surr: Dibromofluoromethane	*93.5*			**0**	*80-119*	*%REC*	*1*	*24-Jul-2020 15:30*
Surr: Dibromofluoromethane	*94.9*			**0**	*80-119*	*%REC*	*10*	*24-Jul-2020 16:42*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*24-Jul-2020 15:30*
Surr: Toluene-d8	*98.2*			**0**	*89-112*	*%REC*	*10*	*24-Jul-2020 16:42*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.00387**		**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	28-Jul-2020 14:29
Ethene	**0.00989**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Jul-2020 14:29
Methane	**1.45**		**0.0107**	**0.100**	**0.0500**	**mg/L**	100	28-Jul-2020 15:01
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**870**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	23-Jul-2020 20:32
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**37.5**		**0.300**	**1.00**	**1.00**	**mg/L**	10	22-Jul-2020 19:20
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	22-Jul-2020 15:43
Sulfate	**214**		**2.00**	**5.00**	**5.00**	**mg/L**	10	22-Jul-2020 19:20
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	05-Aug-2020 16:59
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070985
Sample ID: 16WW40-200721 Lab ID:HS20070985-03
Collection Date: 21-Jul-2020 09:00 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	24-Jul-2020 17:30
1,1-Dichloroethene	**7.0**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Jul-2020 17:30
1,2-Dichloroethane	**6.1**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Jul-2020 17:30
cis-1,2-Dichloroethene	**220**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Jul-2020 17:30
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	24-Jul-2020 17:30
Trichloroethene	**1,700**		**5.0**	**12**	**25**	**UG/L**	25	24-Jul-2020 17:54
Vinyl chloride	**5.3**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Jul-2020 17:30
Surr: 1,2-Dichloroethane-d4	*93.1*			**0**	*81-118*	*%REC*	*5*	*24-Jul-2020 17:30*
Surr: 1,2-Dichloroethane-d4	*91.2*			**0**	*81-118*	*%REC*	*25*	*24-Jul-2020 17:54*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*85-114*	*%REC*	*5*	*24-Jul-2020 17:30*
Surr: 4-Bromofluorobenzene	*97.9*			**0**	*85-114*	*%REC*	*25*	*24-Jul-2020 17:54*
Surr: Dibromofluoromethane	*94.2*			**0**	*80-119*	*%REC*	*5*	*24-Jul-2020 17:30*
Surr: Dibromofluoromethane	*93.2*			**0**	*80-119*	*%REC*	*25*	*24-Jul-2020 17:54*
Surr: Toluene-d8	*99.6*			**0**	*89-112*	*%REC*	*5*	*24-Jul-2020 17:30*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*25*	*24-Jul-2020 17:54*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**8.90**		**0.150**	**0.500**	**0.500**	**mg/L**	5	29-Jul-2020 05:30
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	05-Aug-2020 16:59
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070985
Sample ID: 16WW12-200721 Lab ID:HS20070985-04
Collection Date: 21-Jul-2020 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	24-Jul-2020 18:18
1,1-Dichloroethene	**7.5**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Jul-2020 18:18
1,2-Dichloroethane	**12**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Jul-2020 18:18
cis-1,2-Dichloroethene	**71**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Jul-2020 18:18
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	24-Jul-2020 18:18
Trichloroethene	**2,800**		**5.0**	**12**	**25**	**UG/L**	25	24-Jul-2020 18:42
Vinyl chloride	**8.1**		**1.0**	**2.5**	**5.0**	**UG/L**	5	24-Jul-2020 18:18
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*81-118*	*%REC*	*25*	*24-Jul-2020 18:42*
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*81-118*	*%REC*	*5*	*24-Jul-2020 18:18*
Surr: 4-Bromofluorobenzene	*99.2*			**0**	*85-114*	*%REC*	*25*	*24-Jul-2020 18:42*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*5*	*24-Jul-2020 18:18*
Surr: Dibromofluoromethane	*99.1*			**0**	*80-119*	*%REC*	*5*	*24-Jul-2020 18:18*
Surr: Dibromofluoromethane	*91.9*			**0**	*80-119*	*%REC*	*25*	*24-Jul-2020 18:42*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*25*	*24-Jul-2020 18:42*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*5*	*24-Jul-2020 18:18*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**6.16**		**0.150**	**0.500**	**0.500**	**mg/L**	5	29-Jul-2020 05:48
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	05-Aug-2020 16:59
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070985
Sample ID: 16WW25-200721 Lab ID:HS20070985-05
Collection Date: 21-Jul-2020 10:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	24-Jul-2020 14:18
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 14:18
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 14:18
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 14:18
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-Jul-2020 14:18
Trichloroethene	**0.58**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 14:18
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 14:18
Surr: 1,2-Dichloroethane-d4	*94.9*			**0**	*81-118*	*%REC*	*1*	*24-Jul-2020 14:18*
Surr: 4-Bromofluorobenzene	*98.3*			**0**	*85-114*	*%REC*	*1*	*24-Jul-2020 14:18*
Surr: Dibromofluoromethane	*95.2*			**0**	*80-119*	*%REC*	*1*	*24-Jul-2020 14:18*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*24-Jul-2020 14:18*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000284**	J	**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	28-Jul-2020 14:39
Ethene	**0.000845**	J	**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Jul-2020 14:39
Methane	**0.0156**		**0.000107**	**0.00100**	**0.000500**	**mg/L**	1	28-Jul-2020 14:39
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**52.8**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	23-Jul-2020 20:38
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**2.69**		**0.150**	**0.500**	**0.500**	**mg/L**	5	22-Jul-2020 16:37
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	22-Jul-2020 16:37
Sulfate	**5,550**		**20.0**	**50.0**	**50.0**	**mg/L**	100	23-Jul-2020 00:10
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	05-Aug-2020 16:59
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070985
Sample ID: 16WW26-200721 Lab ID:HS20070985-06
Collection Date: 21-Jul-2020 11:30 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	24-Jul-2020 15:06
1,1-Dichloroethene	**1.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 15:06
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 15:06
cis-1,2-Dichloroethene	**38**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 15:06
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-Jul-2020 15:06
Trichloroethene	**490**		**2.0**	**5.0**	**10**	**UG/L**	10	24-Jul-2020 17:06
Vinyl chloride	**0.88**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 15:06
Surr: 1,2-Dichloroethane-d4	*90.7*			**0**	*81-118*	*%REC*	*1*	*24-Jul-2020 15:06*
Surr: 1,2-Dichloroethane-d4	*92.7*			**0**	*81-118*	*%REC*	*10*	*24-Jul-2020 17:06*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*24-Jul-2020 15:06*
Surr: 4-Bromofluorobenzene	*97.0*			**0**	*85-114*	*%REC*	*10*	*24-Jul-2020 17:06*
Surr: Dibromofluoromethane	*92.1*			**0**	*80-119*	*%REC*	*1*	*24-Jul-2020 15:06*
Surr: Dibromofluoromethane	*93.0*			**0**	*80-119*	*%REC*	*10*	*24-Jul-2020 17:06*
Surr: Toluene-d8	*99.3*			**0**	*89-112*	*%REC*	*1*	*24-Jul-2020 15:06*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*10*	*24-Jul-2020 17:06*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000239**	J	**0.000144**	**0.000250**	**0.00100**	**mg/L**	1	28-Jul-2020 15:12
Ethene	**0.00138**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Jul-2020 15:12
Methane	**0.00510**		**0.000107**	**0.00100**	**0.000500**	**mg/L**	1	28-Jul-2020 15:12
ALKALINITY BY SM2320B		**Method:SM2320B**						Analyst: TH
Alkalinity, Total (As CaCO3)	**21.5**	a	**5.00**	**5.00**	**5.00**	**mg/L**	1	23-Jul-2020 20:43
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**0.774**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	22-Jul-2020 16:19
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	22-Jul-2020 16:19
Sulfate	**665**		**4.00**	**10.0**	**10.0**	**mg/L**	20	27-Jul-2020 22:09
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	05-Aug-2020 16:59
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	07-Aug-2020 09:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070985
Sample ID: 16RW02-200721 Lab ID:HS20070985-07
Collection Date: 21-Jul-2020 12:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	24-Jul-2020 14:42
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 14:42
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 14:42
cis-1,2-Dichloroethene	**1.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 14:42
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-Jul-2020 14:42
Trichloroethene	**4.8**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-Jul-2020 14:42
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 14:42
Surr: 1,2-Dichloroethane-d4	*91.9*			**0**	*81-118*	*%REC*	*1*	*24-Jul-2020 14:42*
Surr: 4-Bromofluorobenzene	*98.2*			**0**	*85-114*	*%REC*	*1*	*24-Jul-2020 14:42*
Surr: Dibromofluoromethane	*92.4*			**0**	*80-119*	*%REC*	*1*	*24-Jul-2020 14:42*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*24-Jul-2020 14:42*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	05-Aug-2020 16:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20070985
Sample ID: Trip Blank-200721 Lab ID:HS20070985-08
Collection Date: 21-Jul-2020 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	24-Jul-2020 13:29
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 13:29
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 13:29
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 13:29
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-Jul-2020 13:29
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 13:29
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-Jul-2020 13:29
Surr: 1,2-Dichloroethane-d4	*90.5*			**0**	*81-118*	*%REC*	*1*	*24-Jul-2020 13:29*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*85-114*	*%REC*	*1*	*24-Jul-2020 13:29*
Surr: Dibromofluoromethane	*91.1*			**0**	*80-119*	*%REC*	*1*	*24-Jul-2020 13:29*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*24-Jul-2020 13:29*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070985

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365508 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070985-02	16IW20-200721	21 Jul 2020 08:10			22 Jul 2020 19:20	10
HS20070985-02	16IW20-200721	21 Jul 2020 08:10			22 Jul 2020 15:43	1
HS20070985-05	16WW25-200721	21 Jul 2020 10:40			23 Jul 2020 00:10	100
HS20070985-05	16WW25-200721	21 Jul 2020 10:40			22 Jul 2020 16:37	5
HS20070985-06	16WW26-200721	21 Jul 2020 11:30			22 Jul 2020 16:19	1
Batch ID: R365564 (0)	**Test Name :** ALKALINITY BY SM2320B				**Matrix:** Groundwater	
HS20070985-02	16IW20-200721	21 Jul 2020 08:10			23 Jul 2020 20:32	1
HS20070985-05	16WW25-200721	21 Jul 2020 10:40			23 Jul 2020 20:38	1
HS20070985-06	16WW26-200721	21 Jul 2020 11:30			23 Jul 2020 20:43	1
Batch ID: R365643 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20070985-08	Trip Blank-200721	21 Jul 2020 00:00			24 Jul 2020 13:29	1
Batch ID: R365643 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20070985-01	16RW11-200721	21 Jul 2020 07:25			24 Jul 2020 13:53	1
HS20070985-02	16IW20-200721	21 Jul 2020 08:10			24 Jul 2020 16:42	10
HS20070985-02	16IW20-200721	21 Jul 2020 08:10			24 Jul 2020 15:30	1
HS20070985-03	16WW40-200721	21 Jul 2020 09:00			24 Jul 2020 17:54	25
HS20070985-03	16WW40-200721	21 Jul 2020 09:00			24 Jul 2020 17:30	5
HS20070985-04	16WW12-200721	21 Jul 2020 09:50			24 Jul 2020 18:42	25
HS20070985-04	16WW12-200721	21 Jul 2020 09:50			24 Jul 2020 18:18	5
HS20070985-05	16WW25-200721	21 Jul 2020 10:40			24 Jul 2020 14:18	1
HS20070985-06	16WW26-200721	21 Jul 2020 11:30			24 Jul 2020 17:06	10
HS20070985-06	16WW26-200721	21 Jul 2020 11:30			24 Jul 2020 15:06	1
HS20070985-07	16RW02-200721	21 Jul 2020 12:25			24 Jul 2020 14:42	1
Batch ID: R365767 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070985-06	16WW26-200721	21 Jul 2020 11:30			27 Jul 2020 22:09	20
Batch ID: R365789 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS20070985-02	16IW20-200721	21 Jul 2020 08:10			28 Jul 2020 15:01	100
HS20070985-02	16IW20-200721	21 Jul 2020 08:10			28 Jul 2020 14:29	1
HS20070985-05	16WW25-200721	21 Jul 2020 10:40			28 Jul 2020 14:39	1
HS20070985-06	16WW26-200721	21 Jul 2020 11:30			28 Jul 2020 15:12	1
Batch ID: R365836 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20070985-03	16WW40-200721	21 Jul 2020 09:00			29 Jul 2020 05:30	5
HS20070985-04	16WW12-200721	21 Jul 2020 09:50			29 Jul 2020 05:48	5

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070985

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R366229 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20070985-01	16RW11-200721	21 Jul 2020 07:25			05 Aug 2020 16:59	1
HS20070985-02	16IW20-200721	21 Jul 2020 08:10			05 Aug 2020 16:59	1
HS20070985-03	16WW40-200721	21 Jul 2020 09:00			05 Aug 2020 16:59	1
HS20070985-04	16WW12-200721	21 Jul 2020 09:50			05 Aug 2020 16:59	1
HS20070985-05	16WW25-200721	21 Jul 2020 10:40			05 Aug 2020 16:59	1
HS20070985-06	16WW26-200721	21 Jul 2020 11:30			05 Aug 2020 16:59	1
HS20070985-07	16RW02-200721	21 Jul 2020 12:25			05 Aug 2020 16:59	1
Batch ID: R366343 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20070985-02	16IW20-200721	21 Jul 2020 08:10			07 Aug 2020 09:33	1
HS20070985-03	16WW40-200721	21 Jul 2020 09:00			07 Aug 2020 09:33	1
HS20070985-04	16WW12-200721	21 Jul 2020 09:50			07 Aug 2020 09:33	1
HS20070985-05	16WW25-200721	21 Jul 2020 10:40			07 Aug 2020 09:33	1
HS20070985-06	16WW26-200721	21 Jul 2020 11:30			07 Aug 2020 09:33	1

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070985

QC BATCH REPORT

Batch ID: R365789 (0) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-200728** Units: **mg/L** Analysis Date: **28-Jul-2020 09:44**
Client ID: Run ID: **FID-4_365789** SeqNo: **5677105** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000250	0.00100								U
Ethene	0.00100	0.00100								U
Methane	0.00100	0.000500								U

LCS Sample ID: **LCS-200728** Units: **mg/L** Analysis Date: **28-Jul-2020 08:57**
Client ID: Run ID: **FID-4_365789** SeqNo: **5677103** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0142	0.00100	0.01804	0	78.4	75 - 125				
Ethene	0.0127	0.00100	0.0168	0	75.4	75 - 125				
Methane	0.00823	0.000500	0.009647	0	85.4	75 - 125				

LCSD Sample ID: **LCSD-200728** Units: **mg/L** Analysis Date: **28-Jul-2020 09:32**
Client ID: Run ID: **FID-4_365789** SeqNo: **5677104** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0180	0.00100	0.01804	0	99.7	75 - 125	0.01415	23.9	30	
Ethene	0.0164	0.00100	0.0168	0	97.7	75 - 125	0.01267	25.7	30	
Methane	0.00876	0.000500	0.009647	0	90.8	75 - 125	0.008234	6.17	30	

DUP Sample ID: **HS20070985-05DUP** Units: **mg/L** Analysis Date: **28-Jul-2020 14:50**
Client ID: **16WW25-200721** Run ID: **FID-4_365789** SeqNo: **5677124** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.000242	0.00100					0.0002835	0	30	J
Ethene	0.00134	0.00100					0.0008451	45.4	30	R
Methane	0.0152	0.000500					0.01563	2.83	30	

The following samples were analyzed in this batch: HS20070985-02 HS20070985-05 HS20070985-06

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070985

QC BATCH REPORT

Batch ID: R365643 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200724** Units: **UG/L** Analysis Date: **24-Jul-2020 13:05**
Client ID: Run ID: **VOA6_365643** SeqNo: **5674123** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.51*	*1.0*	*50*	*0*	*91.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.87*	*1.0*	*50*	*0*	*97.7*	*85 - 114*				
Surr: Dibromofluoromethane	*46.03*	*1.0*	*50*	*0*	*92.1*	*80 - 119*				
Surr: Toluene-d8	*50.63*	*1.0*	*50*	*0*	*101*	*89 - 112*				

LCS Sample ID: **VLCSW-200724** Units: **UG/L** Analysis Date: **24-Jul-2020 12:17**
Client ID: Run ID: **VOA6_365643** SeqNo: **5674122** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	21.62	1.0	20	0	108	80 - 119				
1,1-Dichloroethene	22.43	1.0	20	0	112	71 - 131				
1,2-Dichloroethane	22.01	1.0	20	0	110	73 - 128				
cis-1,2-Dichloroethene	21.74	1.0	20	0	109	78 - 123				
Methylene chloride	20.5	2.0	20	0	103	74 - 124				
Trichloroethene	20.47	1.0	20	0	102	79 - 123				
Vinyl chloride	20.22	1.0	20	0	101	58 - 137				
Surr: 1,2-Dichloroethane-d4	*48.63*	*1.0*	*50*	*0*	*97.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.77*	*1.0*	*50*	*0*	*97.5*	*85 - 114*				
Surr: Dibromofluoromethane	*48.39*	*1.0*	*50*	*0*	*96.8*	*80 - 119*				
Surr: Toluene-d8	*48.05*	*1.0*	*50*	*0*	*96.1*	*89 - 112*				

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070985

QC BATCH REPORT

Batch ID: R365643 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20070985-01MS** Units: **UG/L** Analysis Date: **24-Jul-2020 15:54**
Client ID: **16RW11-200721** Run ID: **VOA6_365643** SeqNo: **5674130** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	23.6	1.0	20	0	118	80 - 119				
1,1-Dichloroethene	22.56	1.0	20	0	113	71 - 131				
1,2-Dichloroethane	23.35	1.0	20	1.58	109	73 - 128				
cis-1,2-Dichloroethene	21.64	1.0	20	60.32	-193	78 - 123				S
Methylene chloride	19.38	2.0	20	0	96.9	74 - 124				
Trichloroethene	23.3	1.0	20	8.902	72.0	79 - 123				S
Vinyl chloride	23.33	1.0	20	0	117	58 - 137				
Surr: 1,2-Dichloroethane-d4	*47.46*	*1.0*	*50*	*0*	*94.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.83*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*44.94*	*1.0*	*50*	*0*	*89.9*	*80 - 119*				
Surr: Toluene-d8	*52.18*	*1.0*	*50*	*0*	*104*	*89 - 112*				

MSD Sample ID: **HS20070985-01MSD** Units: **UG/L** Analysis Date: **24-Jul-2020 16:18**
Client ID: **16RW11-200721** Run ID: **VOA6_365643** SeqNo: **5674131** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	21.93	1.0	20	0	110	80 - 119	23.6	7.32	20	
1,1-Dichloroethene	23.53	1.0	20	0	118	71 - 131	22.56	4.2	20	
1,2-Dichloroethane	21.17	1.0	20	1.58	98.0	73 - 128	23.35	9.78	20	
cis-1,2-Dichloroethene	21.56	1.0	20	60.32	-194	78 - 123	21.64	0.384	20	S
Methylene chloride	21.45	2.0	20	0	107	74 - 124	19.38	10.1	20	
Trichloroethene	21.82	1.0	20	8.902	64.6	79 - 123	23.3	6.56	20	S
Vinyl chloride	22.33	1.0	20	0	112	58 - 137	23.33	4.37	20	
Surr: 1,2-Dichloroethane-d4	*42.96*	*1.0*	*50*	*0*	*85.9*	*81 - 118*	*47.46*	*9.95*	*20*	
Surr: 4-Bromofluorobenzene	*50.74*	*1.0*	*50*	*0*	*101*	*85 - 114*	*51.83*	*2.13*	*20*	
Surr: Dibromofluoromethane	*45.38*	*1.0*	*50*	*0*	*90.8*	*80 - 119*	*44.94*	*0.97*	*20*	
Surr: Toluene-d8	*47.75*	*1.0*	*50*	*0*	*95.5*	*89 - 112*	*52.18*	*8.87*	*20*	

The following samples were analyzed in this batch:

HS20070985-01	HS20070985-02	HS20070985-03	HS20070985-04
HS20070985-05	HS20070985-06	HS20070985-07	HS20070985-08

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070985

QC BATCH REPORT

Batch ID: R365508 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-072220** Units: **mg/L** Analysis Date: **22-Jul-2020 13:54**
Client ID: Run ID: **ICS-Integrion_365508** SeqNo: **5671246** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **LCS-072220** Units: **mg/L** Analysis Date: **22-Jul-2020 14:12**
Client ID: Run ID: **ICS-Integrion_365508** SeqNo: **5671247** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.356	0.100	4	0	109	80 - 120				
Nitrogen, Nitrate (As N)	3.916	0.100	4	0	97.9	80 - 120				
Sulfate	19.93	0.500	20	0	99.7	80 - 120				

MS Sample ID: **HS20070985-02MS** Units: **mg/L** Analysis Date: **22-Jul-2020 18:08**
Client ID: **16IW20-200721** Run ID: **ICS-Integrion_365508** SeqNo: **5671254** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	31.58	0.100	2	32.77	-59.5	80 - 120				SEO
Nitrogen, Nitrate (As N)	2.124	0.100	2	0	106	80 - 120				
Sulfate	190.8	0.500	10	200.8	-101	80 - 120				SEO

MSD Sample ID: **HS20070985-02MSD** Units: **mg/L** Analysis Date: **22-Jul-2020 18:26**
Client ID: **16IW20-200721** Run ID: **ICS-Integrion_365508** SeqNo: **5671265** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	34.59	0.100	2	32.77	90.8	80 - 120	31.58	9.08	20	EO
Nitrogen, Nitrate (As N)	2.296	0.100	2	0	115	80 - 120	2.124	7.78	20	
Sulfate	210.9	0.500	10	200.8	101	80 - 120	190.8	10	20	EO

The following samples were analyzed in this batch: HS20070985-02 HS20070985-05 HS20070985-06

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070985

QC BATCH REPORT

Batch ID: R365564 (0) **Instrument: ManTech01** **Method: ALKALINITY BY SM2320B**

MBLK Sample ID: **WBLKW1-200723** Units: **mg/L** Analysis Date: **23-Jul-2020 17:40**
Client ID: Run ID: **ManTech01_365564** SeqNo: **5672305** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	5.00	5.00								U

LCS Sample ID: **LCS1-200723** Units: **mg/L** Analysis Date: **23-Jul-2020 17:49**
Client ID: Run ID: **ManTech01_365564** SeqNo: **5672306** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1055	5.00	1000	0	106	85 - 115				

LCSD Sample ID: **LCSD1-200723** Units: **mg/L** Analysis Date: **23-Jul-2020 17:58**
Client ID: Run ID: **ManTech01_365564** SeqNo: **5672307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1080	5.00	1000	0	108	85 - 115	1055	2.3	20	

DUP Sample ID: **HS20071060-02DUP** Units: **mg/L** Analysis Date: **23-Jul-2020 18:11**
Client ID: Run ID: **ManTech01_365564** SeqNo: **5672309** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	144.6	5.00					143.8	0.513	20	

The following samples were analyzed in this batch: HS20070985-02 HS20070985-05 HS20070985-06

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070985

QC BATCH REPORT

Batch ID: R365767 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-072720** Units: **mg/L** Analysis Date: **27-Jul-2020 17:01**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676598** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	0.2192	0.500								J

LCS Sample ID: **LCS-072720** Units: **mg/L** Analysis Date: **27-Jul-2020 17:19**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676599** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	20.34	0.500	20	0	102	80 - 120				

MS Sample ID: **HS20071147-05MS** Units: **mg/L** Analysis Date: **28-Jul-2020 02:40**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676619** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	91.12	0.500	10	86.42	47.0	80 - 120				SO

MS Sample ID: **HS20071033-03MS** Units: **mg/L** Analysis Date: **27-Jul-2020 23:57**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676610** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	0.500	0.500	10	0	0	80 - 120				S U

MSD Sample ID: **HS20071147-05MSD** Units: **mg/L** Analysis Date: **28-Jul-2020 02:58**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676620** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	91.19	0.500	10	86.42	47.7	80 - 120	91.12	0.0798	20	SO

MSD Sample ID: **HS20071033-03MSD** Units: **mg/L** Analysis Date: **28-Jul-2020 00:15**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676611** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	0.500	0.500	10	0	0	80 - 120	0	0	20	S U

The following samples were analyzed in this batch: HS20070985-06

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20070985

QC BATCH REPORT

Batch ID: R365836 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-072820** Units: **mg/L** Analysis Date: **28-Jul-2020 13:24**
Client ID: Run ID: **ICS-Integrion_365836** SeqNo: **5678300** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U

LCS Sample ID: **LCS-072820** Units: **mg/L** Analysis Date: **28-Jul-2020 13:42**
Client ID: Run ID: **ICS-Integrion_365836** SeqNo: **5678301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.373	0.100	4	0	109	80 - 120				

MS Sample ID: **HS20071033-05MS** Units: **mg/L** Analysis Date: **29-Jul-2020 08:13**
Client ID: Run ID: **ICS-Integrion_365836** SeqNo: **5678315** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	16.67	0.500	10	6.078	106	80 - 120				

MS Sample ID: **HS20071033-03MS** Units: **mg/L** Analysis Date: **29-Jul-2020 07:19**
Client ID: Run ID: **ICS-Integrion_365836** SeqNo: **5678312** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	18.7	0.500	10	8.292	104	80 - 120				

MSD Sample ID: **HS20071033-05MSD** Units: **mg/L** Analysis Date: **29-Jul-2020 08:31**
Client ID: Run ID: **ICS-Integrion_365836** SeqNo: **5678316** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	16.6	0.500	10	6.078	105	80 - 120	16.67	0.418	20	

MSD Sample ID: **HS20071033-03MSD** Units: **mg/L** Analysis Date: **29-Jul-2020 07:37**
Client ID: Run ID: **ICS-Integrion_365836** SeqNo: **5678313** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	18.71	0.500	10	8.292	104	80 - 120	18.7	0.0802	20	

The following samples were analyzed in this batch: HS20070985-03 HS20070985-04

ALS Houston, US Date: 07-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: **HS20070985**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
Maryland	343, 2019-2020	30-Sep-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 07-Aug-20

Sample Receipt Checklist

Work Order ID: HS20070985 **Date/Time Received:** **22-Jul-2020 09:55**

Client Name: CBI-Houston **Received by:** **Paresh M. Giga**

Completed By:	/S/ Paresh M. Giga	22-Jul-2020 12:31	**Reviewed by:**	/S/ RJ Modashia	22-Jul-2020 15:39
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **GW/Water** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.1c U/c	IR31	
Cooler(s)/Kit(s):	45424		
Date/Time sample(s) sent to storage:	7/22/2020 12:45		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 16 JULY 2020_ALS**

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Perchlorate by SW6850	Metals (arsenic, chromium, manganese, nickel, thallium) by SW6020				Remarks (Preservatives, etc.)	Lab I.D.#
16RW11-200721	WG	7/21/20/0725		4	X					X						
16IW20-200721	WG	7/21/20/0810		10	X	X	X	X	X	X						
16WW40-200721	WG	7/21/20/0900		7	X	X			X	X						
16WW12-200721	WG	7/21/20/0950		7	X	X			X	X						
16WW25-200721	WG	7/21/20/1040		10	X	X	X	X	X	X						
16WW26-200721	WG	7/21/20/1130		10	X	X	X	X	X	X						
16RW02-200721	WG	7/21/20/1225		4	X					X						
TRIPBLANK-200721	W	7/21/20		2	X											

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	7/21/20	1430		7/22/2020	09:55						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

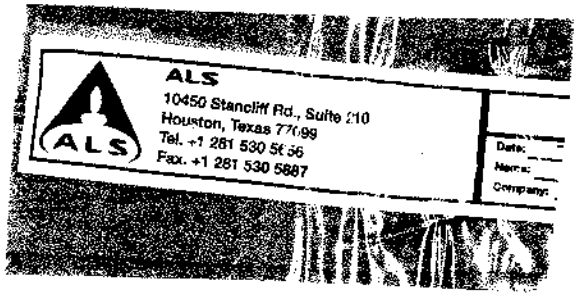
Remarks:

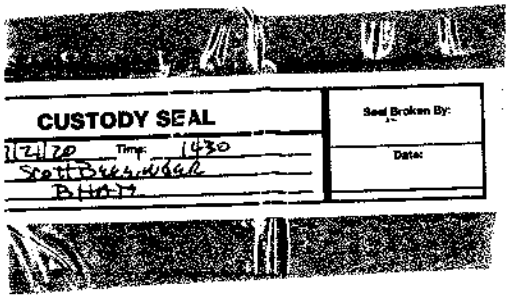
HS20070985

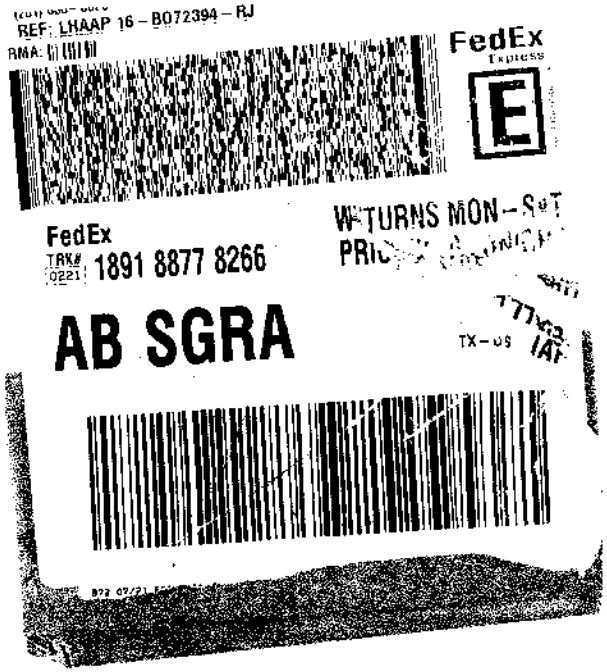
Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant 16 July 2020

SIC
45424 1.1°
#31

(Word) S:\I-ces\Forms\Chain of Custody - BiWeekly


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
Date:
Name:
Company:


CUSTODY SEAL
Seal Broken By:
Date:
Time: 1430
Scott Bressler
BHGE


REF: LHAAP 16 – B072394 – RJ
RMA:
FedEx
Express
E
FedEx
TRK# 0221 1891 8877 8266
W-TURNS MON – SAT
AB SGRA
TX-US

August 05, 2020 Service Request No:E2000671

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

Laboratory Results for: HS20070985

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 22, 2020
For your reference, these analyses have been assigned our service request number **E2000671.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	ALS Houston	**Service Request No.:**	E2000671
Project:	HS20070985	**Date Received:**	07/22/20
Sample Matrix:	W		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seven samples were received for analysis at ALS Environmental in Houston on 07/22/20.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2000317: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch. The LCS and DLCS recoveries are within QC limits.

The analyst encountered interferences at a 1x DF, samples ran at a 10x DF resulting in J flag values at a dilution.

DoD Certification is held for the method/matrix/analytes provided in this report.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: ALS Environmental - US **Service Request:**E2000671
Project: HS20070985

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2000671-001	16RW11-200721	7/21/2020	0725
E2000671-002	16IW20-200721	7/21/2020	0810
E2000671-003	16WW40-200721	7/21/2020	0900
E2000671-004	16WW12-200721	7/21/2020	0950
E2000671-005	16WW25-200721	7/21/2020	1040
E2000671-006	16WW26-200721	7/21/2020	1130
E2000671-007	16RW02-200721	7/21/2020	1225

Service Request Summary

Folder #: **E2000671**
Client Name: ALS Environmental - US
Project Name: HS20070985
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/22/20
Internal Due Date: 8/5/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS20070985
EDD: No EDD Specified

7 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
Location: EHRMS-WIC 7D
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2000671-001	16RW11-200721	Ground Water	07/21/20 0725	**IV**
E2000671-002	16IW20-200721	Ground Water	07/21/20 0810	**IV**
E2000671-003	16WW40-200721	Ground Water	07/21/20 0900	**IV**
E2000671-004	16WW12-200721	Ground Water	07/21/20 0950	**IV**
E2000671-005	16WW25-200721	Ground Water	07/21/20 1040	**IV**
E2000671-006	16WW26-200721	Ground Water	07/21/20 1130	**IV**
E2000671-007	16RW02-200721	Ground Water	07/21/20 1225	**IV**

Service Request Summary

Folder #: **E2000671**
Client Name: ALS Environmental - US
Project Name: HS20070985
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/22/20
Internal Due Date: 8/5/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS20070985
EDD: No EDD Specified

7 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
Location: EHRMS-WIC 7D
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	7	Level II due 8/5,level IV 8/12

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	Internal standard not within the specified limits. See case narrative.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.
M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.

Data Qualifiers

Lab Standard

S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

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State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01 2020	11/30/2021
Arkansas Department of Environmental Quality	20-030-0	3/26/2021
Department of Defense	A2LA 2897.01	11/30/2021
Hawaii Department of Health	2020	4/30/2021
Illinois Environmental Protection Agency	2000322020-4	5/9/2021
Louisiana Department of Health and Hospitals	LA028-2020	12/31/2020
Maine Department of Health and Human Services	2020016	6/5/2022
Minnesota Department of Health	1785988	12/31/2020
Nebraska Department of Health and Human Services	NE-OS-25-13 (2020)	4/30/2021
New Hampshire Environmental Laboratory Accreditation Program	209420	4/24/2021
New York Department of Health	11707	3/31/2021
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Tennessee Department of Environment and Concervation	04016-2020	4/30/2021
Texas Commision on Environmental Quality	T104704231-20-26	4/30/2021
United States Department of Agriculture	P330-19-00299	10/10/2022
Washington Department of Health	C819	11/14/2020

Chain of Custody

ALS Environmental - Houston HRMS
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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 14348**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20070985
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20070985-01**	**16RW11-200721**	**Groundwater**	**21 Jul 2020 07:25**
	SUB_Perch-6850			05 Aug 2020
2.	**HS20070985-02**	**16IW20-200721**	**Groundwater**	**21 Jul 2020 08:10**
	SUB_Perch-6850			05 Aug 2020
3.	**HS20070985-03**	**16WW40-200721**	**Groundwater**	**21 Jul 2020 09:00**
	SUB_Perch-6850			05 Aug 2020
4.	**HS20070985-04**	**16WW12-200721**	**Groundwater**	**21 Jul 2020 09:50**
	SUB_Perch-6850			05 Aug 2020
5.	**HS20070985-05**	**16WW25-200721**	**Groundwater**	**21 Jul 2020 10:40**
	SUB_Perch-6850			05 Aug 2020
6.	**HS20070985-06**	**16WW26-200721**	**Groundwater**	**21 Jul 2020 11:30**
	SUB_Perch-6850			05 Aug 2020
7.	**HS20070985-07**	**16RW02-200721**	**Groundwater**	**21 Jul 2020 12:25**
	SUB_Perch-6850			05 Aug 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14348**

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: _____

Received By: CG Date/Time: 7/22/26 1706

Cooler ID(s): _____ Temperature(s): _____

ALS Environmental

Cooler Receipt Form

Project Chemist CH

Client/Project ALS-HI

Thermometer ID IR31

Date/Time Received: 7/22/20 Initials: CH Date/Time Logged in: 7/22/20 Initials CH

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ✓ ALS Courier ○ Client

2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other

3. Were custody seals on coolers? ○ Yes ✓ No
   Were they intact? ○ Yes ○ No ✓ N/A
   Were they signed and dated? ○ Yes ○ No ✓ N/A
   If yes, how many and where?

4. Packing Material: ○ Inserts ○ Baggies ✓ Bubble Wrap ○ Gel Packs ✓ Wet Ice ○ Sleeves ○ Other

5. Foreign or Regulated Soil? ○ Yes ○ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
—		7/22/20	1700	CH	1.9	☒
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label:

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Houston, TX 77099
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F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
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Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 362574 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 7/30/20 08:39

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000657-001	GPW1_071620	.01	6850/ClO4 DOD			Surface Water	10mL	
2	E2000657-002	GPW3_071620	.01	6850/ClO4 DOD			Surface Water	10mL	
3	E2000657-003	GPW3_071620_a	.01	6850/ClO4 DOD			Surface Water	10mL	
4	E2000657-004	HBW1_071620	.01	6850/ClO4 DOD			Surface Water	10mL	
5	E2000657-005	HBW10_071620	.01	6850/ClO4 DOD			Surface Water	10mL	
6	E2000657-006	HBW7_071620	.01	6850/ClO4 DOD			Surface Water	10mL	
7	E2000669-001	M3Q2011	.01	6850/ClO4 DOD			Water	10mL	
8	E2000671-001	16RW11-200721	.01	6850/ClO4 DOD			Ground Water	10mL	
9	E2000671-002	16IW20-200721	.01	6850/ClO4 DOD			Ground Water	10mL	
10	E2000671-003	16WW40-200721	.01	6850/ClO4 DOD			Ground Water	10mL	
11	E2000671-004	16WW12-200721	.01	6850/ClO4 DOD			Ground Water	10mL	
12	E2000671-005	16WW25-200721	.01	6850/ClO4 DOD			Ground Water	10mL	
13	E2000671-006	16WW26-200721	.01	6850/ClO4 DOD			Ground Water	10mL	
14	E2000671-007	16RW02-200721	.01	6850/ClO4 DOD			Ground Water	10mL	
15	E2000672-001	LH18/24-SP650_072120-BIX	.01	6850/ClO4 DOD			Ground Water	10mL	
16	E2000689-001	LH18/24-SP650_072820-BIX	.01	6850/ClO4 DOD			Ground Water	10mL	
17	EQ2000317-01	MB		6850/ClO4 DOD			Liquid	10mL	
18	EQ2000317-02	LCS		6850/ClO4 DOD			Liquid	10mL	
19	EQ2000317-03	DLCS		6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4 Inventory ID 202037 Logbook Ref: Sodium Perchlorate Expires On: 05/22/2021

E2000657-001	100.00µL	E2000657-002	100.00µL	E2000657-003	100.00µL	E2000657-004	100.00µL	E2000657-005	100.00µL	E2000657-006	100.00µL
EQ2000317-01	100.00µL	EQ2000317-02	100.00µL	EQ2000317-03	100.00µL						

Name: Perchlorate Intermediate Stock1 Inventory ID 209764 Logbook Ref: Perchlorate Int. Stock1 51820 Expires On: 11/18/2020

EQ2000317-02	1.00µL	EQ2000317-03	1.00µL

Preparation Steps

Step: Preparation
Started: 7/30/20 08:39
Finished: 7/30/20 15:16
By: GRIVERA
Comments

Preparation Information Benchsheet

Prep Run#: 362574
Team: Semivoa GCMS/GRIVERA

Prep WorkFlow: GenExt28Day
Prep Method: Method

Status: Prepped
Prep Date/Time: 7/30/20 08:39

Comments:

Reviewed By: GR Date: 7/30/2020

Chain of Custody

Relinquished By:		Date:		Extracts Examined
Received By:		Date:		Yes No

Analytical Results

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ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	7/21/20 0725
Sample Matrix:	Ground Water	**Date Received:**	7/22/20
Sample Name:	16RW11-200721	**Units:**	µg/L
Lab Code:	E2000671-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	7/30/20	8/4/20 14:47	362574	689792	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	7/21/20 0810
Sample Matrix:	Ground Water	**Date Received:**	7/22/20
Sample Name:	16IW20-200721	**Units:**	µg/L
Lab Code:	E2000671-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.562**	J	1.00	0.500	0.250	10	7/30/20	8/5/20 11:08	362574	689792	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	7/21/20 0900
Sample Matrix:	Ground Water	**Date Received:**	7/22/20
Sample Name:	16WW40-200721	**Units:**	µg/L
Lab Code:	E2000671-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.898**	J	1.00	0.500	0.250	10	7/30/20	8/5/20 11:16	362574	689792	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	7/21/20 0950
Sample Matrix:	Ground Water	**Date Received:**	7/22/20
Sample Name:	16WW12-200721	**Units:**	µg/L
Lab Code:	E2000671-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**61.5**		1.00	0.500	0.250	10	7/30/20	8/5/20 11:24	362574	689792	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	7/21/20 1040
Sample Matrix:	Ground Water	**Date Received:**	7/22/20
Sample Name:	16WW25-200721	**Units:**	µg/L
Lab Code:	E2000671-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.512**	J	1.00	0.500	0.250	10	7/30/20	8/5/20 11:32	362574	689792	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	7/21/20 1130
Sample Matrix:	Ground Water	**Date Received:**	7/22/20
Sample Name:	16WW26-200721	**Units:**	µg/L
Lab Code:	E2000671-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0250**	J	0.100	0.0500	0.0250	1	7/30/20	8/4/20 15:26	362574	689792	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	7/21/20 1225
Sample Matrix:	Ground Water	**Date Received:**	7/22/20
Sample Name:	16RW02-200721	**Units:**	µg/L
Lab Code:	E2000671-007	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	7/30/20	8/4/20 15:34	362574	689792	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2000317-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	7/30/20	8/4/20 13:33	362574	689589	

Accuracy & Precision

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070985
Sample Matrix: Ground Water

Service Request: E2000671
Date Analyzed: 8/ 4/20

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 362574

	Lab Control Sample EQ2000317-02			Duplicate Lab Control Sample EQ2000317-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.117	0.100	117	0.118	0.100	118	84 - 119	<1	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000317-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.117**		0.100	0.0500	0.0250	1	7/30/20	8/4/20 13:41	362574	689589	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000317-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.118**		0.100	0.0500	0.0250	1	7/30/20	8/4/20 13:49	362574	689589	

Initial Calibration

ALS Environmental - Houston HRMS
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20200724

1st Review: Kneir
2nd Review: Hvan

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200724_005	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200724_006	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200724_007	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200724_008	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200724_009	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200724_010	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200724_011	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200724_012	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200724_013	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200724_014	Perchlorate6850b.lcm	1x	☒	3100807-07
11	IB		20200724_015	Perchlorate6850b.lcm	1x	☒	
12	PERCHLORATEICV		20200724_016	Perchlorate6850b.lcm	1x	☒	3100807-08
13	IB		20200724_017	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200724_018	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200724_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200724_020	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-04X10		20200724_021	Perchlorate6850b.lcm	10x	☒	
18	EQ2000302-05X10DNU		20200724_022	Perchlorate6850b.lcm	10x	☒	
19	E2000626-001X2		20200724_023	Perchlorate6850b.lcm	2x	☒	
20	E2000627-001X10		20200724_024	Perchlorate6850b.lcm	10x	☒	
21	E2000627-005X100		20200724_025	Perchlorate6850b.lcm	100x	☒	
22	E2000627-006X100		20200724_026	Perchlorate6850b.lcm	100x	☒	
23	E2000627-009X1000		20200724_027	Perchlorate6850b.lcm	1000x	☒	
24	E2000640-001X200		20200724_028	Perchlorate6850b.lcm	200x	☒	
25	PERCHLORATE7		20200724_029	Perchlorate6850b.lcm	1x	☒	3100807-04
26	E2000660-001X10		20200724_030	Perchlorate6850b.lcm	10x	☒	
27	E2000627-004X10		20200724_031	Perchlorate6850b.lcm	10x	☒	
28	PERCHLORATE7		20200724_032	Perchlorate6850b.lcm	1x	☒	3100807-04
29	EQ2000302-05X10		20200724_033	Perchlorate6850b.lcm	10x	☒	
30	PERCHLORATE7		20200724_034	Perchlorate6850b.lcm	1x	☒	3100807-04
31	E2000660-003X10		20200724_035	Perchlorate6850b.lcm	10x	☒	
32	E2000660-004X10		20200724_036	Perchlorate6850b.lcm	10x	☒	
33	E2000660-005X2		20200724_037	Perchlorate6850b.lcm	2x	☒	
34	E2000660-006X10		20200724_038	Perchlorate6850b.lcm	10x	☒	
35	PERCHLORATE7		20200724_039	Perchlorate6850b.lcm	1x	☒	3100807-04
36	EQ2000303-01		20200724_040	Perchlorate6850b.lcm	1x	☒	
37	EQ2000303-02		20200724_041	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-03		20200724_042	Perchlorate6850b.lcm	1x	☒	
39	E2000641-001X20		20200724_043	Perchlorate6850b.lcm	20x	☒	
40	E2000641-002X20		20200724_044	Perchlorate6850b.lcm	20x	☒	
41	E2000641-003X10		20200724_045	Perchlorate6850b.lcm	10x	☒	
42	E2000641-004X20		20200724_046	Perchlorate6850b.lcm	20x	☒	
43	E2000641-005X10		20200724_047	Perchlorate6850b.lcm	10x	☒	
44	E2000641-006X10		20200724_048	Perchlorate6850b.lcm	10x	☒	
45	E2000641-007X10		20200724_049	Perchlorate6850b.lcm	10x	☒	
46	PERCHLORATE7		20200724_050	Perchlorate6850b.lcm	1x	☒	3100807-04
47	E2000641-008X10		20200724_051	Perchlorate6850b.lcm	10x	☒	
48	E2000641-009X10		20200724_052	Perchlorate6850b.lcm	10x	☒	
49	E2000648-001X10		20200724_053	Perchlorate6850b.lcm	10x	☒	
50	E2000648-002X10		20200724_054	Perchlorate6850b.lcm	10x	☒	
51	E2000648-003X20		20200724_055	Perchlorate6850b.lcm	20x	☒	
52	E2000648-005X10		20200724_056	Perchlorate6850b.lcm	10x	☒	

Initial Calibration - Detailed Report

Calibration ID: EC2000016 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2000016-01	PERCHLORATE1	20200724_005	07/24/2020 11:48
02	EC2000016-02	PERCHLORATE2	20200724_006	07/24/2020 11:56
03	EC2000016-03	PERCHLORATE3	20200724_007	07/24/2020 12:04
04	EC2000016-04	PERCHLORATE4	20200724_008	07/24/2020 12:11
05	EC2000016-05	PERCHLORATE5	20200724_009	07/24/2020 12:19
06	EC2000016-06	PERCHLORATE6	20200724_010	07/24/2020 12:27
07	EC2000016-07	PERCHLORATE7	20200724_011	07/24/2020 12:35
08	EC2000016-08	PERCHLORATE8	20200724_012	07/24/2020 12:43
09	EC2000016-09	PERCHLORATE9	20200724_013	07/24/2020 12:51
10	EC2000016-10	PERCHLORATE10	20200724_014	07/24/2020 12:59

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 4.659** **Average RF = 0.121**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1283	02	0.5000	0.13	03	0.7000	0.1207	04	1.0000	0.1251
05	2.0000	0.1211	06	5.0000	0.1202	07	10.0000	0.1211	08	20.0000	0.1168
09	30.0000	0.1121	10	50.0000	0.1148						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.106	6.0	02	0.5000	0.537	7.4	03	0.7000	0.698	-0.3
04	1.0000	1.03	3.4	05	2.0000	2.00	0.1	06	5.0000	4.97	-0.7
07	10.0000	10.0	0.1	08	20.0000	19.3	-3.5	09	30.0000	27.8	-7.3
10	50.0000	47.4	-5.1								

Initial Calibration Verification Summary Report

Calibration ID:	EC2000016	**Instrument ID:**	E-LCMS-01
Datafile ID:	20200724_016	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2000016-11	T	Average RF	10	9.867	ng/mL	-1.3	<= 15

ALS Group Houston

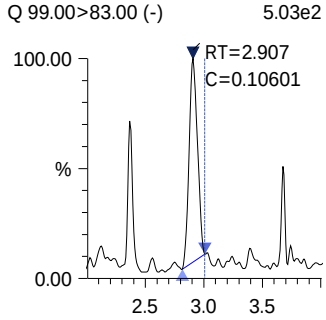
PERCHLORATE1

Date acquired: 7/24/2020 11:48:19 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_005.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE1	7/24/2020 11:48:19 AM	2348	0.10601	20200724_005	2.907	25.0000	1.0000	5
Sodium Perchlorate-18O4_IS	PERCHLORATE1	7/24/2020 11:48:19 AM	183001	1.00000	20200724_005	2.903	25.0000	1.0000	5

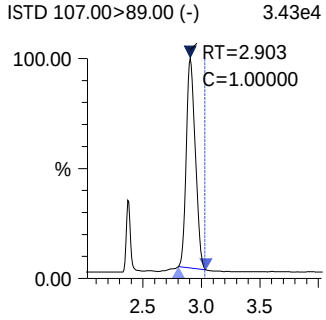
Perchlorate

Conc 0.10601
Area 2348



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 183001



ALS Group Houston

PERCHLORATE2

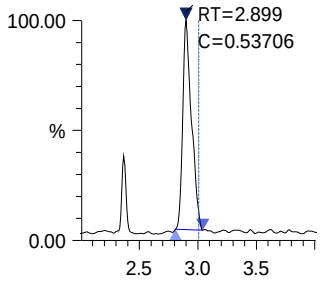
Date acquired: 7/24/2020 11:56:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_006.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE2	7/24/2020 11:56:11 AM	11773	0.53706	20200724_006	2.899	25.0000	1.0000	6
Sodium Perchlorate-18O4_IS	PERCHLORATE2	7/24/2020 11:56:11 AM	181125	1.00000	20200724_006	2.898	25.0000	1.0000	6

Perchlorate

Conc 0.53706
Area 11773

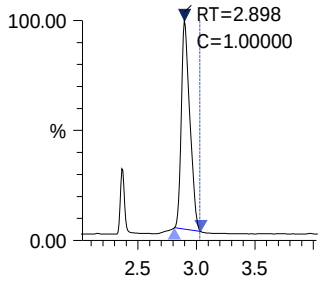
Q 99.00>83.00 (-) 2.32e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 181125

ISTD 107.00>89.00 (-) 3.62e4



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PERCHLORATE3

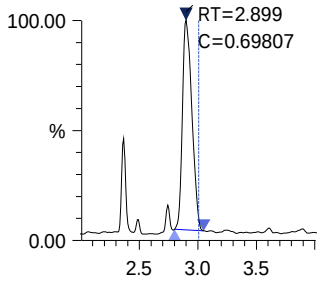
Date acquired: 7/24/2020 12:04:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_007.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE3	7/24/2020 12:04:05 PM	15258	0.69807	20200724_007	2.899	25.0000	1.0000	7
Sodium Perchlorate-18O4_IS	PERCHLORATE3	7/24/2020 12:04:05 PM	180602	1.00000	20200724_007	2.896	25.0000	1.0000	7

Perchlorate

Conc 0.69807
Area 15258

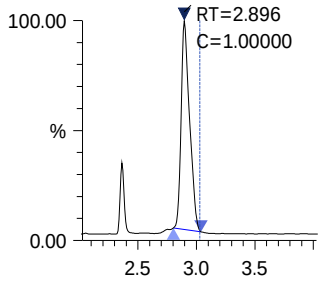
Q 99.00>83.00 (-) 2.79e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 180602

ISTD 107.00>89.00 (-) 3.65e4



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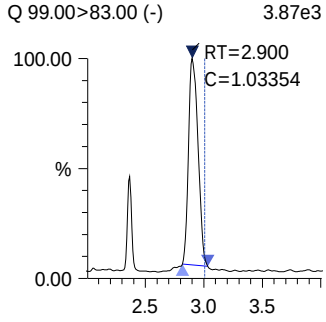
PERCHLORATE4

Date acquired: 7/24/2020 12:11:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_008.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE4	7/24/2020 12:11:58 PM	20922	1.03354	20200724_008	2.900	25.0000	1.0000	8
Sodium Perchlorate-18O4_IS	PERCHLORATE4	7/24/2020 12:11:58 PM	167260	1.00000	20200724_008	2.902	25.0000	1.0000	8

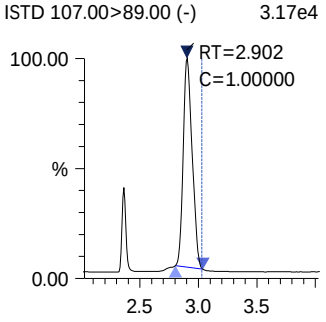
Perchlorate

Conc 1.03354
Area 20922



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 167260



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PERCHLORATE5

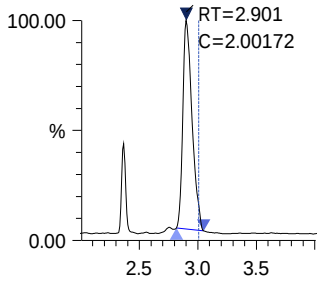
Date acquired: 7/24/2020 12:19:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_009.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE5	7/24/2020 12:19:50 PM	39343	2.00172	20200724_009	2.901	25.0000	1.0000	9
Sodium Perchlorate-18O4_IS	PERCHLORATE5	7/24/2020 12:19:50 PM	162397	1.00000	20200724_009	2.899	25.0000	1.0000	9

Perchlorate

Conc 2.00172
Area 39343

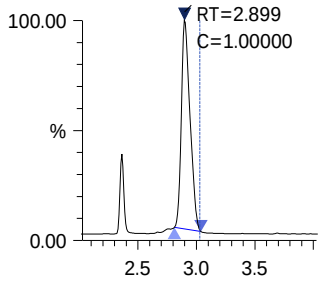
Q 99.00>83.00 (-) 7.39e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 162397

ISTD 107.00>89.00 (-) 3.19e4



ALS Group Houston

PERCHLORATE6

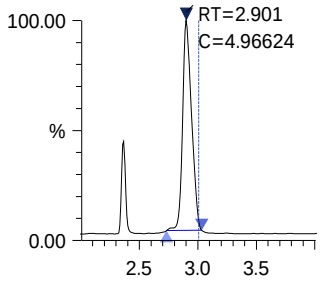
Date acquired: 7/24/2020 12:27:42 PM
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Data File: I:\LCMS01\DATA\20200724\20200724_010.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE6	7/24/2020 12:27:42 PM	102216	4.96624	20200724_010	2.901	25.0000	1.0000	10
Sodium Perchlorate-18O4_IS	PERCHLORATE6	7/24/2020 12:27:42 PM	170060	1.00000	20200724_010	2.900	25.0000	1.0000	10

Perchlorate

Conc 4.96624
Area 102216

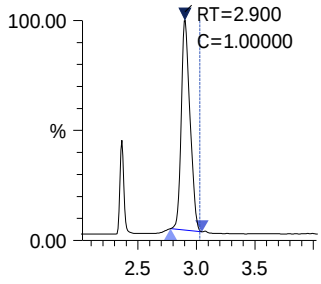
Q 99.00>83.00 (-) 1.97e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 170060

ISTD 107.00>89.00 (-) 3.28e4



ALS Group Houston

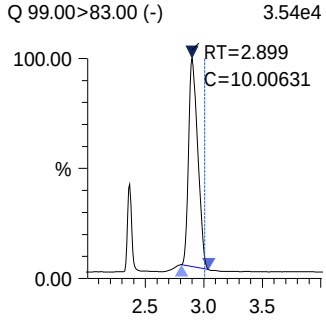
PERCHLORATE7

Date acquired: 7/24/2020 12:35:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_011.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 12:35:33 PM	187110	10.00631	20200724_011	2.899	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 12:35:33 PM	154502	1.00000	20200724_011	2.897	25.0000	1.0000	4

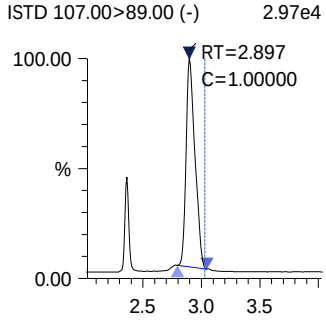
Perchlorate

Conc 10.00631
Area 187110



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 154502



ALS Group Houston

PERCHLORATE8

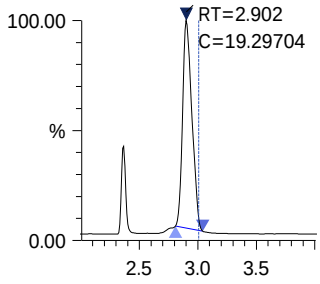
Date acquired: 7/24/2020 12:43:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_012.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE8	7/24/2020 12:43:26 PM	349524	19.29704	20200724_012	2.902	25.0000	1.0000	11
Sodium Perchlorate-18O4_IS	PERCHLORATE8	7/24/2020 12:43:26 PM	149657	1.00000	20200724_012	2.900	25.0000	1.0000	11

Perchlorate

Conc 19.29704
Area 349524

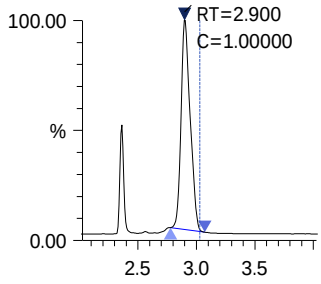
Q 99.00>83.00 (-) 6.58e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 149657

ISTD 107.00>89.00 (-) 2.78e4



ALS Group Houston

PERCHLORATE9

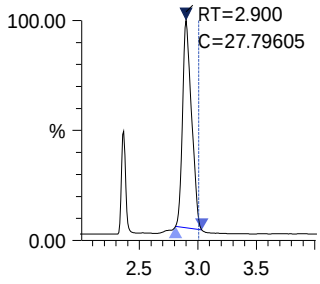
Date acquired: 7/24/2020 12:51:22 PM
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Data File: I:\LCMS01\DATA\20200724\20200724_013.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE9	7/24/2020 12:51:22 PM	465757	27.79605	20200724_013	2.900	25.0000	1.0000	12
Sodium Perchlorate-18O4_IS	PERCHLORATE9	7/24/2020 12:51:22 PM	138448	1.00000	20200724_013	2.898	25.0000	1.0000	12

Perchlorate

Conc 27.79605
Area 465757

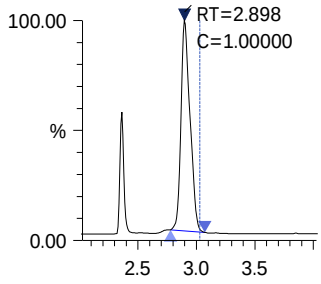
Q 99.00>83.00 (-) 9.05e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 138448

ISTD 107.00>89.00 (-) 2.59e4



ALS Group Houston

PERCHLORATE10

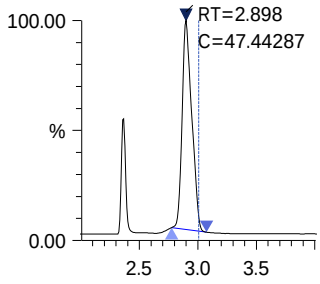
Date acquired: 7/24/2020 12:59:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_014.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE10	7/24/2020 12:59:14 PM	708682	47.44287	20200724_014	2.898	25.0000	1.0000	13
Sodium Perchlorate-18O4_IS	PERCHLORATE10	7/24/2020 12:59:14 PM	123422	1.00000	20200724_014	2.896	25.0000	1.0000	13

Perchlorate

Conc 47.44287
Area 708682

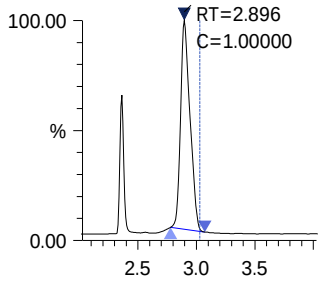
Q 99.00>83.00 (-) 1.28e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 123422

ISTD 107.00>89.00 (-) 2.23e4



ALS Group Houston

PERCHLORATEICV

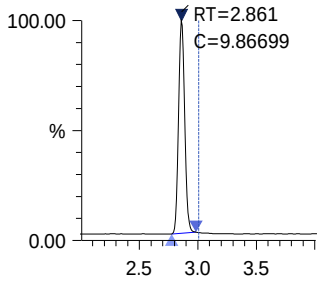
Date acquired: 7/24/2020 1:28:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_016.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATEICV	7/24/2020 1:28:19 PM	231631	9.86699	20200724_016	2.861	25.0000	1.0000	14
Sodium Perchlorate-18O4_IS	PERCHLORATEICV	7/24/2020 1:28:19 PM	193964	1.00000	20200724_016	2.859	25.0000	1.0000	14

Perchlorate

Conc 9.86699
Area 231631

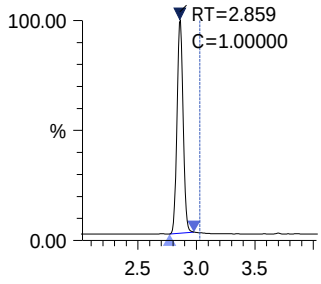
Q 99.00>83.00 (-) 6.30e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 193964

ISTD 107.00>89.00 (-) 5.33e4



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20200804

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	null		20200804_001	Perchlorate6850b.lcm	1x	☒	
2	null		20200804_002	Perchlorate6850b.lcm	1x	☒	
3	IB		20200804_003	Perchlorate6850b.lcm	1x	☒	
4	IB		20200804_004	Perchlorate6850b.lcm	1x	☒	
5	LODV		20200804_005	Perchlorate6850b.lcm	1x	☒	
6	ICS		20200804_006	Perchlorate6850b.lcm	1x	☒	
7	PERCHLORATE7		20200804_007	Perchlorate6850b.lcm	1x	☒	3100807-04
8	EQ2000317-01		20200804_008	Perchlorate6850b.lcm	1x	☒	
9	EQ2000317-02		20200804_009	Perchlorate6850b.lcm	1x	☒	
10	EQ2000317-03		20200804_010	Perchlorate6850b.lcm	1x	☒	
11	E2000657-001		20200804_011	Perchlorate6850b.lcm	1x	☒	
12	E2000657-002		20200804_012	Perchlorate6850b.lcm	1x	☒	
13	E2000657-003		20200804_013	Perchlorate6850b.lcm	1x	☒	
14	E2000657-004		20200804_014	Perchlorate6850b.lcm	1x	☒	
15	EQ2000317-01		20200804_015	Perchlorate6850b.lcm	1x	☒	
16	EQ2000317-02		20200804_016	Perchlorate6850b.lcm	1x	☒	
17	EQ2000317-03		20200804_017	Perchlorate6850b.lcm	1x	☒	
18	PERCHLORATE7		20200804_018	Perchlorate6850b.lcm	1x	☒	3100807-04
19	E2000657-005		20200804_019	Perchlorate6850b.lcm	1x	☒	
20	E2000657-006		20200804_020	Perchlorate6850b.lcm	1x	☒	
21	PERCHLORATE7		20200804_021	Perchlorate6850b.lcm	1x	☒	3100807-04
22	E2000669-001		20200804_022	Perchlorate6850b.lcm	1x	☒	
23	E2000671-001		20200804_023	Perchlorate6850b.lcm	1x	☒	
24	E2000671-002		20200804_024	Perchlorate6850b.lcm	1x	☒	
25	E2000671-003		20200804_025	Perchlorate6850b.lcm	1x	☒	
26	E2000671-004		20200804_026	Perchlorate6850b.lcm	1x	☒	
27	E2000671-005		20200804_027	Perchlorate6850b.lcm	1x	☒	
28	E2000671-006		20200804_028	Perchlorate6850b.lcm	1x	☒	
29	E2000671-007		20200804_029	Perchlorate6850b.lcm	1x	☒	
30	E2000672-001		20200804_030	Perchlorate6850b.lcm	1x	☒	
31	PERCHLORATE7		20200804_031	Perchlorate6850b.lcm	1x	☒	3100807-04
32	E2000689-001		20200804_032	Perchlorate6850b.lcm	1x	☒	
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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070985

Service Request: E2000671
Date Analyzed: 8/ 4/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200804\20200804_007

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689589
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.14	0.1210	0.1106	-8.6	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070985

Service Request: E2000671
Date Analyzed: 8/ 4/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200804\20200804_018

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689589
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	8.92	0.1210	0.1080	-10.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070985

Service Request: E2000671
Date Analyzed: 8/ 4/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200804\20200804_021

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689589
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	8.98	0.1210	0.1087	-10.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070985

Service Request: E2000671
Date Analyzed: 8/ 4/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200804\20200804_021

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689792
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	8.98	0.1210	0.1087	-10.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070985

Service Request: E2000671
Date Analyzed: 8/ 4/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200804\20200804_031

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689792
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.33	0.1210	0.1129	-6.7	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070985

Service Request: E2000671
Date Analyzed: 8/ 5/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200805\20200805_007

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689792
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.01	0.1210	0.1091	-9.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20070985

Service Request: E2000671
Date Analyzed: 8/ 5/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200805\20200805_014

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689792
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.17	0.1210	0.1109	-8.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Analyzed:**	8/4/20 12:30

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200804\20200804_007	**Lab Code:**	EQ2000326-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689589
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000326-01	240,602	2.88
Method Blank	EQ2000317-01	237,618	2.87
Lab Control Sample	EQ2000317-02	240,798	2.88
Duplicate Lab Control Sample	EQ2000317-03	241,552	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Analyzed:**	8/4/20 13:57

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200804\20200804_018	**Lab Code:**	EQ2000326-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689589
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000326-02	233,712	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Analyzed:**	8/4/20 14:21

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200804\20200804_021	**Lab Code:**	EQ2000326-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689589
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000326-03	229,068	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Analyzed:**	8/4/20 14:21

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200804\20200804_021	**Lab Code:**	EQ2000329-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689792
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000329-01	229,068	2.88
16RW11-200721	E2000671-001	138,920	2.84
16WW26-200721	E2000671-006	110,396	2.86
16RW02-200721	E2000671-007	154,352	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Analyzed:**	8/4/20 15:50

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200804\20200804_031	**Lab Code:**	EQ2000329-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689792
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000329-02	177,293	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Analyzed:**	8/5/20 11:00

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200805\20200805_007	**Lab Code:**	EQ2000329-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689792
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000329-03	212,867	2.88
16IW20-200721	E2000671-002	118,531	2.88
16WW40-200721	E2000671-003	113,532	2.87
16WW12-200721	E2000671-004	120,836	2.87
16WW25-200721	E2000671-005	131,788	2.87

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000671
Project:	HS20070985	**Date Analyzed:**	8/5/20 11:56

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200805\20200805_014	**Lab Code:**	EQ2000329-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689792
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000329-04	207,311	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group Houston

Method File: I:\LCMS01\DATA\20200804\20200804.lcm

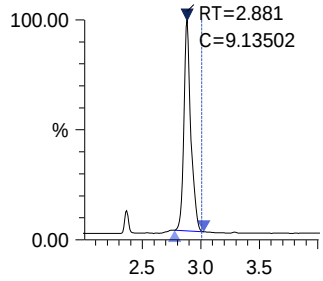
PERCHLORATE7

Date acquired: 8/4/2020 12:30:36 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200804\20200804_007.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	8/4/2020 12:30:36 PM	266011	9.13502	20200804_007	2.881	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	8/4/2020 12:30:36 PM	240602	1.00000	20200804_007	2.880	25.0000	1.0000	4

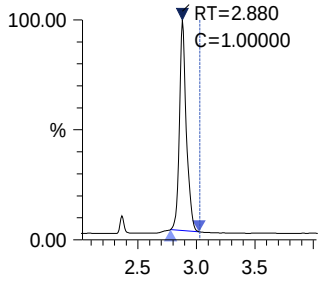
Perchlorate

Conc 9.13502
Area 266011
Q 99.00>83.00 (-) 6.59e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 240602
ISTD 107.00>89.00 (-) 5.93e4



ALS Group Houston

Method File: I:\LCMS01\DATA\20200804\20200804.lcm

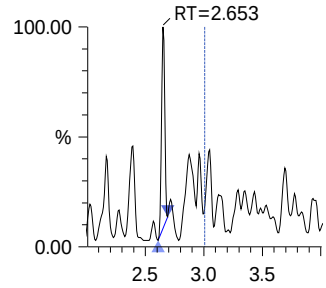
EQ2000317-01

Date acquired: 8/4/2020 1:33:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200804\20200804_015.lcd
Vial: 36 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000317-01	8/4/2020 1:33:52 PM	----	----	20200804_015	----	25.0000	1.0000	36
Sodium Perchlorate-18O4_IS	EQ2000317-01	8/4/2020 1:33:52 PM	237618	1.00000	20200804_015	2.870	25.0000	1.0000	36

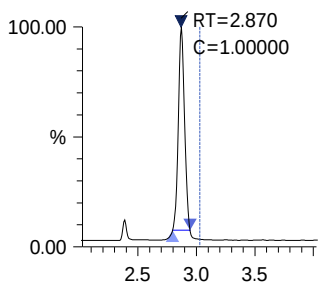
Perchlorate

Conc ----
Area ----
Q 99.00>83.00 (-) 2.24e2



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 237618
ISTD 107.00>89.00 (-) 6.74e4



ALS Group Houston

Method File: I:\LCMS01\DATA\20200804\20200804.lcm

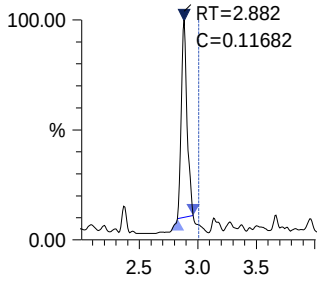
EQ2000317-02

Date acquired: 8/4/2020 1:41:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200804\20200804_016.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000317-02	8/4/2020 1:41:45 PM	3404	0.11682	20200804_016	2.882	25.0000	1.0000	37
Sodium Perchlorate-18O4_IS	EQ2000317-02	8/4/2020 1:41:45 PM	240798	1.00000	20200804_016	2.880	25.0000	1.0000	37

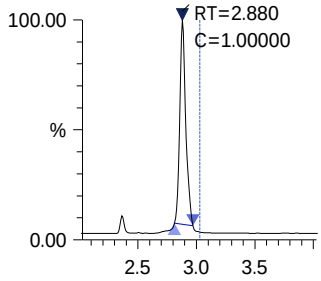
Perchlorate

Conc 0.11682
Area 3404
Q 99.00>83.00 (-) 1.08e3



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 240798
ISTD 107.00>89.00 (-) 6.97e4



ALS Group Houston

Method File: I:\LCMS01\DATA\20200804\20200804.lcm

EQ2000317-03

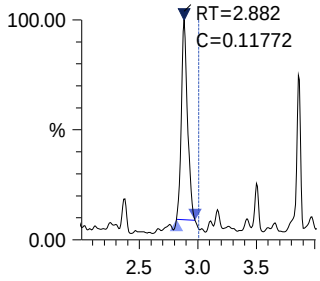
Date acquired: 8/4/2020 1:49:40 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200804\20200804_017.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000317-03	8/4/2020 1:49:40 PM	3442	0.11772	20200804_017	2.882	25.0000	1.0000	38
Sodium Perchlorate-18O4_IS	EQ2000317-03	8/4/2020 1:49:40 PM	241552	1.00000	20200804_017	2.880	25.0000	1.0000	38

Perchlorate

Conc 0.11772
Area 3442

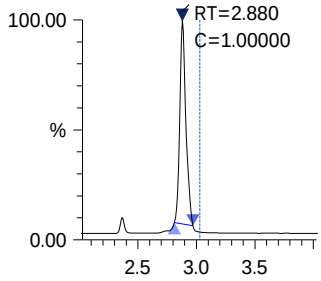
Q 99.00>83.00 (-) 1.01e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 241552

ISTD 107.00>89.00 (-) 6.90e4



ALS Group Houston

Method File: I:\LCMS01\DATA\20200804\20200804.lcm

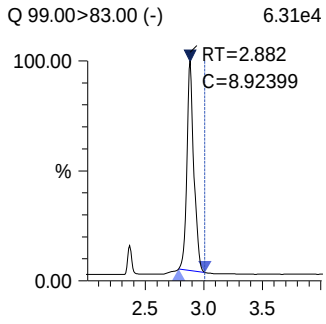
PERCHLORATE7

Date acquired: 8/4/2020 1:57:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200804\20200804_018.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	8/4/2020 1:57:33 PM	252424	8.92399	20200804_018	2.882	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	8/4/2020 1:57:33 PM	233712	1.00000	20200804_018	2.880	25.0000	1.0000	4

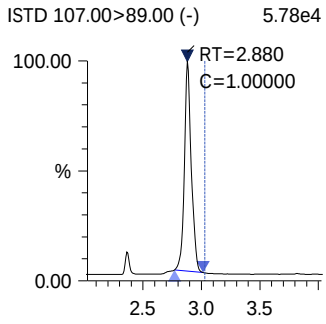
Perchlorate

Conc 8.92399
Area 252424



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 233712



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August 06, 2020

Analytical Report for Service Request No: K2006221

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: ALS Houston DOD TOC

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 23, 2020
For your reference, these analyses have been assigned our service request number **K2006221.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: ALS Houston DOD TOC
Sample Matrix: Ground Water

Service Request: K2006221
Date Received: 07/23/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Five ground water samples were received for analysis at ALS Environmental on 07/23/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 08/06/2020

Chain of Custody

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K2004821

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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14347**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20070985
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20070985-02**	**16IW20-200721**	**Groundwater**	**21 Jul 2020 08:10**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			05 Aug 2020
2.	**HS20070985-03**	**16WW40-200721**	**Groundwater**	**21 Jul 2020 09:00**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			05 Aug 2020
3.	**HS20070985-04**	**16WW12-200721**	**Groundwater**	**21 Jul 2020 09:50**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			05 Aug 2020
4.	**HS20070985-05**	**16WW25-200721**	**Groundwater**	**21 Jul 2020 10:40**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			05 Aug 2020
5.	**HS20070985-06**	**16WW26-200721**	**Groundwater**	**21 Jul 2020 11:30**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			05 Aug 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14347**

Relinquished By: J. [illegible] Date/Time: 7/22/20 18:00

Received By: [signature] Date/Time: 7/23/20 0930

Cooler ID(s): Temperature(s):

PC KL

Cooler Receipt and Preservation Form

Client HH - Houston Service Request K20 060281

Received: 7/23/20 Opened: 7/23/20 By: BR Unloaded: 7/23/20 By: BR

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID (NA)	Tracking Number NA	Filed
1.2	—	—	—	—	12101	14347	189188780437	

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2006221
Project:	ALS Houston DOD TOC	**Date Collected:**	07/21/20
Sample Matrix:	Ground Water	**Date Received:**	07/23/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16IW20-200721	K2006221-001	**8.40**	0.50	0.20	0.07	1	07/29/20 09:38	
16WW40-200721	K2006221-002	**8.66**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW12-200721	K2006221-003	**8.72**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW25-200721	K2006221-004	**27.9**	0.50	0.20	0.07	1	08/05/20 17:56	
16WW26-200721	K2006221-005	**3.05**	0.50	0.20	0.07	1	08/05/20 17:56	
Method Blank	K2006221-MB1	ND U	0.50	0.20	0.07	1	07/29/20 09:38	
Method Blank	K2006221-MB2	ND U	0.50	0.20	0.07	1	08/05/20 17:56	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006221
Project	ALS Houston DOD TOC	**Date Collected:**	07/21/20
Sample Matrix:	Ground Water	**Date Received:**	07/23/20
		Date Analyzed:	07/29/20

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	16IW20-200721	**Units:**	mg/L
Lab Code:	K2006221-001	**Basis:**	NA

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K2006221-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.20	0.07	8.40	8.66	8.53	3	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006221
Project:	ALS Houston DOD TOC	**Date Collected:**	07/21/20
Sample Matrix:	Ground Water	**Date Received:**	07/23/20
		Date Analyzed:	07/29/20
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	16IW20-200721	**Units:**	mg/L
Lab Code:	K2006221-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K2006221-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	8.40	31.8	25.0	94	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006221
Project:	ALS Houston DOD TOC	**Date Analyzed:**	07/29/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	689102

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2006221-LCS1	24.5	25.0	98	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006221
Project:	ALS Houston DOD TOC	**Date Analyzed:**	08/05/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	689991

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2006221-LCS2	26.2	25.0	105	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2006221
Project: ALS Houston DOD TOC

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	689102	KQ2010477-03	07/29/20 09:38	25.0	24.8	99	90-110
CCV2	689102	KQ2010477-04	07/29/20 09:38	25.0	24.9	100	90-110
CCV3	689991	KQ2010844-05	08/05/20 17:56	25.0	25.5	102	90-110
CCV4	689991	KQ2010844-06	08/05/20 17:56	25.0	25.8	103	90-110
CCV5	689991	KQ2010844-07	08/05/20 17:56	25.0	25.3	101	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2006221
Project: ALS Houston DOD TOC

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	689102	KQ2010477-05	07/29/20 09:38	0.50	0.20	0.07	ND	U
CCB2	689102	KQ2010477-06	07/29/20 09:38	0.50	0.20	0.07	ND	U
CCB3	689991	KQ2010844-08	08/05/20 17:56	0.50	0.20	0.07	ND	U
CCB4	689991	KQ2010844-09	08/05/20 17:56	0.50	0.20	0.07	ND	U
CCB5	689991	KQ2010844-10	08/05/20 17:56	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original (6030) 6143 6105 6107 5817 5819 5818 5714 6187 6221(1)

Tier: IV IV IV IV IV IV IV IV I IV

Date Analyzed: 7/29/20

Analyst: MK

Run # 688906/688907/688931 689215/689102

Analysis: TOC/DOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

Final Approved by: _____ Date: 7/31/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 689102 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006187-002	Carbon, Total Organic	N/A		Drinking Water	0.36 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/29/20 09:38:00	N	I
K2006221-001	Carbon, Total Organic	N/A		Ground Water	8.40 mg/L	10 mL	8.40 mg/L	1	0.07	0.50			7/29/20 09:38:00	N	IV
KQ2010477-01	Carbon, Total Organic	DUP	K2006221-001	Ground Water	8.66 mg/L	10 mL	8.66 mg/L	1	0.07	0.50		3	7/29/20 09:38:00	N	IV
KQ2010477-02	Carbon, Total Organic	MS	K2006221-001	Ground Water	31.83 mg/L	10 mL	31.8 mg/L	1	0.07	0.50	94		7/29/20 09:38:00	N	IV
KQ2010477-03	Carbon, Total Organic	CCV		Drinking Water	24.80 mg/L	10 mL	24.8 mg/L	1					7/29/20 09:38:00	N	I
KQ2010477-04	Carbon, Total Organic	CCV		Drinking Water	24.89 mg/L	10 mL	24.9 mg/L	1					7/29/20 09:38:00	N	I
KQ2010477-05	Carbon, Total Organic	CCB		Drinking Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/29/20 09:38:00	N	I
KQ2010477-06	Carbon, Total Organic	CCB		Drinking Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/29/20 09:38:00	N	I
KQ2010477-07	Carbon, Total Organic	LCS		Drinking Water	24.54 mg/L	10 mL	24.5 mg/L	1	0.07	0.50	98		7/29/20 09:38:00	N	I
KQ2010477-08	Carbon, Total Organic	MB		Drinking Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/29/20 09:38:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 688906 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006030-001	Carbon, Total Organic	N/A		Water	0.74 mg/L	10 mL	0.74 mg/L	1	0.07	0.50			7/29/20 09:38:00	N	IV
K2006030-002	Carbon, Total Organic	N/A		Water	1.11 mg/L	10 mL	1.11 mg/L	1	0.07	0.50			7/29/20 09:38:00	N	IV
K2006105-001	Carbon, Total Organic	N/A		Water	0.98 mg/L	10 mL	0.98 mg/L	1	0.07	0.50			7/29/20 09:38:00	N	IV
K2006105-002	Carbon, Total Organic	N/A		Water	0.73 mg/L	10 mL	0.73 mg/L	1	0.07	0.50			7/29/20 09:38:00	N	IV
K2006105-003	Carbon, Total Organic	N/A		Water	0.49 mg/L	10 mL	0.49 mg/L J	1	0.07	0.50			7/29/20 09:38:00	N	IV
K2006107-001	Carbon, Total Organic	N/A		Water	0.38 mg/L	10 mL	0.38 mg/L J	1	0.07	0.50			7/29/20 09:38:00	N	IV
K2006107-002	Carbon, Total Organic	N/A		Water	1.44 mg/L	10 mL	1.44 mg/L	1	0.07	0.50			7/29/20 09:38:00	N	IV
K2006143-001	Carbon, Total Organic	N/A		Water	0.38 mg/L	10 mL	0.38 mg/L J	1	0.07	0.50			7/29/20 09:38:00	N	IV
KQ2010473-01	Carbon, Total Organic	DUP	K2006030-001	Water	0.71 mg/L	10 mL	0.71 mg/L	1	0.07	0.50		4	7/29/20 09:38:00	N	IV
KQ2010473-02	Carbon, Total Organic	MS	K2006030-001	Water	28.21 mg/L	10 mL	28.2 mg/L	1	0.07	0.50	110		7/29/20 09:38:00	N	IV
KQ2010473-03	Carbon, Total Organic	LCS		Water	27.12 mg/L	10 mL	27.1 mg/L	1	0.07	0.50	108		7/29/20 09:38:00	N	IV
KQ2010473-04	Carbon, Total Organic	DLCS		Water	27.12 mg/L	10 mL	27.1 mg/L	1	0.07	0.50	108	<1	7/29/20 09:38:00	N	IV
KQ2010473-05	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/29/20 09:38:00	N	IV
KQ2010473-06	Carbon, Total Organic	CCV		Water	25.64 mg/L	10 mL	25.6 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010473-07	Carbon, Total Organic	CCV		Water	25.98 mg/L	10 mL	26.0 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010473-08	Carbon, Total Organic	CCV		Water	25.02 mg/L	10 mL	25.0 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010473-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/29/20 09:38:00	N	IV
KQ2010473-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/29/20 09:38:00	N	IV
KQ2010473-11	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/29/20 09:38:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 688907 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005817-001	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.62 mg/L	10 mL	0.62 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-002	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.64 mg/L	10 mL	1.64 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-003	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.23 mg/L	10 mL	1.23 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-004	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.46 mg/L	10 mL	1.46 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-005	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.81 mg/L	10 mL	0.81 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-006	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	2.22 mg/L	10 mL	2.22 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-007	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	2.63 mg/L	10 mL	2.63 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-008	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.44 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
K2005817-009	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	4.38 mg/L	10 mL	4.38 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-010	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	4.64 mg/L	10 mL	4.64 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-011	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	2.14 mg/L	10 mL	2.14 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005817-012	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.79 mg/L	10 mL	0.79 mg/L	1		0.50			7/29/20 09:38:00	N	IV
KQ2010474-01	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	25.64 mg/L	10 mL	25.6 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010474-02	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	25.02 mg/L	10 mL	25.0 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010474-03	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	25.98 mg/L	10 mL	26.0 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010474-04	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010474-05	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010474-06	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010474-07	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	27.12 mg/L	10 mL	27.1 mg/L	1		0.50	108		7/29/20 09:38:00	N	IV
KQ2010474-08	Carbon, Dissolved Organic (DOC)	DLCS		Pore Water	27.12 mg/L	10 mL	27.1 mg/L	1		0.50	108	<1	7/29/20 09:38:00	N	IV
KQ2010474-09	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010474-10	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.36 mg/L	10 mL	24.3621 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010474-11	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 688931 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005819-001	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	2.12 mg/L	10 mL	2.12 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005819-002	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.38 mg/L	10 mL	1.38 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005819-003	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.60 mg/L	10 mL	0.60 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005819-004	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	2.00 mg/L	10 mL	2.00 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005819-005	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	2.17 mg/L	10 mL	2.17 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005819-006	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.27 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
K2005819-007	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	4.59 mg/L	10 mL	4.59 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005819-008	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.19 mg/L	10 mL	1.19 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005819-009	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	3.67 mg/L	10 mL	3.67 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005819-010	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.39 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
K2005819-011	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	3.31 mg/L	10 mL	3.31 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005819-012	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.54 mg/L	10 mL	1.54 mg/L	1		0.50			7/29/20 09:38:00	N	IV
KQ2010475-01	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.63 mg/L	10 mL	24.6 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010475-02	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.69 mg/L	10 mL	24.7 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010475-03	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.80 mg/L	10 mL	24.8 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010475-04	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010475-05	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010475-06	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010475-07	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010475-08	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	25.57 mg/L	10 mL	25.6 mg/L	1		0.50	102		7/29/20 09:38:00	N	IV
KQ2010475-09	Carbon, Dissolved Organic (DOC)	DLCS		Pore Water	25.52 mg/L	10 mL	25.5 mg/L	1		0.50	102	<1	7/29/20 09:38:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 689215 **Method/Testcode:** 9060A/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005714-002	Carbon, Total Organic (TOC)	N/A		Water	7.82 mg/L	10 mL	78.2 mg/L	10		5.0			7/29/20 09:38:00	N	I
K2005818-001	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	8.57 mg/L	10 mL	8.57 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005818-002	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	1.73 mg/L	10 mL	1.73 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005818-003	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.29 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
K2005818-004	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.15 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
K2005818-005	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	2.74 mg/L	10 mL	2.74 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005818-006	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	3.38 mg/L	10 mL	3.38 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005818-007	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	2.64 mg/L	10 mL	2.64 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005818-008	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	2.43 mg/L	10 mL	2.43 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005818-009	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	3.00 mg/L	10 mL	3.00 mg/L	1		0.50			7/29/20 09:38:00	N	IV
K2005818-010	Carbon, Dissolved Organic (DOC)	N/A		Pore Water	0.42 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
K2005818-011	Carbon, Dissolved Organic (DOC)	N/A		Aqueous Equip Blank	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
K2005818-012	Carbon, Dissolved Organic (DOC)	N/A		Aqueous Equip Blank	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010478-01	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.36 mg/L	10 mL	24.4 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010478-02	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.63 mg/L	10 mL	24.6 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010478-03	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.69 mg/L	10 mL	24.7 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010478-04	Carbon, Dissolved Organic (DOC)	CCV		Pore Water	24.80 mg/L	10 mL	24.8 mg/L	1					7/29/20 09:38:00	N	IV
KQ2010478-06	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010478-07	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010478-08	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010478-09	Carbon, Dissolved Organic (DOC)	CCB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010478-11	Carbon, Dissolved Organic (DOC)	LCS		Pore Water	25.57 mg/L	10 mL	25.6 mg/L	1		0.50	102		7/29/20 09:38:00	N	IV
KQ2010478-12	Carbon, Dissolved Organic (DOC)	DLCS		Pore Water	25.52 mg/L	10 mL	25.5 mg/L	1		0.50	102	<1	7/29/20 09:38:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 689215 **Method/Testcode:** 9060A/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2010478-13	Carbon, Dissolved Organic (DOC)	MB		Pore Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	IV
KQ2010478-14	Carbon, Total Organic (TOC)	LCS		Water	25.57 mg/L	10 mL	25.6 mg/L	1		0.50	102		7/29/20 09:38:00	N	I
KQ2010478-15	Carbon, Total Organic (TOC)	DLCS		Water	25.52 mg/L	10 mL	25.5 mg/L	1		0.50	102	<1	7/29/20 09:38:00	N	I
KQ2010478-16	Carbon, Total Organic (TOC)	CCV		Water	24.63 mg/L	10 mL	24.6 mg/L	1					7/29/20 09:38:00	N	I
KQ2010478-17	Carbon, Total Organic (TOC)	CCV		Water	24.69 mg/L	10 mL	24.7 mg/L	1					7/29/20 09:38:00	N	I
KQ2010478-18	Carbon, Total Organic (TOC)	CCV		Water	24.80 mg/L	10 mL	24.8 mg/L	1					7/29/20 09:38:00	N	I
KQ2010478-19	Carbon, Total Organic (TOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	I
KQ2010478-20	Carbon, Total Organic (TOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	I
KQ2010478-21	Carbon, Total Organic (TOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	I
KQ2010478-22	Carbon, Total Organic (TOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1		0.50			7/29/20 09:38:00	N	I

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688906 (6030, 6143, 6105, 6107)
688907 (5817)
688931 (5819)
689215 (5818, 5714)
689102 (6187, 6221)

Schedule: 072920

Version: 19
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/07/31 08:31 - Friday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
4	Sample	K2006030-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2006030-001DUP	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
7	Sample	K2006030-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2006143-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2006105-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2006105-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2006105-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2006107-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2006107-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2006030-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2005817-001	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
16	Sample	K2005817-002	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
17	Sample	K2005817-003	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
18	Sample	K2005817-004	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
19	Sample	K2005817-005	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
22	Sample	K2005817-006	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
23	Sample	K2005817-007	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
24	Sample	K2005817-008	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
25	Sample	K2005817-009	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
26	Sample	K2005817-010	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
27	Sample	K2005817-011	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
28	Sample	K2005817-012	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2005818-001	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
30	Sample	K2005818-002	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
31	Sample	K2005818-003	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
32	Sample	K2005818-004	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
33	Sample	K2005818-005	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
34	Sample	K2005818-006	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
35	Sample	K2005818-007	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
36	Sample	K2005818-008	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
37	Sample	K2005818-009	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
38	Sample	K2005818-010	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 072920

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
41	Sample	K2005818-011	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
42	Sample	K2005818-012	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
43	Sample	K2005819-001	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
44	Sample	K2005819-002	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
45	Sample	K2005819-003	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
46	Sample	K2005819-004	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
47	Sample	K2005819-005	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K2005819-006	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
49	Sample	K2005819-007	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
50	Sample	K2005819-008	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
51	Sample	K2005819-009	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
52	Sample	K2005819-010	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
53	Sample	K2005819-011	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
54	Sample	K2005819-012	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
55	Sample	K2005714-002 10X	CAS_salt_010711 (CAS_salt_010711)	4	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
56	Sample	MB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
57	Sample	K2006187-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
58	Sample	K2006221-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
59	Sample	K2006221-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K2006221-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
13	Sample		CAS_salt_010711 (CAS_salt_010711)	1	False	Ready
					False	

Fusion Report - 072920
Wednesday, July 29, 2020 07:44 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/07/31 09:38 - Friday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	072920	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v1) Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v10) Fusion1 (Fusion1) (v11) Fusion1 (Fusion1) (v17) Fusion1 (Fusion1) (v18) Fusion1 (Fusion1) (v19)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/07/29 07:44

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	10.81	25.13	14.31	49.56	05:24
2	TC Clean	10.36	24.05	13.69	50.02	03:57
3	TC Clean	3.97	17.80	13.83	50.16	03:44
4	TC Clean	5.48	19.96	14.47	50.16	03:46

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/07/29 08:05

Rep	Base	Adjusted				

#	Analysis Type	(Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.05	13.50	13.55	49.60	05:28
2	TC Clean	9.74	23.72	13.98	50.05	04:05
3	TC Clean	2.88	16.88	14.00	50.03	03:48
4	TC Clean	2.15	15.81	13.66	49.97	03:50

Sample Type: Clean From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/07/29 08:27

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.16	13.20	13.36	49.38	05:23
2	TC Clean	5.40	18.84	13.44	49.95	04:05
3	TC Clean	1.73	15.29	13.57	49.97	03:47
4	TC Clean	1.30	14.82	13.52	50.03	03:45

Sample Type: Blank (Creating v1421) From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/07/29 08:49

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.28	12.98	13.26	49.53	05:14
2	TC Clean	4.41	17.82	13.41	49.93	04:03
3	TC Clean	1.43	14.63	13.20	50.09	03:50
4	TC Clean	1.33	14.68	13.35	49.90	03:46
5	Reagent Blank	5.37	18.69	13.32	49.93	05:07
6	Acid Blank	0.58	13.66	13.08	49.46	05:31

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.1071 ppm	0.0000 ppm	0.0000%	2020/07/29 09:23

Rep	Base			Adjusted		Baseline	Pressure	Run

#	Analysis Type	ppm	µg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	0.1071	1.0710	10.01	23.31	13.30	50.10	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.6411 ppm (PASS)	0.0000 ppm	0%	2020/07/29 09:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.6411	256.4111	189.76	203.13	13.37	50.13	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/29 09:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.87	21.08	13.21	50.10	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/29 10:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.80	19.99	13.19	50.14	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	27.1171 ppm (PASS)	0.0000 ppm	0%	2020/07/29 10:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	27.1171	271.1713	200.11	213.39	13.28	50.07	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	27.1225 ppm (PASS)	0.0000 ppm	0%	2020/07/29 10:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	27.1225	271.2254	200.15	213.39	13.24	50.05	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	ICS	4.0577 ppm	0.0000 ppm	0.0000%	2020/07/29 10:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0577	40.5773	37.72	50.89	13.17	50.08	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	K2006030-001	0.7435 ppm	0.0128 ppm	1.7200%	2020/07/29 11:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7526	7.5259	14.54	27.57	13.03	50.01	10:27
2	TOC	0.7345	7.3448	14.41	27.52	13.11	50.02	10:25

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K2006030-001DUP	0.7125 ppm	0.0042 ppm	0.5900%	2020/07/29 11:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7095	7.0954	14.24	27.48	13.24	50.05	10:27
2	TOC	0.7155	7.1553	14.28	27.36	13.08	50.02	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	ICS	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/29 12:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.44	21.43	12.99	49.98	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K2006030-002	1.1060 ppm	0.0244 ppm	2.2100%	2020/07/29 12:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1232	11.2323	17.14	30.24	13.10	49.99	10:27
2	TOC	1.0887	10.8873	16.90	30.01	13.11	49.97	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2006143-001	0.3840 ppm	0.0112 ppm	2.9100%	2020/07/29 12:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3761	3.7610	11.90	24.92	13.02	49.95	10:25
2	TOC	0.3919	3.9192	12.01	25.13	13.12	49.98	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

9	TOC	K2006105-001	0.9825 ppm	0.0086 ppm	0.8700%	2020/07/29 13:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9885	9.8852	16.20	29.16	12.96	49.93	10:27
2	TOC	0.9764	9.7640	16.11	29.20	13.09	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.9832 ppm (PASS)	0.0000 ppm	0%	2020/07/29 13:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.9832	259.8324	192.16	205.14	12.98	49.93	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/29 13:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.49	19.73	13.24	49.91	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
	10	TOC	K2006105-002	0.7346 ppm	0.0504 ppm	6.8600%	2020/07/29 14:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6990	6.9899	14.16	27.26	13.10	49.90	10:26
2	TOC	0.7703	7.7027	14.66	27.75	13.09	49.91	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K2006105-003	0.4922 ppm	0.0061 ppm	1.2500%	2020/07/29 14:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4966	4.9656	12.74	25.84	13.09	49.89	10:27
2	TOC	0.4879	4.8786	12.68	25.79	13.11	49.91	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	K2006107-001	0.3775 ppm	0.0207 ppm	5.4700%	2020/07/29 15:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3628	3.6284	11.81	24.93	13.13	49.89	10:27
2	TOC	0.3921	3.9207	12.01	25.26	13.25	49.89	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	K2006107-002	1.4353 ppm	0.0458 ppm	3.1900%	2020/07/29 15:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4029	14.0293	19.10	32.22	13.12	49.92	10:31
2	TOC	1.4676	14.6765	19.56	32.80	13.24	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	K2006030-001MS	28.2057 ppm	0.0917 ppm	0.3300%	2020/07/29 16:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2706	282.7059	207.57	220.93	13.36	49.92	10:31
2	TOC	28.1409	281.4087	206.66	220.04	13.37	49.94	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K2005817-001	0.6205 ppm	0.0756 ppm	12.1900%	2020/07/29 16:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7316	7.3163	14.39	27.76	13.36	49.97	10:26
2	TOC	0.6018	6.0177	13.48	26.76	13.28	50.01	10:25
3	TOC	0.5842	5.8423	13.36	26.82	13.46	49.93	10:26
4	TOC	0.5644	5.6442	13.22	26.79	13.57	49.87	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K2005817-002	1.6374 ppm	0.0273 ppm	1.6700%	2020/07/29 17:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6500	16.4997	20.83	33.95	13.11	49.85	10:25
2	TOC	1.6464	16.4641	20.81	33.90	13.09	49.89	10:26
3	TOC	1.6562	16.5625	20.88	34.09	13.21	49.90	10:25
4	TOC	1.5968	15.9680	20.46	33.66	13.20	49.92	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K2005817-003	1.2258 ppm	0.0394 ppm	3.2200%	2020/07/29 18:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2622	12.6222	18.11	31.39	13.27	49.92	10:27
2	TOC	1.2381	12.3813	17.95	31.20	13.26	49.93	10:26
3	TOC	1.2329	12.3286	17.91	31.16	13.25	49.94	10:29
4	TOC	1.1698	11.6985	17.47	30.91	13.45	49.97	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K2005817-004	1.4604 ppm	0.0132 ppm	0.9000%	2020/07/29 19:16

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	1.4655	14.6551	19.54	32.95	13.41	50.01	10:26
2	TOC	1.4457	14.4569	19.40	32.67	13.27	50.04	10:24
3	TOC	1.4544	14.5439	19.46	32.78	13.32	50.08	10:25
4	TOC	1.4759	14.7591	19.61	32.93	13.32	50.10	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K2005817-005	0.8064 ppm	0.0226 ppm	2.8000%	2020/07/29 20:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8016	8.0163	14.88	28.17	13.28	50.13	10:25
2	TOC	0.8319	8.3185	15.10	28.41	13.32	50.18	10:30
3	TOC	0.7781	7.7811	14.72	28.21	13.49	50.19	10:29
4	TOC	0.8142	8.1417	14.97	28.45	13.48	50.15	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.0187 ppm (PASS)	0.0000 ppm	0%	2020/07/29 21:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0187	250.1872	185.39	198.73	13.34	50.27	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/29 21:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.54	19.89	13.35	50.18	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D

Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample — From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/29 21:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.04	19.51	13.47	50.18	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	26.0940 ppm (PASS)	0.0000 ppm	0%	2020/07/29 21:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.0940	260.9401	192.94	206.24	13.30	50.26	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Check Standard --> LCS — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	26.1117 ppm (PASS)	0.0000 ppm	0%	2020/07/29 22:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.1117	261.1169	193.06	206.45	13.39	50.17	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample — From Schedule Version 10

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
◆	22	TOC	K2005817-006	2.2237 ppm	0.0401 ppm	1.8000%	2020/07/29 22:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2655	22.6553	25.15	38.64	13.49	50.16	10:26
2	TOC	2.1710	21.7101	24.49	37.92	13.43	50.18	10:25
3	TOC	2.2402	22.4015	24.98	38.48	13.51	50.11	10:24
4	TOC	2.2181	22.1806	24.82	38.24	13.42	50.22	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K2005817-007	2.6264 ppm	0.0399 ppm	1.5200%	2020/07/29 23:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6218	26.2177	27.65	41.26	13.61	50.11	10:26
2	TOC	2.5787	25.7872	27.35	40.90	13.55	50.17	10:26
3	TOC	2.6762	26.7623	28.03	41.61	13.57	50.10	10:28
4	TOC	2.6288	26.2876	27.70	41.27	13.57	50.12	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K2005817-008	0.4391 ppm	0.0341 ppm	7.7600%	2020/07/30 00:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4072	4.0718	12.12	25.75	13.64	50.25	10:25
2	TOC	0.4867	4.8672	12.68	25.94	13.27	50.20	10:27
3	TOC	0.4253	4.2528	12.24	25.61	13.36	50.29	10:26
4	TOC	0.4374	4.3740	12.33	25.79	13.46	50.16	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2005817-009	4.3771 ppm	0.0387 ppm	0.8800%	2020/07/30 01:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.3892	43.8917	40.05	53.57	13.52	50.24	10:27
2	TOC	4.3510	43.5097	39.78	53.23	13.45	50.17	10:24
3	TOC	4.3420	43.4199	39.72	53.11	13.40	50.12	10:27
4	TOC	4.4264	44.2638	40.31	53.70	13.39	50.20	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC)	CAS_salt_010711	CAS_salt_010711

(v1421) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K2005817-010	4.6431 ppm	0.0271 ppm	0.5800%	2020/07/30 02:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6118	46.1184	41.61	54.99	13.38	50.15	10:29
2	TOC	4.6451	46.4506	41.84	55.39	13.54	50.13	10:28
3	TOC	4.6776	46.7756	42.07	55.64	13.57	50.11	10:29
4	TOC	4.6378	46.3779	41.79	55.38	13.58	50.06	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K2005817-011	2.1429 ppm	0.0230 ppm	1.0700%	2020/07/30 02:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1673	21.6731	24.46	38.22	13.76	50.24	10:29
2	TOC	2.1203	21.2026	24.13	37.52	13.39	50.13	10:25
3	TOC	2.1573	21.5733	24.39	37.92	13.52	50.10	10:30
4	TOC	2.1265	21.2654	24.18	37.60	13.43	50.06	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K2005817-012	0.7944 ppm	0.0476 ppm	5.9900%	2020/07/30 03:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8651	8.6507	15.33	28.61	13.28	50.06	10:26
2	TOC	0.7658	7.6585	14.63	28.10	13.47	50.03	10:24
3	TOC	0.7807	7.8067	14.74	28.19	13.46	50.19	10:27
4	TOC	0.7661	7.6613	14.64	28.05	13.42	50.10	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.3621 ppm (PASS)	0.0000 ppm	0%	2020/07/30 04:49

	Base		Rep							Run

Pos	Analysis Type	ID	#	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Time
B	TOC	25 ppm	1	24.3621	243.6211	180.79	194.43	13.65	50.06	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/30 05:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.09	19.62	13.53	50.03	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2005818-001	8.5741 ppm	0.0662 ppm	0.7700%	2020/07/30 05:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.5546	85.5464	69.27	82.91	13.64	50.04	10:27
2	TOC	8.4902	84.9020	68.82	82.37	13.55	50.04	10:25
3	TOC	8.6399	86.3988	69.87	83.33	13.46	50.01	10:26
4	TOC	8.6118	86.1180	69.67	83.26	13.59	50.00	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	K2005818-002	1.7310 ppm	0.0280 ppm	1.6200%	2020/07/30 06:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7659	17.6587	21.65	35.14	13.50	49.99	10:26
2	TOC	1.7401	17.4007	21.47	34.95	13.49	50.01	10:27
3	TOC	1.7161	17.1612	21.30	34.93	13.63	50.02	10:29
4	TOC	1.7020	17.0201	21.20	34.87	13.67	49.99	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC)	CAS_salt_010711	CAS_salt_010711

(v1421) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K2005818-003	0.2913 ppm	0.0364 ppm	12.4800%	2020/07/30 07:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3432	3.4317	11.67	25.03	13.36	49.98	10:28
2	TOC	0.2899	2.8986	11.29	24.87	13.58	50.00	10:29
3	TOC	0.2642	2.6420	11.11	24.63	13.51	50.00	10:29
4	TOC	0.2680	2.6804	11.14	24.58	13.44	50.01	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2005818-004	0.1533 ppm	0.0324 ppm	21.1300%	2020/07/30 08:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1446	1.4459	10.28	23.70	13.42	50.04	10:26
2	TOC	0.1456	1.4559	10.28	23.61	13.32	50.01	10:25
3	TOC	0.1236	1.2364	10.13	23.46	13.33	49.97	10:25
4	TOC	0.1995	1.9948	10.66	23.95	13.29	50.05	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2005818-005	2.7415 ppm	0.0067 ppm	0.2400%	2020/07/30 09:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7317	27.3168	28.42	41.53	13.11	49.99	10:25
2	TOC	2.7429	27.4295	28.50	41.81	13.31	49.97	10:25
3	TOC	2.7459	27.4594	28.52	41.75	13.22	49.97	10:25
4	TOC	2.7455	27.4551	28.52	41.90	13.38	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K2005818-006	3.3817 ppm	0.0778 ppm	2.3000%	2020/07/30 09:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.4666	34.6656	33.58	46.72	13.14	49.99	10:29
2	TOC	3.3457	33.4567	32.73	45.96	13.23	50.01	10:27
3	TOC	3.4225	34.2251	33.27	46.27	13.00	50.02	10:25
4	TOC	3.2922	32.9221	32.36	45.81	13.46	50.06	10:24

Sample Type: Sample From Schedule Version 11

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K2005818-007	2.6392 ppm	0.0337 ppm	1.2800%	2020/07/30 10:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6730	26.7295	28.01	41.28	13.27	50.02	10:26
2	TOC	2.6252	26.2519	27.68	40.91	13.23	50.00	10:25
3	TOC	2.6598	26.5984	27.92	41.14	13.23	50.04	10:25
4	TOC	2.5987	25.9868	27.49	40.81	13.32	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K2005818-008	2.4316 ppm	0.0919 ppm	3.7800%	2020/07/30 11:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4812	24.8121	26.67	39.99	13.33	50.04	10:29
2	TOC	2.4339	24.3389	26.33	39.69	13.35	49.97	10:27
3	TOC	2.5094	25.0944	26.86	40.03	13.16	49.97	10:24
4	TOC	2.3020	23.0202	25.41	38.77	13.36	50.01	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K2005818-009	3.0047 ppm	0.0348 ppm	1.1600%	2020/07/30 12:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0416	30.4160	30.60	43.90	13.30	49.94	10:24
2	TOC	2.9622	29.6220	30.04	43.35	13.31	50.00	10:28
3	TOC	2.9924	29.9242	30.25	43.47	13.21	49.97	10:28
4	TOC	3.0225	30.2250	30.46	43.71	13.25	50.02	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 17

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆ 38	TOC	K2005818-010	0.4178 ppm	0.0223 ppm	5.3500%	2020/07/30 13:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4401	4.4011	12.35	25.56	13.21	50.01	10:31
2	TOC	0.4199	4.1987	12.21	25.54	13.33	50.04	10:27
3	TOC	0.3869	3.8694	11.98	25.38	13.40	50.00	10:27
4	TOC	0.4244	4.2443	12.24	25.60	13.36	50.01	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 17

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6308 ppm (PASS)	0.0000 ppm	0%	2020/07/30 14:34

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6308	246.3082	182.67	195.82	13.14	49.99	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 17

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/30 14:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.97	19.28	13.31	50.07	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 17

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/30 15:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0000	0.0000	5.58	19.09	13.51	50.01	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 17

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.5663 ppm (PASS)	0.0000 ppm	0%	2020/07/30 15:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.5663	255.6627	189.24	202.53	13.29	50.04	10:36

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Check Standard --> LCS From Schedule Version 17

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.5171 ppm (PASS)	0.0000 ppm	0%	2020/07/30 15:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.5171	255.1709	188.89	202.18	13.29	50.09	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 17

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	41	TOC	K2005818-011	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/30 15:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.18	20.53	13.35	50.03	10:27
2	TOC	0.0000	0.0000	6.48	19.82	13.34	50.08	10:27
3	TOC	0.0000	0.0000	6.60	19.98	13.38	50.07	10:26
4	TOC	0.0000	0.0000	6.50	19.96	13.46	50.06	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC)	CAS_salt_010711	CAS_salt_010711

(v1421) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	42	TOC	K2005818-012	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/30 16:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.26	19.69	13.43	50.10	10:27
2	TOC	0.0000	0.0000	6.73	19.73	13.00	50.07	10:26
3	TOC	0.0000	0.0000	6.30	19.73	13.43	50.06	10:25
4	TOC	0.0000	0.0000	6.50	19.71	13.21	50.09	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	43	TOC	K2005819-001	2.1241 ppm	0.0217 ppm	1.0200%	2020/07/30 17:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0936	20.9361	23.95	37.23	13.28	50.02	10:30
2	TOC	2.1241	21.2411	24.16	37.57	13.41	50.04	10:27
3	TOC	2.1362	21.3623	24.25	37.33	13.09	50.04	10:26
4	TOC	2.1425	21.4250	24.29	37.49	13.20	50.01	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	44	TOC	K2005819-002	1.3780 ppm	0.0191 ppm	1.3800%	2020/07/30 18:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3941	13.9409	19.04	32.34	13.30	50.01	10:27
2	TOC	1.3706	13.7057	18.87	32.10	13.23	49.98	10:27
3	TOC	1.3929	13.9295	19.03	32.25	13.22	49.99	10:24
4	TOC	1.3545	13.5446	18.76	32.12	13.36	50.09	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	45	TOC	K2005819-003	0.5970 ppm	0.0214 ppm	3.5900%	2020/07/30 19:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6097	6.0975	13.54	26.84	13.30	50.18	10:27
2	TOC	0.5998	5.9977	13.47	26.85	13.39	50.22	10:29
3	TOC	0.5658	5.6584	13.23	26.75	13.52	50.13	10:25
4	TOC	0.6125	6.1246	13.56	26.84	13.28	50.16	10:27

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	K2005819-004	1.9965 ppm	0.0336 ppm	1.6800%	2020/07/30 20:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9599	19.5989	23.01	36.43	13.42	50.11	10:28
2	TOC	1.9761	19.7614	23.12	36.48	13.36	50.07	10:27
3	TOC	2.0226	20.2261	23.45	36.65	13.20	50.06	10:25
4	TOC	2.0272	20.2718	23.48	36.63	13.15	50.03	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	K2005819-005	2.1686 ppm	0.0169 ppm	0.7800%	2020/07/30 21:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1684	21.6845	24.47	37.84	13.37	49.92	10:27
2	TOC	2.1905	21.9054	24.63	37.77	13.14	50.04	10:25
3	TOC	2.1493	21.4935	24.34	37.58	13.24	49.91	10:25
4	TOC	2.1660	21.6602	24.46	37.74	13.28	49.84	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 17

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6864 ppm (PASS)	0.0000 ppm	0%	2020/07/30 22:17

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6864	246.8642	183.06	196.10	13.04	49.77	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 17

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0	0 / infinity	0.0000	0.0000	0%	2020/07/30 22:31

					ppm]	(NA / NA)	ppm (PASS)	ppm		

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.07	19.27	13.21	49.89	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 17

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC	K2005819-006	0.2688 ppm	0.0150 ppm	5.5700%	2020/07/30 22:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2725	2.7246	11.17	24.20	13.03	49.83	10:26
2	TOC	0.2658	2.6576	11.13	24.06	12.93	49.81	10:25
3	TOC	0.2864	2.8643	11.27	24.09	12.82	49.79	10:27
4	TOC	0.2504	2.5037	11.02	24.23	13.21	49.78	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC	K2005819-007	4.5920 ppm	0.0314 ppm	0.6800%	2020/07/30 23:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6056	46.0557	41.57	54.72	13.15	49.91	10:30
2	TOC	4.5801	45.8005	41.39	54.47	13.08	49.81	10:26
3	TOC	4.5550	45.5496	41.21	54.49	13.28	49.96	10:26
4	TOC	4.6275	46.2752	41.72	54.79	13.07	49.86	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	50	TOC	K2005819-008	1.1908 ppm	0.0269 ppm	2.2600%	2020/07/31 00:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2260	12.2602	17.86	31.13	13.26	50.04	10:29
2	TOC	1.1971	11.9708	17.66	30.96	13.30	49.91	10:24
3	TOC	1.1669	11.6685	17.45	30.59	13.14	50.03	10:30
4	TOC	1.1731	11.7313	17.49	30.85	13.36	50.06	10:26

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K2005819-009	3.6727 ppm	0.0556 ppm	1.5100%	2020/07/31 01:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.6841	36.8409	35.10	48.43	13.32	50.02	10:29
2	TOC	3.7460	37.4596	35.54	49.01	13.47	50.13	10:25
3	TOC	3.6398	36.3976	34.79	48.34	13.54	50.05	10:28
4	TOC	3.6209	36.2094	34.66	48.18	13.52	50.12	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K2005819-010	0.3922 ppm	0.0236 ppm	6.0100%	2020/07/31 02:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4217	4.2172	12.22	25.59	13.37	50.08	10:27
2	TOC	0.3691	3.6912	11.85	25.42	13.57	50.13	10:32
3	TOC	0.3780	3.7795	11.91	25.55	13.64	50.10	10:26
4	TOC	0.4001	4.0005	12.07	25.37	13.30	50.07	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K2005819-011	3.3106 ppm	0.0404 ppm	1.2200%	2020/07/31 03:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2527	32.5272	32.08	45.55	13.47	50.11	10:26
2	TOC	3.3422	33.4225	32.71	46.19	13.48	50.14	10:29
3	TOC	3.3340	33.3398	32.65	46.01	13.36	50.10	10:24
4	TOC	3.3135	33.1345	32.50	46.01	13.50	50.08	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K2005819-012	1.5351 ppm	0.0612 ppm	3.9800%	2020/07/31 04:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4712	14.7121	19.58	33.12	13.54	50.10	10:28
2	TOC	1.6185	16.1847	20.61	34.15	13.53	50.02	10:26
3	TOC	1.5251	15.2510	19.96	33.45	13.49	50.14	10:24

4	TOC	1.5258	15.2581	19.96	33.13	13.17	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	55	TOC	K2005714-002 10X	7.8157 ppm	0.0662 ppm	0.8500%	2020/07/31 05:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.7328	77.3280	63.50	76.91	13.41	50.18	10:27
2	TOC	7.7930	77.9296	63.93	77.31	13.39	50.07	10:26
3	TOC	7.8788	78.7878	64.53	77.94	13.42	50.01	10:26
4	TOC	7.8581	78.5811	64.38	77.68	13.30	50.10	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 17

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.7986 ppm (PASS)	0.0000 ppm	0%	2020/07/31 06:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7986	247.9861	183.85	197.17	13.32	50.02	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 17

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/31 06:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.71	19.08	13.37	50.10	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 17

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	56	TOC	MB	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/31 06:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.59	18.81	13.22	50.06	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 17

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.5403 ppm (PASS)	0.0000 ppm	0%	2020/07/31 06:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.5403	245.4030	182.04	195.43	13.39	49.99	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 17

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	K2006187-002	0.3572 ppm	0.0432 ppm	12.1100%	2020/07/31 07:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3878	3.8779	11.98	25.38	13.39	50.09	10:25
2	TOC	0.3266	3.2663	11.55	24.91	13.36	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	K2006221-001	8.4009 ppm	0.2348 ppm	2.7900%	2020/07/31 07:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.5669	85.6690	69.36	82.88	13.52	50.16	10:29
2	TOC	8.2349	82.3488	67.03	80.62	13.59	50.02	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC)	CAS_salt_010711	CAS_salt_010711

(v1421) (v4) (v38)

Sample Type: Sample From Schedule Version 18

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K2006221-001D	8.6556 ppm	0.2974 ppm	3.4400%	2020/07/31 08:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.8658	88.6583	71.45	84.97	13.52	50.15	10:27
2	TOC	8.4453	84.4530	68.50	81.90	13.40	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 19

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	K2006221-001MS	31.8335 ppm	0.0513 ppm	0.1600%	2020/07/31 08:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.8698	318.6982	232.82	246.24	13.41	50.10	10:30
2	TOC	31.7973	317.9726	232.31	245.85	13.54	50.01	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2607 (IC) (v1421)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 19

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8850 ppm (PASS)	0.0000 ppm	0%	2020/07/31 09:02

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8850	248.8500	184.46	197.69	13.24	50.03	10:36

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 19

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/31 09:17

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.96	19.30	13.34	50.07	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1420	6.5243	19.2900	0.0000	0.0000	0.0000	2020/07/28 14:12	Fusion1 (Fusion1)
v1421	1.7893	0.5830	0.0000	0.0000	0.0000	2020/07/29 09:23	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v38	Calibration curve formula:	TOC: y = 7.015x + 9.892
Ver Creation:	2020/06/13 16:40	r^2 value:	TOC: r^2 = 0.99974
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	9.5750	0.0000		2020/06/13 15:13
0.500 ppm	12.9010	0.5000		2020/06/13 15:28
1.0 ppm	15.6320	1.0000		2020/06/13 15:42
5.0 ppm	43.2510	5.0000		2020/06/13 15:56
10 ppm	82.4040	10.0000		2020/06/13 16:11
25 ppm	188.6880	25.0000		2020/06/13 16:25
50 ppm	358.6500	50.0000		2020/06/13 16:39

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/07/31 09:32

ALS Environmental

StarLIMS Run: 688906/688907/688931/689215/689102

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 19-GEN-8-15-C 50 ppm LCS: 19-GEN-8-31I 25.0 ppm

ICAL Date: 6/16/2020

ICAL ID: 19-GEN-8-22-G

ICS ID: 19-GEN-8-4-G

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 19-GEN-8-15-B 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-32J

21 % H3PO4: 19-GEN-08-32I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: MK	Date Analyzed: 7/29/20
Reviewed By: JL	Date Reviewed: 7/31/20

Work Request # Original (5714) 6036 6044 6221 6224 6047

Tier: 1 IV IV IV IV IV

Date Analyzed: 8/5/20

Analyst: MK Run # 690001 | 689791

Analysis: TDC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

6047 - 2, 5, 6 need to be reanalyzed samples were above curve
1, 3, 4 and 2, 5, 6, will be reanalyzed Due to failing CCB

Final Approved by: [signature] Date: 8/6/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 689991 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005714-002	Carbon, Total Organic	N/A		Water	7.88 mg/L	10 mL	78.8 mg/L	10	0.7	5.0			8/5/20 17:56:00	N	I
K2006036-001	Carbon, Total Organic	N/A		Water	2.13 mg/L	10 mL	2.13 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-001	Carbon, Total Organic	N/A		Water	0.93 mg/L	10 mL	0.93 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-002	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 mL	1.23 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-003	Carbon, Total Organic	N/A		Water	41.98 mg/L	10 mL	42.0 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-004	Carbon, Total Organic	N/A		Water	0.89 mg/L	10 mL	0.89 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-005	Carbon, Total Organic	N/A		Water	2.61 mg/L	10 mL	2.61 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-006	Carbon, Total Organic	N/A		Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-007	Carbon, Total Organic	N/A		Water	15.29 mg/L	10 mL	15.3 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006044-008	Carbon, Total Organic	N/A		Water	8.90 mg/L	10 mL	8.90 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006221-002	Carbon, Total Organic	N/A		Ground Water	8.66 mg/L	10 mL	8.66 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006221-003	Carbon, Total Organic	N/A		Ground Water	8.72 mg/L	10 mL	8.72 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006221-004	Carbon, Total Organic	N/A		Ground Water	27.89 mg/L	10 mL	27.9 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006221-005	Carbon, Total Organic	N/A		Ground Water	3.05 mg/L	10 mL	3.05 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006224-001	Carbon, Total Organic	N/A		Water		10 mL		1					8/5/20 17:56:00	N	IV
KQ2010844-01	Carbon, Total Organic	DUP	K2006044-001	Water	0.97 mg/L	10 mL	0.97 mg/L	1	0.07	0.50		4	8/5/20 17:56:00	N	IV
KQ2010844-02	Carbon, Total Organic	MS	K2006044-001	Water	25.60 mg/L	10 mL	25.6 mg/L	1	0.07	0.50	99		8/5/20 17:56:00	N	IV
KQ2010844-03	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	I
KQ2010844-04	Carbon, Total Organic	LCS		Water	26.18 mg/L	10 mL	26.2 mg/L	1	0.07	0.50	105		8/5/20 17:56:00	N	I
KQ2010844-05	Carbon, Total Organic	CCV		Water	25.48 mg/L	10 mL	25.5 mg/L	1					8/5/20 17:56:00	N	I
KQ2010844-06	Carbon, Total Organic	CCV		Water	25.83 mg/L	10 mL	25.8 mg/L	1					8/5/20 17:56:00	N	I
KQ2010844-07	Carbon, Total Organic	CCV		Water	25.31 mg/L	10 mL	25.3 mg/L	1					8/5/20 17:56:00	N	I
KQ2010844-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	I
KQ2010844-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	I
KQ2010844-10	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690001 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006047-001	Carbon, Total Organic	N/A		Water	3.58 mg/L	10 mL	3.58 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-002.R01	Carbon, Total Organic	N/A		Water	53.68 mg/L	10 mL	53.7 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-003	Carbon, Total Organic	N/A		Water	18.64 mg/L	10 mL	18.6 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-004	Carbon, Total Organic	N/A		Water	5.60 mg/L	10 mL	5.60 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-005.R01	Carbon, Total Organic	N/A		Water	86.41 mg/L	10 mL	86.4 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006047-006.R01	Carbon, Total Organic	N/A		Water	19.58 mg/L	10 mL	19.6 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
K2006224-001	Carbon, Total Organic	N/A		Water	2.02 mg/L	10 mL	2.02 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-01	Carbon, Total Organic	DUP	K2006224-001	Water	2.22 mg/L	10 mL	2.22 mg/L	1	0.07	0.50		10	8/5/20 17:56:00	N	IV
KQ2010845-02	Carbon, Total Organic	MS	K2006224-001	Water	29.24 mg/L	10 mL	29.2 mg/L	1	0.07	0.50	109		8/5/20 17:56:00	N	IV
KQ2010845-03	Carbon, Total Organic	CCV		Water	25.83 mg/L	10 mL	25.8 mg/L	1					8/5/20 17:56:00	N	IV
KQ2010845-04	Carbon, Total Organic	CCV		Water	25.31 mg/L	10 mL	25.3 mg/L	1					8/5/20 17:56:00	N	IV
KQ2010845-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-07	Carbon, Total Organic	CCB		Water	1.08 mg/L	10 mL	1.08 mg/L	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-08	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/5/20 17:56:00	N	IV
KQ2010845-09	Carbon, Total Organic	LCS		Water	25.67 mg/L	10 mL	25.7 mg/L	1	0.07	0.50	103		8/5/20 17:56:00	N	IV
KQ2010845-10	Carbon, Total Organic	CCV		Water	27.16 mg/L	10 mL	27.2 mg/L	1					8/5/20 17:56:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Schedule: 080520

Version: 10
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/08/06 10:08 - Thursday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	k2005714-002 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2006221-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2006221-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2006221-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2006221-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2006044-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2006044-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2006044-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2006044-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2006044-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2006044-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2006044-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2006044-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2006044-007	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2006044-008	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2006036-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K2006224-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K2006224-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K2006224-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2006047-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2006047-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2006047-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2006047-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2006047-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2006047-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
29	Sample	K2006047-002 5X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
30	Sample	K2006047-5 10X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K2006047-6 5X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25ppm_salt [25ppm salt]	CAS_salt (CAS_salt_0811a)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

NR

Fusion Report - 080520
Wednesday, August 05, 2020 05:56 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/08/06 10:34 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	080520	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v1) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v9) Fusion1 (Fusion1) (v10)		
Comment:			

Report Results

Sample Type: Blank (Creating v1429) From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/08/05 17:56

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.67	24.90	13.23	49.97	08:00
2	TC Clean	4.10	17.23	13.13	49.90	07:16
3	TC Clean	0.50	13.74	13.25	49.85	07:02
4	TC Clean	0.04	13.30	13.26	49.94	07:03
5	Reagent Blank	4.01	17.27	13.26	50.00	08:10
6	Acid Blank	0.37	13.64	13.28	49.61	05:34

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/05 18:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.17	22.40	13.24	50.09	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4763 ppm (PASS)	0.0000 ppm	0%	2020/08/05 18:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4763	254.7632	188.60	201.77	13.17	50.11	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/05 19:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.03	22.40	13.36	50.16	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/05 19:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.40	21.66	13.26	50.19	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	26.1783 ppm (PASS)	0.0000 ppm	0%	2020/08/05 19:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.1783	261.7826	193.53	206.65	13.12	50.17	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.3474 ppm	0.0000 ppm	0.0000%	2020/08/05 19:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3474	3.4737	11.61	25.12	13.51	50.18	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	k2005714-002 10x	7.8756 ppm	0.0371 ppm	0.4700%	2020/08/05 20:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8493	78.4934	64.23	77.66	13.43	50.18	10:29
2	TOC	7.9018	79.0180	64.60	78.25	13.65	50.16	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	K2006221-002	8.6645 ppm	0.2369 ppm	2.7300%	2020/08/05 20:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.8320	88.3197	71.12	84.56	13.44	50.20	10:28
2	TOC	8.4970	84.9697	68.78	82.43	13.65	50.24	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	K2006221-003	8.7199 ppm	0.1460 ppm	1.6700%	2020/08/05 21:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.8231	88.2313	71.06	84.45	13.39	50.18	10:28
2	TOC	8.6167	86.1671	69.62	83.04	13.42	50.20	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K2006221-004	27.8920 ppm	0.9180 ppm	3.2900%	2020/08/05 21:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.5411	285.4108	209.38	222.93	13.55	50.20	10:26
2	TOC	27.2428	272.4283	200.27	213.61	13.33	50.17	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K2006221-005	3.0464 ppm	0.0680 ppm	2.2300%	2020/08/05 22:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0946	30.9455	30.88	44.37	13.49	50.19	10:25
2	TOC	2.9983	29.9833	30.20	43.71	13.51	50.17	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K2006044-001	0.9314 ppm	0.0448 ppm	4.8100%	2020/08/05 22:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9631	9.6307	15.93	29.52	13.59	50.20	10:26
2	TOC	0.8998	8.9977	15.48	29.21	13.73	50.18	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	K2006044-001D	0.9707 ppm	0.0489 ppm	5.0400%	2020/08/05 23:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0053	10.0526	16.22	29.64	13.42	50.18	10:26

2	TOC	0.9361	9.3612	15.74	29.22	13.48	50.17	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.8333 ppm (PASS)	0.0000 ppm	0%	2020/08/05 23:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.8333	258.3328	191.11	204.62	13.52	50.18	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/05 23:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.95	22.27	13.32	50.19	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K2006044-001MS	25.5979 ppm	0.1718 ppm	0.6700%	2020/08/05 23:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.4764	254.7643	187.88	201.34	13.46	50.21	10:27
2	TOC	25.7193	257.1935	189.59	203.16	13.58	50.29	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	11	TOC	K2006044-002	1.2344 ppm	0.0396 ppm	3.2100%	2020/08/06 00:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2624	12.6243	18.03	31.57	13.54	50.24	10:30
2	TOC	1.2064	12.0641	17.63	31.12	13.48	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K2006044-003	41.9765 ppm	0.4087 ppm	0.9700%	2020/08/06 00:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	41.6875	416.8752	301.60	315.16	13.56	50.22	10:29
2	TOC	42.2654	422.6544	305.66	319.18	13.53	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2006044-004	0.8868 ppm	0.1462 ppm	16.4800%	2020/08/06 01:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9902	9.9015	16.12	29.44	13.32	50.21	10:27
2	TOC	0.7834	7.8345	14.67	28.15	13.48	50.22	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2006044-005	2.6089 ppm	0.0248 ppm	0.9500%	2020/08/06 01:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5913	25.9133	27.35	40.71	13.36	50.24	10:26
2	TOC	2.6264	26.2640	27.59	41.09	13.49	50.26	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K2006044-006	2.3500 ppm	0.0145 ppm	0.6200%	2020/08/06 02:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3603	23.6025	25.73	39.21	13.48	50.23	10:27
2	TOC	2.3397	23.3972	25.58	39.06	13.47	50.22	10:26

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K2006044-007	15.2921 ppm	0.0945 ppm	0.6200%	2020/08/06 02:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.2253	152.2529	115.97	129.45	13.48	50.22	10:30
2	TOC	15.3589	153.5886	116.91	130.40	13.49	50.21	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K2006044-008	8.9005 ppm	0.0962 ppm	1.0800%	2020/08/06 03:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9685	89.6854	72.08	85.57	13.49	50.29	10:26
2	TOC	8.8325	88.3254	71.13	84.67	13.54	50.21	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K2006036-001	2.1285 ppm	0.0291 ppm	1.3700%	2020/08/06 03:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1079	21.0793	23.96	37.42	13.46	50.19	10:26
2	TOC	2.1491	21.4913	24.25	37.74	13.50	50.26	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K2006224-001	2.0213 ppm	0.0465 ppm	2.3000%	2020/08/06 04:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9885	19.8847	23.12	36.65	13.53	50.23	10:25
2	TOC	2.0542	20.5419	23.58	36.98	13.40	50.19	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.3087 ppm (PASS)	0.0000 ppm	0%	2020/08/06 04:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.3087	253.0867	187.43	200.85	13.42	50.19	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/06 04:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.64	23.04	13.40	50.18	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/06 05:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.24	21.72	13.49	50.25	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.6691 ppm (PASS)	0.0000 ppm	0%	2020/08/06 05:23

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

	Type									
C	TOC	25.0 ppm	1	25.6691	256.6905	189.96	203.52	13.56	50.18	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K2006224-001D	2.2243 ppm	0.0695 ppm	3.1200%	2020/08/06 05:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2734	22.7343	25.12	38.38	13.27	50.19	10:26
2	TOC	2.1752	21.7521	24.43	37.73	13.30	50.17	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K2006224-001MS	29.2402 ppm	0.0525 ppm	0.1800%	2020/08/06 06:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.2031	292.0311	214.02	227.38	13.36	50.16	10:28
2	TOC	29.2774	292.7738	214.55	227.96	13.41	50.22	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K2006047-001	3.5809 ppm	0.0408 ppm	1.1400%	2020/08/06 06:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.6097	36.0975	34.49	48.21	13.72	50.18	10:25
2	TOC	3.5520	35.5201	34.09	47.55	13.46	50.20	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K2006047-002	53.6821 ppm	0.7354 ppm	1.3700%	2020/08/06 07:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	54.2022	542.0216	389.39	402.93	13.54	50.17	10:27
2	TOC	53.1621	531.6208	382.09	395.92	13.83	50.17	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K2006047-003	18.6374 ppm	0.2652 ppm	1.4200%	2020/08/06 07:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.8249	188.2495	141.22	154.86	13.63	50.19	10:29
2	TOC	18.4499	184.4989	138.59	152.24	13.65	50.15	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K2006047-004	5.5994 ppm	0.0964 ppm	1.7200%	2020/08/06 07:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.6675	56.6753	48.93	62.18	13.25	50.14	10:27
2	TOC	5.5312	55.3125	47.97	61.53	13.56	50.14	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K2006047-005	86.4136 ppm	4.0529 ppm	4.6900%	2020/08/06 08:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	83.5477	835.4772	595.24	608.81	13.57	50.11	10:24
2	TOC	89.2794	892.7944	635.45	649.95	14.50	50.10	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K2006047-006	18.8920 ppm	19.5781 ppm	103.6300%	2020/08/06 08:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.7358	327.3577	238.81	252.98	14.18	50.08	10:31
2	TOC	5.0481	50.4813	44.58	57.85	13.27	50.09	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2006047-002 5X	16.5885 ppm	0.8324 ppm	5.0200%	2020/08/06 09:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	17.1772	171.7715	129.67	142.98	13.32	50.08	10:26
2	TOC	15.9999	159.9993	121.41	134.63	13.22	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.1702 (IC) (v1429)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	27.1565 ppm (PASS)	0.0000 ppm	0%	2020/08/06 09:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	27.1565	271.5647	200.39	213.65	13.26	50.06	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	1.0759 ppm (PASS)	0.0000 ppm	0%	2020/08/06 10:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	1.0759	10.7586	17.44	30.42	12.98	50.06	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆ 30	TOC	K2006047-5 10X		NaN	NaN	NaN%	2020/08/06 10:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

Dilution	Method	Calibration
1:10	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1428	2.0260	0.3900	0.0000	0.0000	0.0000	2020/08/05 11:39	Fusion1 (Fusion1)
v1429	1.3370	0.3660	0.0000	0.0000	0.0000	2020/08/05 18:45	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v38	Calibration curve formula:	TOC: y = 7.015x + 9.892
Ver Creation:	2020/06/13 16:40	r^2 value:	TOC: r^2 = 0.99974
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	9.5750	0.0000		2020/06/13 15:13
0.500 ppm	12.9010	0.5000		2020/06/13 15:28
1.0 ppm	15.6320	1.0000		2020/06/13 15:42
5.0 ppm	43.2510	5.0000		2020/06/13 15:56
10 ppm	82.4040	10.0000		2020/06/13 16:11
25 ppm	188.6880	25.0000		2020/06/13 16:25
50 ppm	358.6500	50.0000		2020/06/13 16:39

Methods

Name: CAS_salt_010711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/02/21 17:57		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/08/06 10:31

ALS Environmental

StarLIMS Run: 689991/6900001

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 19-GEN-8-15-C 50 ppm LCS: 19-GEN-8-31I 25.0 ppm

ICAL Date: 6/16/2020

ICAL ID: 19-GEN-8-22-G

ICS ID: 19-GEN-8-4-G

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 19-GEN-8-15-B 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-32J

21 % H3PO4: 19-GEN-08-32I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: MF	Date Analyzed: 8/6/20
Reviewed By: JC	Date Reviewed: 8/6/20

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

August 17, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20071033**

Laboratory Results for: **Longhorn Army Ammunition Plant 16 July 2020**

Dear Susan Huang,

ALS Environmental received 9 sample(s) on Jul 22, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20071033

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20071033-01	16WW44-200720	Groundwater		20-Jul-2020 07:45	22-Jul-2020 09:55	☐
HS20071033-02	16WW14-200720	Groundwater		20-Jul-2020 08:30	22-Jul-2020 09:55	☐
HS20071033-03	16RW10-200720	Groundwater		20-Jul-2020 09:20	22-Jul-2020 09:55	☐
HS20071033-04	16PM09-200720	Groundwater		20-Jul-2020 10:15	22-Jul-2020 09:55	☐
HS20071033-05	16PM06-200720	Groundwater		20-Jul-2020 11:00	22-Jul-2020 09:55	☐
HS20071033-06	16PM14-200720	Groundwater		20-Jul-2020 11:55	22-Jul-2020 09:55	☐
HS20071033-07	16PM02-200720	Groundwater		20-Jul-2020 12:45	22-Jul-2020 09:55	☐
HS20071033-08	16PM03-200720	Groundwater		20-Jul-2020 13:35	22-Jul-2020 09:55	☐
HS20071033-09	Trip Blank-200720	Water	CG-060320-201	20-Jul-2020 00:00	22-Jul-2020 09:55	☐

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20071033

Work Order Comments

• The analysis for TOC was subcontracted to ALS Environmental in Kelso WA. Final report attached.

Analysis of Perchlorate was performed by ALS Houston TX, High Resolution. Laboratory. Final report attached

GCMS Volatiles by Method SW8260

Batch ID: R365571

Sample ID: 16PM06-200720(HS20071033-05MS)

• MSand or MSD recovered outside the control limit, however, the result in the parent sample is greater than 4x the spike amount.cis-1,2-Dichloroethene, Trichloroethene

WetChemistry by Method SW9056

Batch ID: R365836

Sample ID: 16PM06-200720 (HS20071033-05)

• Sample ran at 5X due to high concentration of Sulfate

Sample ID: 16PM14-200720 (HS20071033-06)

• Sample ran at 5X due to high concentration of Sulfate

Sample ID: 16RW10-200720 (HS20071033-03)

• Sample ran at 5X due to high concentration of Sulfate

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071033
Sample ID: 16WW44-200720 Lab ID:HS20071033-01
Collection Date: 20-Jul-2020 07:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	23-Jul-2020 13:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:45
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-Jul-2020 13:45
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:45
Surr: 1,2-Dichloroethane-d4	*89.6*			**0**	*81-118*	*%REC*	*1*	*23-Jul-2020 13:45*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*85-114*	*%REC*	*1*	*23-Jul-2020 13:45*
Surr: Dibromofluoromethane	*93.7*			**0**	*80-119*	*%REC*	*1*	*23-Jul-2020 13:45*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*23-Jul-2020 13:45*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	06-Aug-2020 16:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071033
Sample ID: 16WW14-200720 Lab ID:HS20071033-02
Collection Date: 20-Jul-2020 08:30 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	23-Jul-2020 14:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 14:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 14:09
cis-1,2-Dichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	23-Jul-2020 14:09
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-Jul-2020 14:09
Trichloroethene	**42**		**0.20**	**0.50**	**1.0**	**UG/L**	1	23-Jul-2020 14:09
Vinyl chloride	**0.61**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	23-Jul-2020 14:09
Surr: 1,2-Dichloroethane-d4	*89.3*			**0**	*81-118*	*%REC*	*1*	*23-Jul-2020 14:09*
Surr: 4-Bromofluorobenzene	*98.0*			**0**	*85-114*	*%REC*	*1*	*23-Jul-2020 14:09*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*1*	*23-Jul-2020 14:09*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*23-Jul-2020 14:09*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	06-Aug-2020 16:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071033
Sample ID: 16RW10-200720 Lab ID:HS20071033-03
Collection Date: 20-Jul-2020 09:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	23-Jul-2020 15:21
1,1-Dichloroethene	**17**		**1.0**	**2.5**	**5.0**	**UG/L**	5	23-Jul-2020 15:21
1,2-Dichloroethane	**4.0**	J	**1.0**	**2.5**	**5.0**	**UG/L**	5	23-Jul-2020 15:21
cis-1,2-Dichloroethene	**290**		**1.0**	**2.5**	**5.0**	**UG/L**	5	23-Jul-2020 15:21
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	23-Jul-2020 15:21
Trichloroethene	**1,800**		**5.0**	**12**	**25**	**UG/L**	25	23-Jul-2020 14:33
Vinyl chloride	**80**		**1.0**	**2.5**	**5.0**	**UG/L**	5	23-Jul-2020 15:21
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*81-118*	*%REC*	*5*	*23-Jul-2020 15:21*
Surr: 1,2-Dichloroethane-d4	*89.9*			**0**	*81-118*	*%REC*	*25*	*23-Jul-2020 14:33*
Surr: 4-Bromofluorobenzene	*99.6*			**0**	*85-114*	*%REC*	*25*	*23-Jul-2020 14:33*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*5*	*23-Jul-2020 15:21*
Surr: Dibromofluoromethane	*90.7*			**0**	*80-119*	*%REC*	*25*	*23-Jul-2020 14:33*
Surr: Dibromofluoromethane	*92.4*			**0**	*80-119*	*%REC*	*5*	*23-Jul-2020 15:21*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*25*	*23-Jul-2020 14:33*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*5*	*23-Jul-2020 15:21*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**8.29**		**0.150**	**0.500**	**0.500**	**mg/L**	5	29-Jul-2020 07:00
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	06-Aug-2020 16:49
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Aug-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071033
Sample ID: 16PM09-200720 Lab ID:HS20071033-04
Collection Date: 20-Jul-2020 10:15 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	23-Jul-2020 18:09
1,1-Dichloroethene	**30**		**1.0**	**2.5**	**5.0**	**UG/L**	5	23-Jul-2020 18:09
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	23-Jul-2020 18:09
cis-1,2-Dichloroethene	**520**		**1.0**	**2.5**	**5.0**	**UG/L**	5	23-Jul-2020 18:09
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	23-Jul-2020 18:09
Trichloroethene	**1,400**		**5.0**	**12**	**25**	**UG/L**	25	23-Jul-2020 18:33
Vinyl chloride	**23**		**1.0**	**2.5**	**5.0**	**UG/L**	5	23-Jul-2020 18:09
Surr: 1,2-Dichloroethane-d4	*92.9*			**0**	*81-118*	*%REC*	*5*	*23-Jul-2020 18:09*
Surr: 1,2-Dichloroethane-d4	*90.9*			**0**	*81-118*	*%REC*	*25*	*23-Jul-2020 18:33*
Surr: 4-Bromofluorobenzene	*99.3*			**0**	*85-114*	*%REC*	*5*	*23-Jul-2020 18:09*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*25*	*23-Jul-2020 18:33*
Surr: Dibromofluoromethane	*92.2*			**0**	*80-119*	*%REC*	*25*	*23-Jul-2020 18:33*
Surr: Dibromofluoromethane	*91.8*			**0**	*80-119*	*%REC*	*5*	*23-Jul-2020 18:09*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*5*	*23-Jul-2020 18:09*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*25*	*23-Jul-2020 18:33*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	06-Aug-2020 16:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071033
Sample ID: 16PM06-200720 Lab ID:HS20071033-05
Collection Date: 20-Jul-2020 11:00 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	25	U	7.5	25	25	UG/L	25	23-Jul-2020 15:45
1,1-Dichloroethene	**150**		**5.0**	**12**	**25**	**UG/L**	25	23-Jul-2020 15:45
1,2-Dichloroethane	**50**		**5.0**	**12**	**25**	**UG/L**	25	23-Jul-2020 15:45
cis-1,2-Dichloroethene	**49,000**		**100**	**250**	**500**	**UG/L**	500	23-Jul-2020 14:57
Methylene chloride	25	U	10	25	50	UG/L	25	23-Jul-2020 15:45
Trichloroethene	**58,000**		**100**	**250**	**500**	**UG/L**	500	23-Jul-2020 14:57
Vinyl chloride	**2,100**		**5.0**	**12**	**25**	**UG/L**	25	23-Jul-2020 15:45
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*81-118*	*%REC*	*500*	*23-Jul-2020 14:57*
Surr: 1,2-Dichloroethane-d4	*91.2*			**0**	*81-118*	*%REC*	*25*	*23-Jul-2020 15:45*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*500*	*23-Jul-2020 14:57*
Surr: 4-Bromofluorobenzene	*93.2*			**0**	*85-114*	*%REC*	*25*	*23-Jul-2020 15:45*
Surr: Dibromofluoromethane	*91.1*			**0**	*80-119*	*%REC*	*500*	*23-Jul-2020 14:57*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*25*	*23-Jul-2020 15:45*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*500*	*23-Jul-2020 14:57*
Surr: Toluene-d8	*97.9*			**0**	*89-112*	*%REC*	*25*	*23-Jul-2020 15:45*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**6.08**		**0.150**	**0.500**	**0.500**	**mg/L**	5	29-Jul-2020 07:55
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	06-Aug-2020 16:49
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Aug-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071033
Sample ID: 16PM14-200720 Lab ID:HS20071033-06
Collection Date: 20-Jul-2020 11:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	10	U	3.0	10	10	UG/L	10	23-Jul-2020 18:57
1,1-Dichloroethene	**21**		**2.0**	**5.0**	**10**	**UG/L**	10	23-Jul-2020 18:57
1,2-Dichloroethane	**24**		**2.0**	**5.0**	**10**	**UG/L**	10	23-Jul-2020 18:57
cis-1,2-Dichloroethene	**3,300**		**20**	**50**	**100**	**UG/L**	100	23-Jul-2020 19:21
Methylene chloride	10	U	4.0	10	20	UG/L	10	23-Jul-2020 18:57
Trichloroethene	**5,100**		**20**	**50**	**100**	**UG/L**	100	23-Jul-2020 19:21
Vinyl chloride	**150**		**2.0**	**5.0**	**10**	**UG/L**	10	23-Jul-2020 18:57
Surr: 1,2-Dichloroethane-d4	*92.0*			**0**	*81-118*	*%REC*	*10*	*23-Jul-2020 18:57*
Surr: 1,2-Dichloroethane-d4	*92.5*			**0**	*81-118*	*%REC*	*100*	*23-Jul-2020 19:21*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*10*	*23-Jul-2020 18:57*
Surr: 4-Bromofluorobenzene	*98.0*			**0**	*85-114*	*%REC*	*100*	*23-Jul-2020 19:21*
Surr: Dibromofluoromethane	*91.4*			**0**	*80-119*	*%REC*	*10*	*23-Jul-2020 18:57*
Surr: Dibromofluoromethane	*93.2*			**0**	*80-119*	*%REC*	*100*	*23-Jul-2020 19:21*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*10*	*23-Jul-2020 18:57*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*100*	*23-Jul-2020 19:21*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**5.04**		**0.150**	**0.500**	**0.500**	**mg/L**	5	29-Jul-2020 06:06
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	06-Aug-2020 16:49
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Aug-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071033
Sample ID: 16PM02-200720 Lab ID:HS20071033-07
Collection Date: 20-Jul-2020 12:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	25	U	7.5	25	25	UG/L	25	23-Jul-2020 20:34
1,1-Dichloroethene	**44**		**5.0**	**12**	**25**	**UG/L**	25	23-Jul-2020 20:34
1,2-Dichloroethane	**25**		**5.0**	**12**	**25**	**UG/L**	25	23-Jul-2020 20:34
cis-1,2-Dichloroethene	**4,800**		**100**	**250**	**500**	**UG/L**	500	23-Jul-2020 20:58
Methylene chloride	25	U	10	25	50	UG/L	25	23-Jul-2020 20:34
Trichloroethene	**31,000**		**100**	**250**	**500**	**UG/L**	500	23-Jul-2020 20:58
Vinyl chloride	**110**		**5.0**	**12**	**25**	**UG/L**	25	23-Jul-2020 20:34
Surr: 1,2-Dichloroethane-d4	*91.2*			**0**	*81-118*	*%REC*	*25*	*23-Jul-2020 20:34*
Surr: 1,2-Dichloroethane-d4	*91.3*			**0**	*81-118*	*%REC*	*500*	*23-Jul-2020 20:58*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*85-114*	*%REC*	*500*	*23-Jul-2020 20:58*
Surr: 4-Bromofluorobenzene	*97.9*			**0**	*85-114*	*%REC*	*25*	*23-Jul-2020 20:34*
Surr: Dibromofluoromethane	*93.3*			**0**	*80-119*	*%REC*	*25*	*23-Jul-2020 20:34*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*500*	*23-Jul-2020 20:58*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*25*	*23-Jul-2020 20:34*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*500*	*23-Jul-2020 20:58*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	06-Aug-2020 16:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071033
Sample ID: 16PM03-200720 Lab ID:HS20071033-08
Collection Date: 20-Jul-2020 13:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	20	U	6.0	20	20	UG/L	20	23-Jul-2020 19:46
1,1-Dichloroethene	**50**		**4.0**	**10**	**20**	**UG/L**	20	23-Jul-2020 19:46
1,2-Dichloroethane	**25**		**4.0**	**10**	**20**	**UG/L**	20	23-Jul-2020 19:46
cis-1,2-Dichloroethene	**9,300**		**40**	**100**	**200**	**UG/L**	200	23-Jul-2020 20:10
Methylene chloride	20	U	8.0	20	40	UG/L	20	23-Jul-2020 19:46
Trichloroethene	**9,100**		**40**	**100**	**200**	**UG/L**	200	23-Jul-2020 20:10
Vinyl chloride	**320**		**4.0**	**10**	**20**	**UG/L**	20	23-Jul-2020 19:46
Surr: 1,2-Dichloroethane-d4	*92.5*			**0**	*81-118*	*%REC*	*20*	*23-Jul-2020 19:46*
Surr: 1,2-Dichloroethane-d4	*111*			**0**	*81-118*	*%REC*	*200*	*23-Jul-2020 20:10*
Surr: 4-Bromofluorobenzene	*97.0*			**0**	*85-114*	*%REC*	*20*	*23-Jul-2020 19:46*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*200*	*23-Jul-2020 20:10*
Surr: Dibromofluoromethane	*92.3*			**0**	*80-119*	*%REC*	*20*	*23-Jul-2020 19:46*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*200*	*23-Jul-2020 20:10*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*20*	*23-Jul-2020 19:46*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*200*	*23-Jul-2020 20:10*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	06-Aug-2020 16:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071033
Sample ID: Trip Blank-200720 Lab ID:HS20071033-09
Collection Date: 20-Jul-2020 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	23-Jul-2020 13:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-Jul-2020 13:21
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-Jul-2020 13:21
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*81-118*	*%REC*	*1*	*23-Jul-2020 13:21*
Surr: 4-Bromofluorobenzene	*97.4*			**0**	*85-114*	*%REC*	*1*	*23-Jul-2020 13:21*
Surr: Dibromofluoromethane	*88.3*			**0**	*80-119*	*%REC*	*1*	*23-Jul-2020 13:21*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*23-Jul-2020 13:21*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071033

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365571 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20071033-09	Trip Blank-200720	20 Jul 2020 00:00			23 Jul 2020 13:21	1
Batch ID: R365571 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20071033-01	16WW44-200720	20 Jul 2020 07:45			23 Jul 2020 13:45	1
HS20071033-02	16WW14-200720	20 Jul 2020 08:30			23 Jul 2020 14:09	1
HS20071033-03	16RW10-200720	20 Jul 2020 09:20			23 Jul 2020 15:21	5
HS20071033-03	16RW10-200720	20 Jul 2020 09:20			23 Jul 2020 14:33	25
HS20071033-04	16PM09-200720	20 Jul 2020 10:15			23 Jul 2020 18:33	25
HS20071033-04	16PM09-200720	20 Jul 2020 10:15			23 Jul 2020 18:09	5
HS20071033-05	16PM06-200720	20 Jul 2020 11:00			23 Jul 2020 15:45	25
HS20071033-05	16PM06-200720	20 Jul 2020 11:00			23 Jul 2020 14:57	500
HS20071033-06	16PM14-200720	20 Jul 2020 11:55			23 Jul 2020 19:21	100
HS20071033-06	16PM14-200720	20 Jul 2020 11:55			23 Jul 2020 18:57	10
HS20071033-07	16PM02-200720	20 Jul 2020 12:45			23 Jul 2020 20:58	500
HS20071033-07	16PM02-200720	20 Jul 2020 12:45			23 Jul 2020 20:34	25
HS20071033-08	16PM03-200720	20 Jul 2020 13:35			23 Jul 2020 20:10	200
HS20071033-08	16PM03-200720	20 Jul 2020 13:35			23 Jul 2020 19:46	20
Batch ID: R365836 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20071033-03	16RW10-200720	20 Jul 2020 09:20			29 Jul 2020 07:00	5
HS20071033-05	16PM06-200720	20 Jul 2020 11:00			29 Jul 2020 07:55	5
HS20071033-06	16PM14-200720	20 Jul 2020 11:55			29 Jul 2020 06:06	5
Batch ID: R366325 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20071033-01	16WW44-200720	20 Jul 2020 07:45			06 Aug 2020 16:49	1
HS20071033-02	16WW14-200720	20 Jul 2020 08:30			06 Aug 2020 16:49	1
HS20071033-03	16RW10-200720	20 Jul 2020 09:20			06 Aug 2020 16:49	1
HS20071033-04	16PM09-200720	20 Jul 2020 10:15			06 Aug 2020 16:49	1
HS20071033-05	16PM06-200720	20 Jul 2020 11:00			06 Aug 2020 16:49	1
HS20071033-06	16PM14-200720	20 Jul 2020 11:55			06 Aug 2020 16:49	1
HS20071033-07	16PM02-200720	20 Jul 2020 12:45			06 Aug 2020 16:49	1
HS20071033-08	16PM03-200720	20 Jul 2020 13:35			06 Aug 2020 16:49	1
Batch ID: R366700 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20071033-03	16RW10-200720	20 Jul 2020 09:20			13 Aug 2020 12:17	1
HS20071033-05	16PM06-200720	20 Jul 2020 11:00			13 Aug 2020 12:17	1
HS20071033-06	16PM14-200720	20 Jul 2020 11:55			13 Aug 2020 12:17	1

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071033

QC BATCH REPORT

Batch ID: R365571 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200723** Units: **UG/L** Analysis Date: **23-Jul-2020 12:57**
Client ID: Run ID: **VOA6_365571** SeqNo: **5672477** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.6*	*1.0*	*50*	*0*	*95.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*45.12*	*1.0*	*50*	*0*	*90.2*	*85 - 114*				
Surr: Dibromofluoromethane	*47.67*	*1.0*	*50*	*0*	*95.3*	*80 - 119*				
Surr: Toluene-d8	*48.67*	*1.0*	*50*	*0*	*97.3*	*89 - 112*				

LCS Sample ID: **VLCSW-200723** Units: **UG/L** Analysis Date: **23-Jul-2020 12:09**
Client ID: Run ID: **VOA6_365571** SeqNo: **5672476** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.57	1.0	20	0	103	80 - 119				
1,1-Dichloroethene	20.01	1.0	20	0	100	71 - 131				
1,2-Dichloroethane	20.67	1.0	20	0	103	73 - 128				
cis-1,2-Dichloroethene	20.02	1.0	20	0	100	78 - 123				
Methylene chloride	20.97	2.0	20	0	105	74 - 124				
Trichloroethene	19.28	1.0	20	0	96.4	79 - 123				
Vinyl chloride	19.55	1.0	20	0	97.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*48.78*	*1.0*	*50*	*0*	*97.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.15*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*49.29*	*1.0*	*50*	*0*	*98.6*	*80 - 119*				
Surr: Toluene-d8	*49.06*	*1.0*	*50*	*0*	*98.1*	*89 - 112*				

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071033

QC BATCH REPORT

Batch ID: R365571 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20071033-05MS** Units: **UG/L** Analysis Date: **23-Jul-2020 16:57**
Client ID: **16PM06-200720** Run ID: **VOA6_365571** SeqNo: **5672487** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	11450	500	10000	0	115	80 - 119				
1,1-Dichloroethene	12050	500	10000	0	120	71 - 131				
1,2-Dichloroethane	11490	500	10000	0	115	73 - 128				
cis-1,2-Dichloroethene	60440	500	10000	48570	119	78 - 123				O
Methylene chloride	11300	1000	10000	0	113	74 - 124				
Trichloroethene	71900	500	10000	58100	138	79 - 123				SO
Vinyl chloride	14870	500	10000	1927	129	58 - 137				
Surr: 1,2-Dichloroethane-d4	*22080*	*500*	*25000*	*0*	*88.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*25140*	*500*	*25000*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*23070*	*500*	*25000*	*0*	*92.3*	*80 - 119*				
Surr: Toluene-d8	*25140*	*500*	*25000*	*0*	*101*	*89 - 112*				

MS Sample ID: **HS20071033-03MS** Units: **UG/L** Analysis Date: **23-Jul-2020 16:09**
Client ID: **16RW10-200720** Run ID: **VOA6_365571** SeqNo: **5672485** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	530.4	25	500	0	106	80 - 119				
1,1-Dichloroethene	543.6	25	500	19.82	105	71 - 131				
1,2-Dichloroethane	506.4	25	500	0	101	73 - 128				
cis-1,2-Dichloroethene	859.4	25	500	313.5	109	78 - 123				
Methylene chloride	510.9	50	500	0	102	74 - 124				
Trichloroethene	2360	25	500	1827	107	79 - 123				
Vinyl chloride	644.9	25	500	88.87	111	58 - 137				
Surr: 1,2-Dichloroethane-d4	*1136*	*25*	*1250*	*0*	*90.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*1235*	*25*	*1250*	*0*	*98.8*	*85 - 114*				
Surr: Dibromofluoromethane	*1159*	*25*	*1250*	*0*	*92.7*	*80 - 119*				
Surr: Toluene-d8	*1281*	*25*	*1250*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071033

QC BATCH REPORT

Batch ID: R365571 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS20071033-05MSD** Units: **UG/L** Analysis Date: **23-Jul-2020 17:21**
Client ID: **16PM06-200720** Run ID: **VOA6_365571** SeqNo: **5672488** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	11560	500	10000	0	116	80 - 119	11450	0.9	20	
1,1-Dichloroethene	11700	500	10000	0	117	71 - 131	12050	2.97	20	
1,2-Dichloroethane	12550	500	10000	0	126	73 - 128	11490	8.83	20	
cis-1,2-Dichloroethene	60880	500	10000	48570	123	78 - 123	60440	0.729	20	SO
Methylene chloride	11710	1000	10000	0	117	74 - 124	11300	3.5	20	
Trichloroethene	72740	500	10000	58100	146	79 - 123	71900	1.16	20	SO
Vinyl chloride	13370	500	10000	1927	114	58 - 137	14870	10.6	20	
Surr: 1,2-Dichloroethane-d4	*24230*	*500*	*25000*	*0*	*96.9*	*81 - 118*	*22080*	*9.29*	*20*	
Surr: 4-Bromofluorobenzene	*24460*	*500*	*25000*	*0*	*97.8*	*85 - 114*	*25140*	*2.75*	*20*	
Surr: Dibromofluoromethane	*23410*	*500*	*25000*	*0*	*93.7*	*80 - 119*	*23070*	*1.46*	*20*	
Surr: Toluene-d8	*24700*	*500*	*25000*	*0*	*98.8*	*89 - 112*	*25140*	*1.75*	*20*	

MSD Sample ID: **HS20071033-03MSD** Units: **UG/L** Analysis Date: **23-Jul-2020 16:33**
Client ID: **16RW10-200720** Run ID: **VOA6_365571** SeqNo: **5672486** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	528.6	25	500	0	106	80 - 119	530.4	0.331	20	
1,1-Dichloroethene	474	25	500	19.82	90.8	71 - 131	543.6	13.7	20	
1,2-Dichloroethane	521.2	25	500	0	104	73 - 128	506.4	2.89	20	
cis-1,2-Dichloroethene	800.5	25	500	313.5	97.4	78 - 123	859.4	7.09	20	
Methylene chloride	518.1	50	500	0	104	74 - 124	510.9	1.39	20	
Trichloroethene	2247	25	500	1827	84.2	79 - 123	2360	4.88	20	
Vinyl chloride	617.5	25	500	88.87	106	58 - 137	644.9	4.34	20	
Surr: 1,2-Dichloroethane-d4	*1106*	*25*	*1250*	*0*	*88.4*	*81 - 118*	*1136*	*2.71*	*20*	
Surr: 4-Bromofluorobenzene	*1226*	*25*	*1250*	*0*	*98.1*	*85 - 114*	*1235*	*0.715*	*20*	
Surr: Dibromofluoromethane	*1136*	*25*	*1250*	*0*	*90.9*	*80 - 119*	*1159*	*2*	*20*	
Surr: Toluene-d8	*1277*	*25*	*1250*	*0*	*102*	*89 - 112*	*1281*	*0.321*	*20*	

The following samples were analyzed in this batch: HS20071033-01, HS20071033-02, HS20071033-03, HS20071033-04, HS20071033-05, HS20071033-06, HS20071033-07, HS20071033-08, HS20071033-09

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071033

QC BATCH REPORT

Batch ID: R365836 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-072820** Units: **mg/L** Analysis Date: **28-Jul-2020 13:24**
Client ID: Run ID: **ICS-Integrion_365836** SeqNo: **5678300** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U

LCS Sample ID: **LCS-072820** Units: **mg/L** Analysis Date: **28-Jul-2020 13:42**
Client ID: Run ID: **ICS-Integrion_365836** SeqNo: **5678301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.373	0.100	4	0	109	80 - 120				

MS Sample ID: **HS20071033-05MS** Units: **mg/L** Analysis Date: **29-Jul-2020 08:13**
Client ID: **16PM06-200720** Run ID: **ICS-Integrion_365836** SeqNo: **5678315** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	16.67	0.500	10	6.078	106	80 - 120				

MS Sample ID: **HS20071033-03MS** Units: **mg/L** Analysis Date: **29-Jul-2020 07:19**
Client ID: **16RW10-200720** Run ID: **ICS-Integrion_365836** SeqNo: **5678312** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	18.7	0.500	10	8.292	104	80 - 120				

MSD Sample ID: **HS20071033-05MSD** Units: **mg/L** Analysis Date: **29-Jul-2020 08:31**
Client ID: **16PM06-200720** Run ID: **ICS-Integrion_365836** SeqNo: **5678316** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	16.6	0.500	10	6.078	105	80 - 120	16.67	0.418	20	

MSD Sample ID: **HS20071033-03MSD** Units: **mg/L** Analysis Date: **29-Jul-2020 07:37**
Client ID: **16RW10-200720** Run ID: **ICS-Integrion_365836** SeqNo: **5678313** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	18.71	0.500	10	8.292	104	80 - 120	18.7	0.0802	20	

The following samples were analyzed in this batch: HS20071033-03 HS20071033-05 HS20071033-06

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: **HS20071033**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
Maryland	343, 2019-2020	30-Sep-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 17-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20071033

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20071033-01	16WW44-200720	Login	7/22/2020 6:32:06 PM	PMG	Sub
HS20071033-01	16WW44-200720	Login	7/22/2020 6:32:06 PM	PMG	VOA157

ALS Houston, US Date: 17-Aug-20

Sample Receipt Checklist

Work Order ID: HS20071033 **Date/Time Received:** **22-Jul-2020 09:55**

Client Name: CBI-Houston **Received by:** **Paresh M. Giga**

Completed By:	/S/ Paresh M. Giga	22-Jul-2020 18:42	**Reviewed by:**	/S/ RJ Modashia	23-Jul-2020 09:14
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **GW/Water** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:none
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.2C U/C	IR31	
Cooler(s)/Kit(s):	42639		
Date/Time sample(s) sent to storage:	7/22/2020 18:55		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. 501032

Job: **LHAAP 16 JULY 2020_ALS**

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D. Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Perchlorate by SW6850	Metals (arsenic, chromium, manganese, nickel, thallium) by SW6020				Remarks (Preservative etc.)
16WW44-200720	WG	7/20/20/0745		4	X					X					
16WW14-200720	WG	7/20/20/0830		4	X					X					
16RW10-200720	WG	7/20/20/0920		7	X	X			X	X					
16RW10-200720-MS	WG	7/20/20/0920		7	X	X			X	X					
16RW10-200720-MSD	WG	7/20/20/0920		7	X	X			X	X					
16PM09-200720	WG	7/20/20/1015		4	X	[illegible]				X					
16PM06-200720	WG	7/20/20/1100		7	X	X			X	X					
16PM06-200720-MS	WG	7/20/20/1100		7	X	X			X	X					

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com **and invoices to** fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	7/21/20	1430		7/22/20							

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

42638 1.2° #31

(Word) S:\I-ces\Forms\Chain of Custody - BiWeekly

HS20071033

Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant 16 July 2020

CHAIN OF CUSTODY

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: R.J Modashia

Page 1 of 1

HS20071033

Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant 16 July 2020

Project: APTIM
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No.: 501032

Job: **LHAAP 16 JULY 2020_ALS**

Prepared By: Scott Beesinger

P.O. Number:

Field Sample I.D. / Time	Sample Matrix	Date /	MS / MSD	No. OF CONTAINERS	VOC by SW 8260B	TOC by SM5310C	MEE by RSK 175	Anions (bromide, sulfate, nitrate) by SW9056 and Alkalinity by SM2320	Bromide by SW9056	Perchlorate by SW6850	Metals (arsenic, chromium, manganese, nickel, thallium) by SW6020				Remarks (Preserva etc.)
16PM06-200720-MSD	WG	7/20/20/1100		7	X	X			X	X					
16PM14-200720	WG	7/20/20/1155		7	X	X			X	X					
16PM02-200720	WG	7/20/20/1295		4	X					X					
16PM03-200720	WG	7/20/20/1335		4	X					X					
TRIPBLANK-200720	WG	7/20/20		2	X										

Additional Remarks: Standard TAT on all parameters. Please email results to Susan.Huang@aptim.com and invoices to fedinvoices@aptim.com

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	7/21/20	1430		7/21/20	1430						

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

(Word) S:\I-ces\Forms\Chain of Custody - BiWeekly

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

42639

CUSTODY SEAL

Date: 7/21/20 Time: 1430
Name: Scott Beesinger
Company: BHATE

Seal Broken By:
Date: 07/22/20

42639 JUL 22 20

Must Deliver Next Business Day
Time and Tempature Sensitive

42639

ALS

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINGER
APTIM
1209-B EAST GRAND AVE.
PMB202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 22JUN20
ACTWGT: 1.00 LB MAN
CAD: 3001100/CAFE3211
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-6666
REF: LHAAP 16 - B072394 - RI
PMA:

FedEx Express

FedEx
TRK# 0221 1891 8877 8303

WED - 22 JUL 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

August 06, 2020 Service Request No:E2000674

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

Laboratory Results for: HS20071033

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 23, 2020
For your reference, these analyses have been assigned our service request number **E2000674.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	ALS Houston	**Service Request No.:**	E2000674
Project:	HS20071033	**Date Received:**	07/23/20
Sample Matrix:	GW		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eight samples were received for analysis at ALS Environmental in Houston on 07/23/20.

The samples were received at 0°C in good condition and is/are consistent with the accompanying chain of custody form. (Dioxin/furan compounds are stable at room temperature.) The sample was/samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2000328: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a two MS/MSD for this extraction batch. The MS and MSD (EQ2000328-06/07) recoveries outside QC limits, parent sample had to be analyzed at a 10X due to sample matrix.

DoD Certification is held for the method/matrix/analytes provided in this report.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: ALS Environmental - US **Service Request:**E2000674
Project: HS20071033

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2000674-001	16WW44-200720	7/20/2020	0745
E2000674-002	16WW14-200720	7/20/2020	0830
E2000674-003	16RW10-200720	7/20/2020	0920
E2000674-004	16PM09-200720	7/20/2020	1015
E2000674-005	16PM06-200720	7/20/2020	1100
E2000674-006	16PM14-200720	7/20/2020	1155
E2000674-007	16PM02-200720	7/20/2020	1245
E2000674-008	16PM03-200720	7/20/2020	1335

Service Request Summary

Folder #: **E2000674**
Client Name: ALS Environmental - US
Project Name: HS20071033
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/23/20
Internal Due Date: 8/5/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS20071033
EDD: No EDD Specified

12 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
Location: EHRMS-WIC 7D
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2000674-001	16WW44-200720	Ground Water	07/20/20 0745	**IV**
E2000674-002	16WW14-200720	Ground Water	07/20/20 0830	**IV**
E2000674-003	16RW10-200720	Ground Water	07/20/20 0920	**IV**
E2000674-004	16PM09-200720	Ground Water	07/20/20 1015	**IV**
E2000674-005	16PM06-200720	Ground Water	07/20/20 1100	**IV**
E2000674-006	16PM14-200720	Ground Water	07/20/20 1155	**IV**
E2000674-007	16PM02-200720	Ground Water	07/20/20 1245	**IV**
E2000674-008	16PM03-200720	Ground Water	07/20/20 1335	**IV**

Service Request Summary

Folder #: **E2000674**
Client Name: ALS Environmental - US
Project Name: HS20071033
Project Number:

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Houston, TX 77099-4338
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 07/23/20
Internal Due Date: 8/5/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS20071033
EDD: No EDD Specified

12 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
Location: EHRMS-WIC 7D
Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	6	Level II due 8/5,level IV 8/12
Semivoa GCMS	ClO4 DOD/6850	2	MS/MSD

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	Internal standard not within the specified limits. See case narrative.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.
M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.

Data Qualifiers

Lab Standard

S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

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State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01 2020	11/30/2021
Arkansas Department of Environmental Quality	20-030-0	3/26/2021
Department of Defense	A2LA 2897.01	11/30/2021
Hawaii Department of Health	2020	4/30/2021
Illinois Environmental Protection Agency	2000322020-4	5/9/2021
Louisiana Department of Health and Hospitals	LA028-2020	12/31/2020
Maine Department of Health and Human Services	2020016	6/5/2022
Minnesota Department of Health	1785988	12/31/2020
Nebraska Department of Health and Human Services	NE-OS-25-13 (2020)	4/30/2021
New Hampshire Environmental Laboratory Accreditation Program	209420	4/24/2021
New York Department of Health	11707	3/31/2021
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Tennessee Department of Environment and Concervation	04016-2020	4/30/2021
Texas Commision on Environmental Quality	T104704231-20-26	4/30/2021
United States Department of Agriculture	P330-19-00299	10/10/2022
Washington Department of Health	C819	11/14/2020

Chain of Custody

ALS Environmental - Houston HRMS
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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID: 14357**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS20071033
TSR: Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20071033-01**	**16WW44-200720**	**Groundwater**	**20 Jul 2020 07:45**
	SUB_Perch-6850			05 Aug 2020
2.	**HS20071033-02**	**16WW14-200720**	**Groundwater**	**20 Jul 2020 08:30**
	SUB_Perch-6850			05 Aug 2020
3.	**HS20071033-03**	**16RW10-200720**	**Groundwater**	**20 Jul 2020 09:20**
	SUB_Perch-6850			05 Aug 2020
4.	**HS20071033-04**	**16PM09-200720**	**Groundwater**	**20 Jul 2020 10:15**
	SUB_Perch-6850			05 Aug 2020
5.	**HS20071033-05**	**16PM06-200720**	**Groundwater**	**20 Jul 2020 11:00**
	SUB_Perch-6850			05 Aug 2020
6.	**HS20071033-06**	**16PM14-200720**	**Groundwater**	**20 Jul 2020 11:55**
	SUB_Perch-6850			05 Aug 2020
7.	**HS20071033-07**	**16PM02-200720**	**Groundwater**	**20 Jul 2020 12:45**
	SUB_Perch-6850			05 Aug 2020
8.	**HS20071033-08**	**16PM03-200720**	**Groundwater**	**20 Jul 2020 13:35**
	SUB_Perch-6850			05 Aug 2020

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14357**

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
HS20071033-03 & HS20071033-05 = MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	
Received By:		Date/Time:	7/23/20 1200
Cooler ID(s):		Temperature(s):	

ALS Environmental

Cooler Receipt Form

Project Chemist CG

Client/Project ALS-H

Thermometer ID IR31

Date/Time Received: 7/23/26 Initials: CG

Date/Time Logged in: 7/23/26 Initials CG

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ✓ ALS Courier ○ Client

2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other

3. Were custody seals on coolers? ○ Yes ✓ No
   Were they intact? ○ Yes ○ No ✓ N/A
   Were they signed and dated? ○ Yes ○ No ✓ N/A
   If yes, how many and where?

4. Packing Material: ○ Inserts ✓ Baggies ○ Bubble Wrap ○ Gel Packs ✓ Wet Ice ○ Sleeves ○ Other

5. Foreign or Regulated Soil? ○ Yes ○ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
~		7/23/26	1200	CG	3.5	☒
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label:

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Houston, TX 77099
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F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 362931 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 8/5/20 10:59

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000674-001	16WW44-200720	.01	6850/ClO4 DOD			Ground Water	10mL	
2	E2000674-002	16WW14-200720	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2000674-003	16RW10-200720	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2000674-004	16PM09-200720	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2000674-005	16PM06-200720	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2000674-006	16PM14-200720	.01	6850/ClO4 DOD			Ground Water	10mL	
7	E2000674-007	16PM02-200720	.01	6850/ClO4 DOD			Ground Water	10mL	
8	E2000674-008	16PM03-200720	.01	6850/ClO4 DOD			Ground Water	10mL	
9	EQ2000328-01	MB		6850/ClO4 DOD			Liquid	10mL	
10	EQ2000328-02	LCS		6850/ClO4 DOD			Liquid	10mL	
11	EQ2000328-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
12	EQ2000328-04	16RW10-200720 MS	.01	6850/ClO4 DOD			Liquid	10mL	
13	EQ2000328-05	16RW10-200720 DMS	.01	6850/ClO4 DOD			Liquid	10mL	
14	EQ2000328-06	16PM06-200720 MS	.01	6850/ClO4 DOD			Liquid	10mL	
15	EQ2000328-07	16PM06-200720 DMS	.01	6850/ClO4 DOD			Liquid	10mL	
16	R2006493-001	45MI20016	.05	6850/ClO4 DOD			Water	10mL	
17	R2006493-003	45MI20003	.05	6850/ClO4 DOD			Water	10mL	
18	R2006493-005	45MI20008	.05	6850/ClO4 DOD			Water	10mL	
19	R2006493-007	45MI20010	.05	6850/ClO4 DOD			Water	10mL	
20	R2006493-009	45MI20020	.05	6850/ClO4 DOD			Water	10mL	
21	R2006493-011	45MI20026	.05	6850/ClO4 DOD			Water	10mL	
22	R2006493-013	45MI20037	.05	6850/ClO4 DOD			Water	10mL	
23	R2006493-015	45MI20014	.05	6850/ClO4 DOD			Water	10mL	

Spiking Solutions

Name: Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4 Inventory ID 202037 Logbook Ref: Sodium Perchlorate Expires On: 05/22/2021

E2000674-001	100.00µL	E2000674-002	100.00µL	E2000674-003	100.00µL	E2000674-004	100.00µL	E2000674-005	100.00µL	E2000674-006	100.00µL
E2000674-007	100.00µL	E2000674-008	100.00µL	EQ2000328-01	100.00µL	EQ2000328-02	100.00µL	EQ2000328-03	100.00µL	EQ2000328-04	100.00µL
EQ2000328-05	100.00µL	EQ2000328-06	100.00µL	EQ2000328-07	100.00µL						

Name: Perchlorate Intermediate Stock1 Inventory ID 209764 Logbook Ref: Perchlorate Int. Stock1 51820 Expires On: 11/18/2020

EQ2000328-02	1.00µL	EQ2000328-03	1.00µL	EQ2000328-04	1.00µL	EQ2000328-05	1.00µL	EQ2000328-06	1.00µL	EQ2000328-07	1.00µL

Preparation Information Benchsheet

Prep Run#: 362931
Team: Semivoa GCMS/GRIVERA
Prep WorkFlow: GenExt28Day
Prep Method: Method
Status: Prepped
Prep Date/Time: 8/5/20 10:59

Preparation Steps

Step: Preparation
Started: 8/5/20 10:59
Finished: 8/5/20 17:06
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Analytical Results

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ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 0745
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16WW44-200720	**Units:**	µg/L
Lab Code:	E2000674-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/ 5/20	8/5/20 13:17	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 0830
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16WW14-200720	**Units:**	µg/L
Lab Code:	E2000674-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.544**	J	1.00	0.500	0.250	10	8/ 5/20	8/5/20 15:35	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 0920
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16RW10-200720	**Units:**	µg/L
Lab Code:	E2000674-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**62.7**		1.00	0.500	0.250	10	8/ 5/20	8/5/20 15:43	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 1015
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16PM09-200720	**Units:**	µg/L
Lab Code:	E2000674-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/ 5/20	8/5/20 13:49	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 1100
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16PM06-200720	**Units:**	µg/L
Lab Code:	E2000674-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	8/ 5/20	8/6/20 12:52	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 1155
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16PM14-200720	**Units:**	µg/L
Lab Code:	E2000674-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.435**	J	1.00	0.500	0.250	10	8/ 5/20	8/5/20 15:59	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 1245
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16PM02-200720	**Units:**	µg/L
Lab Code:	E2000674-007	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0686**	J	0.100	0.0500	0.0250	1	8/ 5/20	8/5/20 14:12	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 1335
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16PM03-200720	**Units:**	µg/L
Lab Code:	E2000674-008	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**245**		1.00	0.500	0.250	10	8/ 5/20	8/5/20 16:07	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2000328-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/ 5/20	8/5/20 16:30	362931	689820	

Accuracy & Precision

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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20071033
Sample Matrix: Ground Water

Service Request: E2000674
Date Analyzed: 8/ 5/20

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 362931

	Lab Control Sample EQ2000328-02			Duplicate Lab Control Sample EQ2000328-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.116	0.100	116	0.118	0.100	118	84 - 119	2	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000328-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.116**		0.100	0.0500	0.0250	1	8/ 5/20	8/5/20 12:30	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2000328-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.118**		0.100	0.0500	0.0250	1	8/ 5/20	8/5/20 12:38	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
		Date Analyzed:	8/ 5/20

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	16RW10-200720	**Units:**	µg/L
Lab Code:	E2000674-003	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		16RW10-200720MS				16RW10-200720DMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2000328-04				EQ2000328-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	62.7	62.8	0.100	96		62.8	0.100	101	84 - 119	<1	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 0920
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16RW10-200720	**Units:**	µg/L
Lab Code:	EQ2000328-04	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**62.8**		1.00	0.500	0.250	10	8/ 5/20	8/5/20 16:38	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 0920
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16RW10-200720	**Units:**	µg/L
Lab Code:	EQ2000328-05	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**62.8**		1.00	0.500	0.250	10	8/ 5/20	8/5/20 16:46	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
		Date Analyzed:	8/ 6/20

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	16PM06-200720	**Units:**	µg/L
Lab Code:	E2000674-005	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		16PM06-200720MS				16PM06-200720DMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2000328-06				EQ2000328-07					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**		**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND	0.276	0.100	276	*	0.280	0.100	280	*	84 - 119	1	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 1100
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16PM06-200720	**Units:**	µg/L
Lab Code:	EQ2000328-06	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.276**	J	1.00	0.500	0.250	10	8/ 5/20	8/6/20 11:42	362931	689820	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Collected:**	7/20/20 1100
Sample Matrix:	Ground Water	**Date Received:**	7/23/20
Sample Name:	16PM06-200720	**Units:**	µg/L
Lab Code:	EQ2000328-07	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.280**	J	1.00	0.500	0.250	10	8/ 5/20	8/6/20 12:25	362931	689820	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20200724

1st Review: Kneir
2nd Review: Hvan

ALS Environmental

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: **EC2000016**

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	PERCHLORATE1		20200724_005	Perchlorate6850b.lcm	1x	☒	3100806-05
2	PERCHLORATE2		20200724_006	Perchlorate6850b.lcm	1x	☒	3100806-06
3	PERCHLORATE3		20200724_007	Perchlorate6850b.lcm	1x	☒	3100806-07
4	PERCHLORATE4		20200724_008	Perchlorate6850b.lcm	1x	☒	3100807-01
5	PERCHLORATE5		20200724_009	Perchlorate6850b.lcm	1x	☒	3100807-02
6	PERCHLORATE6		20200724_010	Perchlorate6850b.lcm	1x	☒	3100807-03
7	PERCHLORATE7		20200724_011	Perchlorate6850b.lcm	1x	☒	3100807-04
8	PERCHLORATE8		20200724_012	Perchlorate6850b.lcm	1x	☒	3100807-05
9	PERCHLORATE9		20200724_013	Perchlorate6850b.lcm	1x	☒	3100807-06
10	PERCHLORATE10		20200724_014	Perchlorate6850b.lcm	1x	☒	3100807-07
11	IB		20200724_015	Perchlorate6850b.lcm	1x	☒	
12	PERCHLORATEICV		20200724_016	Perchlorate6850b.lcm	1x	☒	3100807-08
13	IB		20200724_017	Perchlorate6850b.lcm	1x	☒	
14	LODV		20200724_018	Perchlorate6850b.lcm	1x	☒	
15	ICS		20200724_019	Perchlorate6850b.lcm	1x	☒	
16	PERCHLORATE7		20200724_020	Perchlorate6850b.lcm	1x	☒	3100807-04
17	EQ2000302-04X10		20200724_021	Perchlorate6850b.lcm	10x	☒	
18	EQ2000302-05X10DNU		20200724_022	Perchlorate6850b.lcm	10x	☒	
19	E2000626-001X2		20200724_023	Perchlorate6850b.lcm	2x	☒	
20	E2000627-001X10		20200724_024	Perchlorate6850b.lcm	10x	☒	
21	E2000627-005X100		20200724_025	Perchlorate6850b.lcm	100x	☒	
22	E2000627-006X100		20200724_026	Perchlorate6850b.lcm	100x	☒	
23	E2000627-009X1000		20200724_027	Perchlorate6850b.lcm	1000x	☒	
24	E2000640-001X200		20200724_028	Perchlorate6850b.lcm	200x	☒	
25	PERCHLORATE7		20200724_029	Perchlorate6850b.lcm	1x	☒	3100807-04
26	E2000660-001X10		20200724_030	Perchlorate6850b.lcm	10x	☒	
27	E2000627-004X10		20200724_031	Perchlorate6850b.lcm	10x	☒	
28	PERCHLORATE7		20200724_032	Perchlorate6850b.lcm	1x	☒	3100807-04
29	EQ2000302-05X10		20200724_033	Perchlorate6850b.lcm	10x	☒	
30	PERCHLORATE7		20200724_034	Perchlorate6850b.lcm	1x	☒	3100807-04
31	E2000660-003X10		20200724_035	Perchlorate6850b.lcm	10x	☒	
32	E2000660-004X10		20200724_036	Perchlorate6850b.lcm	10x	☒	
33	E2000660-005X2		20200724_037	Perchlorate6850b.lcm	2x	☒	
34	E2000660-006X10		20200724_038	Perchlorate6850b.lcm	10x	☒	
35	PERCHLORATE7		20200724_039	Perchlorate6850b.lcm	1x	☒	3100807-04
36	EQ2000303-01		20200724_040	Perchlorate6850b.lcm	1x	☒	
37	EQ2000303-02		20200724_041	Perchlorate6850b.lcm	1x	☒	
38	EQ2000303-03		20200724_042	Perchlorate6850b.lcm	1x	☒	
39	E2000641-001X20		20200724_043	Perchlorate6850b.lcm	20x	☒	
40	E2000641-002X20		20200724_044	Perchlorate6850b.lcm	20x	☒	
41	E2000641-003X10		20200724_045	Perchlorate6850b.lcm	10x	☒	
42	E2000641-004X20		20200724_046	Perchlorate6850b.lcm	20x	☒	
43	E2000641-005X10		20200724_047	Perchlorate6850b.lcm	10x	☒	
44	E2000641-006X10		20200724_048	Perchlorate6850b.lcm	10x	☒	
45	E2000641-007X10		20200724_049	Perchlorate6850b.lcm	10x	☒	
46	PERCHLORATE7		20200724_050	Perchlorate6850b.lcm	1x	☒	3100807-04
47	E2000641-008X10		20200724_051	Perchlorate6850b.lcm	10x	☒	
48	E2000641-009X10		20200724_052	Perchlorate6850b.lcm	10x	☒	
49	E2000648-001X10		20200724_053	Perchlorate6850b.lcm	10x	☒	
50	E2000648-002X10		20200724_054	Perchlorate6850b.lcm	10x	☒	
51	E2000648-003X20		20200724_055	Perchlorate6850b.lcm	20x	☒	
52	E2000648-005X10		20200724_056	Perchlorate6850b.lcm	10x	☒	

Initial Calibration - Detailed Report

Calibration ID: EC2000016 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2000016-01	PERCHLORATE1	20200724_005	07/24/2020 11:48
02	EC2000016-02	PERCHLORATE2	20200724_006	07/24/2020 11:56
03	EC2000016-03	PERCHLORATE3	20200724_007	07/24/2020 12:04
04	EC2000016-04	PERCHLORATE4	20200724_008	07/24/2020 12:11
05	EC2000016-05	PERCHLORATE5	20200724_009	07/24/2020 12:19
06	EC2000016-06	PERCHLORATE6	20200724_010	07/24/2020 12:27
07	EC2000016-07	PERCHLORATE7	20200724_011	07/24/2020 12:35
08	EC2000016-08	PERCHLORATE8	20200724_012	07/24/2020 12:43
09	EC2000016-09	PERCHLORATE9	20200724_013	07/24/2020 12:51
10	EC2000016-10	PERCHLORATE10	20200724_014	07/24/2020 12:59

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 4.659** **Average RF = 0.121**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1283	02	0.5000	0.13	03	0.7000	0.1207	04	1.0000	0.1251
05	2.0000	0.1211	06	5.0000	0.1202	07	10.0000	0.1211	08	20.0000	0.1168
09	30.0000	0.1121	10	50.0000	0.1148						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.106	6.0	02	0.5000	0.537	7.4	03	0.7000	0.698	-0.3
04	1.0000	1.03	3.4	05	2.0000	2.00	0.1	06	5.0000	4.97	-0.7
07	10.0000	10.0	0.1	08	20.0000	19.3	-3.5	09	30.0000	27.8	-7.3
10	50.0000	47.4	-5.1								

Initial Calibration Verification Summary Report

Calibration ID:	EC2000016	**Instrument ID:**	E-LCMS-01
Datafile ID:	20200724_016	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2000016-11	T	Average RF	10	9.867	ng/mL	-1.3	<= 15

ALS Group Houston

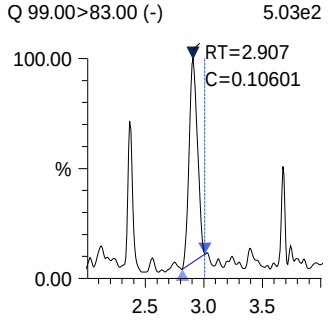
PERCHLORATE1

Date acquired: 7/24/2020 11:48:19 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_005.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE1	7/24/2020 11:48:19 AM	2348	0.10601	20200724_005	2.907	25.0000	1.0000	5
Sodium Perchlorate-18O4_IS	PERCHLORATE1	7/24/2020 11:48:19 AM	183001	1.00000	20200724_005	2.903	25.0000	1.0000	5

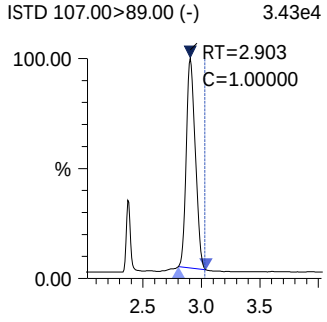
Perchlorate

Conc 0.10601
Area 2348



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 183001



ALS Group Houston

PERCHLORATE2

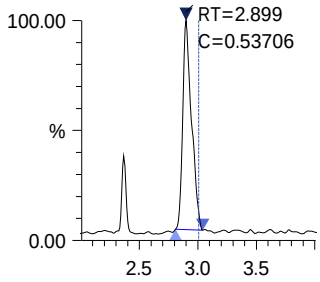
Date acquired: 7/24/2020 11:56:11 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_006.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE2	7/24/2020 11:56:11 AM	11773	0.53706	20200724_006	2.899	25.0000	1.0000	6
Sodium Perchlorate-18O4_IS	PERCHLORATE2	7/24/2020 11:56:11 AM	181125	1.00000	20200724_006	2.898	25.0000	1.0000	6

Perchlorate

Conc 0.53706
Area 11773

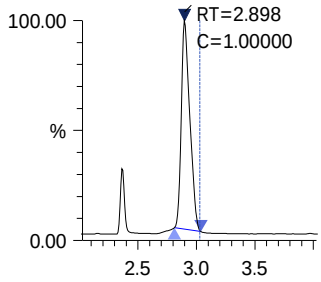
Q 99.00>83.00 (-) 2.32e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 181125

ISTD 107.00>89.00 (-) 3.62e4



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PERCHLORATE3

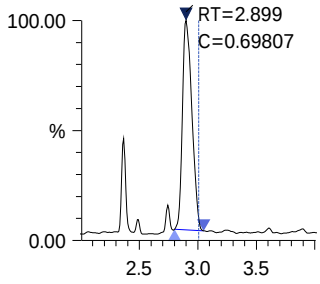
Date acquired: 7/24/2020 12:04:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_007.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE3	7/24/2020 12:04:05 PM	15258	0.69807	20200724_007	2.899	25.0000	1.0000	7
Sodium Perchlorate-18O4_IS	PERCHLORATE3	7/24/2020 12:04:05 PM	180602	1.00000	20200724_007	2.896	25.0000	1.0000	7

Perchlorate

Conc 0.69807
Area 15258

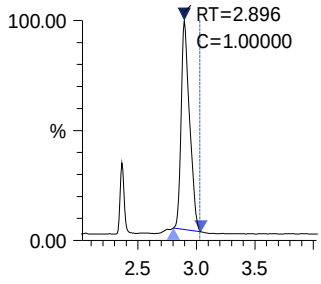
Q 99.00>83.00 (-) 2.79e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 180602

ISTD 107.00>89.00 (-) 3.65e4



ALS Group Houston

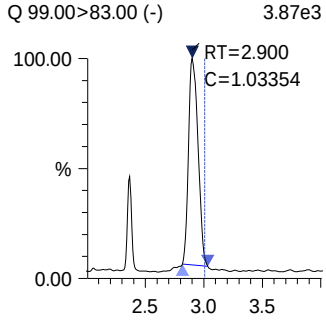
PERCHLORATE4

Date acquired: 7/24/2020 12:11:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_008.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE4	7/24/2020 12:11:58 PM	20922	1.03354	20200724_008	2.900	25.0000	1.0000	8
Sodium Perchlorate-18O4_IS	PERCHLORATE4	7/24/2020 12:11:58 PM	167260	1.00000	20200724_008	2.902	25.0000	1.0000	8

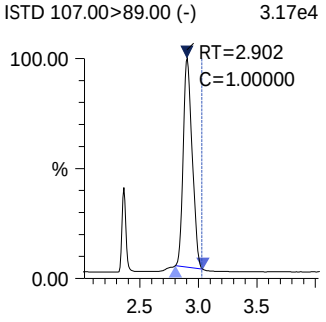
Perchlorate

Conc 1.03354
Area 20922



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 167260



ALS Group Houston

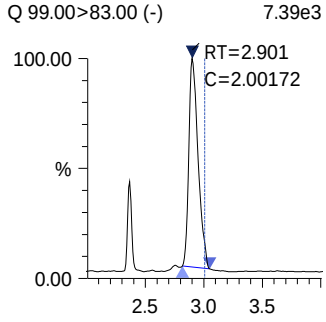
PERCHLORATE5

Date acquired: 7/24/2020 12:19:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_009.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE5	7/24/2020 12:19:50 PM	39343	2.00172	20200724_009	2.901	25.0000	1.0000	9
Sodium Perchlorate-18O4_IS	PERCHLORATE5	7/24/2020 12:19:50 PM	162397	1.00000	20200724_009	2.899	25.0000	1.0000	9

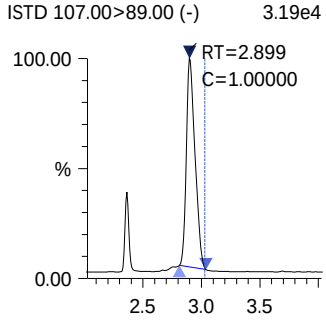
Perchlorate

Conc 2.00172
Area 39343



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 162397



ALS Group Houston

PERCHLORATE6

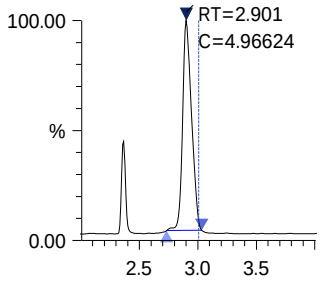
Date acquired: 7/24/2020 12:27:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_010.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE6	7/24/2020 12:27:42 PM	102216	4.96624	20200724_010	2.901	25.0000	1.0000	10
Sodium Perchlorate-18O4_IS	PERCHLORATE6	7/24/2020 12:27:42 PM	170060	1.00000	20200724_010	2.900	25.0000	1.0000	10

Perchlorate

Conc 4.96624
Area 102216

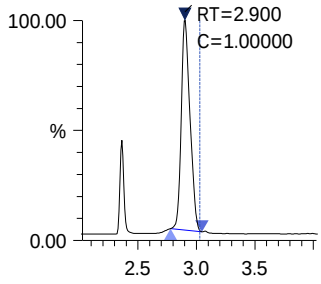
Q 99.00>83.00 (-) 1.97e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 170060

ISTD 107.00>89.00 (-) 3.28e4



ALS Group Houston

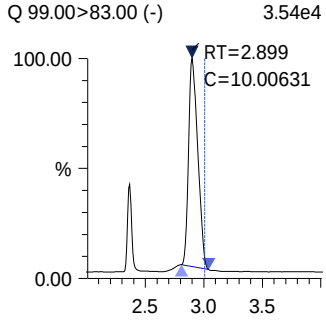
PERCHLORATE7

Date acquired: 7/24/2020 12:35:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_011.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	7/24/2020 12:35:33 PM	187110	10.00631	20200724_011	2.899	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	7/24/2020 12:35:33 PM	154502	1.00000	20200724_011	2.897	25.0000	1.0000	4

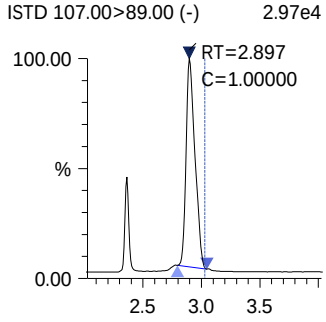
Perchlorate

Conc 10.00631
Area 187110



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 154502



ALS Group Houston

PERCHLORATE8

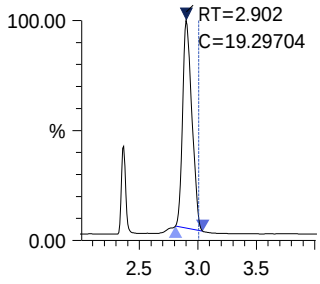
Date acquired: 7/24/2020 12:43:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_012.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE8	7/24/2020 12:43:26 PM	349524	19.29704	20200724_012	2.902	25.0000	1.0000	11
Sodium Perchlorate-18O4_IS	PERCHLORATE8	7/24/2020 12:43:26 PM	149657	1.00000	20200724_012	2.900	25.0000	1.0000	11

Perchlorate

Conc 19.29704
Area 349524

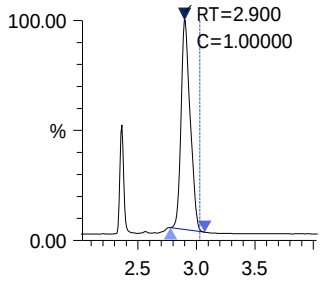
Q 99.00>83.00 (-) 6.58e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 149657

ISTD 107.00>89.00 (-) 2.78e4



ALS Group Houston

PERCHLORATE9

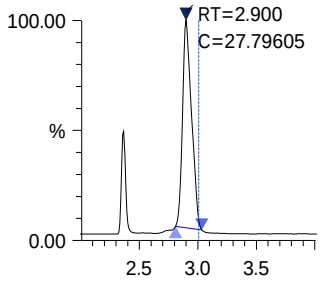
Date acquired: 7/24/2020 12:51:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_013.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE9	7/24/2020 12:51:22 PM	465757	27.79605	20200724_013	2.900	25.0000	1.0000	12
Sodium Perchlorate-18O4_IS	PERCHLORATE9	7/24/2020 12:51:22 PM	138448	1.00000	20200724_013	2.898	25.0000	1.0000	12

Perchlorate

Conc 27.79605
Area 465757

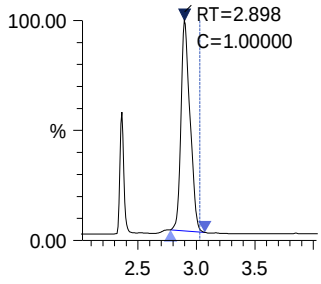
Q 99.00>83.00 (-) 9.05e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 138448

ISTD 107.00>89.00 (-) 2.59e4



ALS Group Houston

PERCHLORATE10

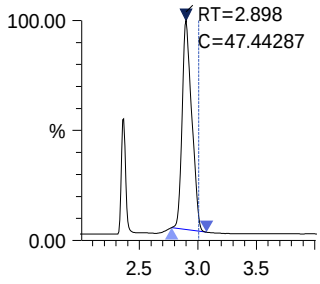
Date acquired: 7/24/2020 12:59:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_014.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE10	7/24/2020 12:59:14 PM	708682	47.44287	20200724_014	2.898	25.0000	1.0000	13
Sodium Perchlorate-18O4_IS	PERCHLORATE10	7/24/2020 12:59:14 PM	123422	1.00000	20200724_014	2.896	25.0000	1.0000	13

Perchlorate

Conc 47.44287
Area 708682

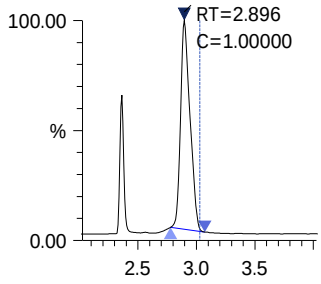
Q 99.00>83.00 (-) 1.28e5



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 123422

ISTD 107.00>89.00 (-) 2.23e4



ALS Group Houston

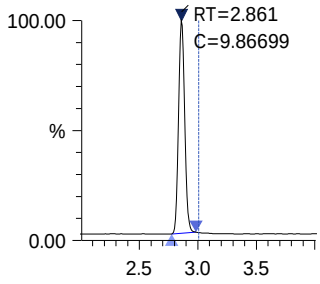
PERCHLORATEICV

Date acquired: 7/24/2020 1:28:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200724\20200724_016.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATEICV	7/24/2020 1:28:19 PM	231631	9.86699	20200724_016	2.861	25.0000	1.0000	14
Sodium Perchlorate-18O4_IS	PERCHLORATEICV	7/24/2020 1:28:19 PM	193964	1.00000	20200724_016	2.859	25.0000	1.0000	14

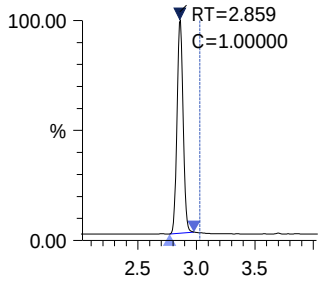
Perchlorate

Conc 9.86699
Area 231631
Q 99.00>83.00 (-) 6.30e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 193964
ISTD 107.00>89.00 (-) 5.33e4



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20200805

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	null		20200805_001	Perchlorate6850b.lcm	1x	☒	
2	null		20200805_002	Perchlorate6850b.lcm	1x	☒	
3	IB		20200805_003	Perchlorate6850b.lcm	1x	☒	
4	IB		20200805_004	Perchlorate6850b.lcm	1x	☒	
5	LODV		20200805_005	Perchlorate6850b.lcm	1x	☒	
6	ICS		20200805_006	Perchlorate6850b.lcm	1x	☒	
7	PERCHLORATE7		20200805_007	Perchlorate6850b.lcm	1x	☒	3100807-04
8	E2000671-002x10		20200805_008	Perchlorate6850b.lcm	10x	☒	
9	E2000671-003x10		20200805_009	Perchlorate6850b.lcm	10x	☒	
10	E2000671-004x10		20200805_010	Perchlorate6850b.lcm	10x	☒	
11	E2000671-005x10		20200805_011	Perchlorate6850b.lcm	10x	☒	
12	E2000672-001x2		20200805_012	Perchlorate6850b.lcm	2x	☒	
13	E2000689-001x2		20200805_013	Perchlorate6850b.lcm	2x	☒	
14	PERCHLORATE7		20200805_014	Perchlorate6850b.lcm	1x	☒	
15	EQ2000328-01		20200805_015	Perchlorate6850b.lcm	1x	☒	
16	EQ2000328-02		20200805_016	Perchlorate6850b.lcm	1x	☒	
17	EQ2000328-03		20200805_017	Perchlorate6850b.lcm	1x	☒	
18	EQ2000328-04		20200805_018	Perchlorate6850b.lcm	1x	☒	3100807-04
19	EQ2000328-05		20200805_019	Perchlorate6850b.lcm	1x	☒	
20	EQ2000328-06		20200805_020	Perchlorate6850b.lcm	1x	☒	
21	EQ2000328-07		20200805_021	Perchlorate6850b.lcm	1x	☒	3100807-04
22	E2000674-001		20200805_022	Perchlorate6850b.lcm	1x	☒	
23	E2000674-002		20200805_023	Perchlorate6850b.lcm	1x	☒	
24	E2000674-003		20200805_024	Perchlorate6850b.lcm	1x	☒	
25	PERCHLORATE7		20200805_025	Perchlorate6850b.lcm	1x	☒	
26	E2000674-004		20200805_026	Perchlorate6850b.lcm	1x	☒	
27	E2000674-005		20200805_027	Perchlorate6850b.lcm	1x	☒	
28	E2000674-006		20200805_028	Perchlorate6850b.lcm	1x	☒	
29	E2000674-007		20200805_029	Perchlorate6850b.lcm	1x	☒	
30	E2000674-008		20200805_030	Perchlorate6850b.lcm	1x	☒	
31	PERCHLORATE7		20200805_031	Perchlorate6850b.lcm	1x	☒	3100807-04
32	E2000674-002X10		20200805_032	Perchlorate6850b.lcm	10x	☒	
33	E2000674-003X10		20200805_033	Perchlorate6850b.lcm	10x	☒	
34	E2000674-005X10		20200805_034	Perchlorate6850b.lcm	10x	☒	
35	E2000674-006X10		20200805_035	Perchlorate6850b.lcm	10x	☒	
36	E2000674-008X10		20200805_036	Perchlorate6850b.lcm	10x	☒	
37	PERCHLORATE7		20200805_037	Perchlorate6850b.lcm	1x	☒	3100807-04
38	EQ2000328-01		20200805_038	Perchlorate6850b.lcm	1x	☒	
39	EQ2000328-04X10		20200805_039	Perchlorate6850b.lcm	10x	☒	
40	EQ2000328-05X10		20200805_040	Perchlorate6850b.lcm	10x	☒	
41	EQ2000328-06X10		20200805_041	Perchlorate6850b.lcm	10x	☒	
42	EQ2000328-07X10		20200805_042	Perchlorate6850b.lcm	10x	☒	
43	PERCHLORATE7		20200805_043	Perchlorate6850b.lcm	1X	☒	3100807-04
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20200806

ALS Environmental

1st Review: Kneir
2nd Review: Hvan

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 7/24/2020
Cal. Std. xp: 11/18/2020
ICAL ID: EC2000016

Mobile Phases **A:** 0.75% Formic Acid/Water 3100807-09 **B:** MeOH 3100802-01

			File Name	Acquisition Method	Dilution	R	Comments
1	null		20200806_001	Perchlorate6850b.lcm	1x	☒	
2	null		20200806_002	Perchlorate6850b.lcm	1x	☒	
3	IB		20200806_003	Perchlorate6850b.lcm	1x	☒	
4	IB		20200806_004	Perchlorate6850b.lcm	1x	☒	
5	LODV		20200806_005	Perchlorate6850b.lcm	1x	☒	
6	ICS		20200806_006	Perchlorate6850b.lcm	1x	☒	
7	PERCHLORATE7		20200806_007	Perchlorate6850b.lcm	1x	☒	3100807-04
8	EQ2000328-06X10		20200806_008	Perchlorate6850b.lcm	10x	☒	
9	EQ2000328-07X10		20200806_009	Perchlorate6850b.lcm	10x	☒	
10	EQ2000318-01		20200806_010	Perchlorate6850b.lcm	1x	☒	
11	E2000674-005X10		20200806_011	Perchlorate6850b.lcm	10x	☒	
12	EQ2000318-02		20200806_012	Perchlorate6850b.lcm	1x	☒	
13	EQ2000318-03		20200806_013	Perchlorate6850b.lcm	1x	☒	
14	EQ2000318-04		20200806_014	Perchlorate6850b.lcm	1x	☒	
15	EQ2000318-05		20200806_015	Perchlorate6850b.lcm	1x	☒	
16	EQ2000328-06X10		20200806_016	Perchlorate6850b.lcm	10x	☒	
17	EQ2000328-07X10		20200806_017	Perchlorate6850b.lcm	10x	☒	
18	PERCHLORATE7		20200806_018	Perchlorate6850b.lcm	1x	☒	3100807-04
19	E2000674-005X10		20200806_019	Perchlorate6850b.lcm	10x	☒	
20	E2000680-001X10		20200806_020	Perchlorate6850b.lcm	10x	☒	
21	R2006334-009		20200806_021	Perchlorate6850b.lcm	1x	☒	
22	R2006334-014		20200806_022	Perchlorate6850b.lcm	1x	☒	
23	R2006334-016		20200806_023	Perchlorate6850b.lcm	1x	☒	
24	PERCHLORATE7		20200806_024	Perchlorate6850b.lcm	1x	☒	3100807-04
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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20071033

Service Request: E2000674
Date Analyzed: 8/ 5/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200805\20200805_014

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689820
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.17	0.1210	0.1109	-8.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20071033

Service Request: E2000674
Date Analyzed: 8/ 5/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200805\20200805_025

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689820
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.16	0.1210	0.1109	-8.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20071033

Service Request: E2000674
Date Analyzed: 8/ 5/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200805\20200805_031

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689820
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	8.95	0.1210	0.1083	-10.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20071033

Service Request: E2000674
Date Analyzed: 8/ 5/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200805\20200805_031

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689820
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	8.95	0.1210	0.1083	-10.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20071033

Service Request: E2000674
Date Analyzed: 8/ 5/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200805\20200805_037

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689820
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.02	0.1210	0.1092	-9.8	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20071033

Service Request: E2000674
Date Analyzed: 8/ 5/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200805\20200805_043

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689820
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.01	0.1210	0.1090	-9.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20071033

Service Request: E2000674
Date Analyzed: 8/ 6/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200806\20200806_007

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689820
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.05	0.1210	0.1095	-9.5	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS20071033

Service Request: E2000674
Date Analyzed: 8/ 6/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20200806\20200806_018

Calibration Date: 7/24/20
Calibration ID: EC2000016
Analysis Lot: 689820
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.28	0.1210	0.1123	-7.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/ 6/20

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	7/24/20
File ID:	I:\LCMS01\DATA\20200806\20200806_024	**Calibration ID:**	EC2000016
		Analysis Lot:	689820
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.11	0.1210	0.1103	-8.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/5/20 11:56

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200805\20200805_014	**Lab Code:**	EQ2000330-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689820
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000330-01	207,311	2.88
Lab Control Sample	EQ2000328-02	239,187	2.88
Duplicate Lab Control Sample	EQ2000328-03	238,028	2.88
16WW44-200720	E2000674-001	128,893	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/5/20 13:41

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200805\20200805_025	**Lab Code:**	EQ2000330-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689820
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000330-02	148,884	2.88
16PM09-200720	E2000674-004	91,381	2.87
16PM02-200720	E2000674-007	81,028	2.87

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/5/20 14:28

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200805\20200805_031	**Lab Code:**	EQ2000330-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689820
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000330-03	144,103	2.88
Continuing Calibration Verification	EQ2000330-04	144,103	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/5/20 14:28

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200805\20200805_031	**Lab Code:**	EQ2000330-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689820
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000330-03	144,103	2.88
Continuing Calibration Verification	EQ2000330-04	144,103	2.88
16WW14-200720	E2000674-002	149,730	2.82
16RW10-200720	E2000674-003	108,720	2.87
16PM14-200720	E2000674-006	113,600	2.86
16PM03-200720	E2000674-008	111,238	2.87

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/5/20 16:15

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200805\20200805_037	**Lab Code:**	EQ2000330-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689820
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000330-05	176,954	2.88
Method Blank	EQ2000328-01	238,718	2.81
16RW10-200720MS	EQ2000328-04	136,530	2.81
16RW10-200720DMS	EQ2000328-05	106,502	2.87

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/5/20 17:10

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200805\20200805_043	**Lab Code:**	EQ2000330-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689820
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000330-06	137,120	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/6/20 10:24

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200806\20200806_007	**Lab Code:**	EQ2000330-07
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689820
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000330-07	168,468	2.88
16PM06-200720MS	EQ2000328-06	173,044	2.82
16PM06-200720DMS	EQ2000328-07	209,760	2.82

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/6/20 12:32

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200806\20200806_018	**Lab Code:**	EQ2000330-08
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689820
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000330-08	157,554	2.88
16PM06-200720	E2000674-005	190,078	2.82

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2000674
Project:	HS20071033	**Date Analyzed:**	8/6/20 13:35

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20200806\20200806_024	**Lab Code:**	EQ2000330-09
Instrument ID:	E-LCMS-01	**Analysis Lot:**	689820
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	161,047	2.90
	Upper Limit ==>	241,571	4.90
	Lower Limit ==>	80,524	0.90
Associated Analyses			
Continuing Calibration Verification	EQ2000330-09	159,534	2.88

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group Houston

PERCHLORATE7

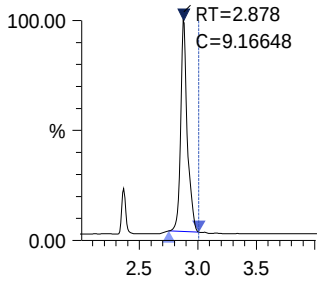
Date acquired: 8/5/2020 11:56:14 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200805\20200805_014.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	8/5/2020 11:56:14 AM	229993	9.16648	20200805_014	2.878	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	8/5/2020 11:56:14 AM	207311	1.00000	20200805_014	2.877	25.0000	1.0000	4

Perchlorate

Conc 9.16648
Area 229993

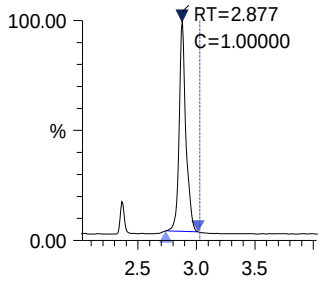
Q 99.00>83.00 (-) 5.89e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 207311

ISTD 107.00>89.00 (-) 5.24e4



ALS Group Houston

EQ2000328-02

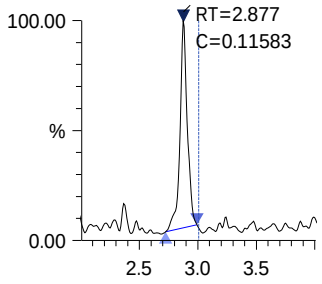
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200805\20200805_016.lcd
Vial: 40 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000328-02	8/5/2020 12:30:31 PM	3353	0.11583	20200805_016	2.877	25.0000	1.0000	40
Sodium Perchlorate-18O4_IS	EQ2000328-02	8/5/2020 12:30:31 PM	239187	1.00000	20200805_016	2.875	25.0000	1.0000	40

Perchlorate

Conc 0.11583
Area 3353

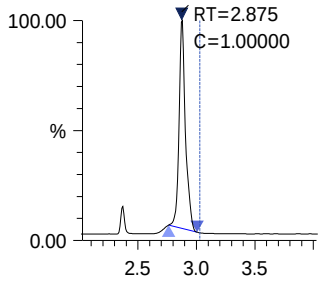
Q 99.00>83.00 (-) 7.93e2



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 239187

ISTD 107.00>89.00 (-) 6.35e4



ALS Group Houston

EQ2000328-03

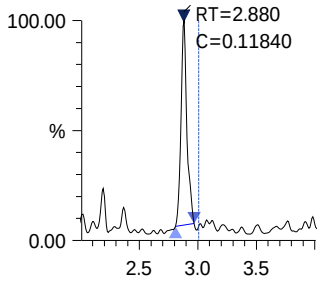
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Vial: 41 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000328-03	8/5/2020 12:38:23 PM	3411	0.11840	20200805_017	2.880	25.0000	1.0000	41
Sodium Perchlorate-18O4_IS	EQ2000328-03	8/5/2020 12:38:23 PM	238028	1.00000	20200805_017	2.878	25.0000	1.0000	41

Perchlorate

Conc 0.11840
Area 3411

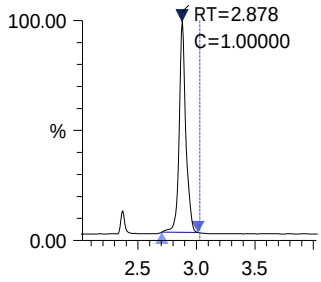
Q 99.00>83.00 (-) 1.02e3



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 238028

ISTD 107.00>89.00 (-) 6.06e4



ALS Group Houston

PERCHLORATE7

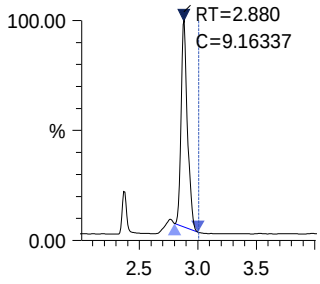
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200805\20200805_025.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	8/5/2020 1:41:31 PM	165118	9.16337	20200805_025	2.880	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	8/5/2020 1:41:31 PM	148884	1.00000	20200805_025	2.879	25.0000	1.0000	4

Perchlorate

Conc 9.16337
Area 165118

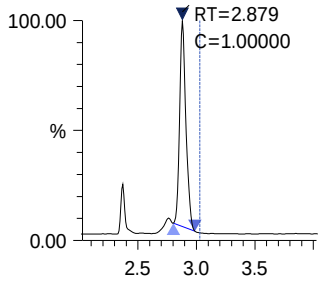
Q 99.00>83.00 (-) 4.55e4



Sodium Perchlorate-18O4 _IS

Conc 1.00000
Area 148884

ISTD 107.00>89.00 (-) 4.08e4



ALS Group Houston

PERCHLORATE7

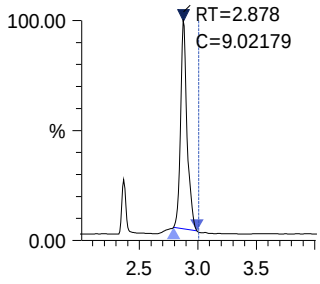
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Data File: I:\LCMS01\DATA\20200805\20200805_037.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	8/5/2020 4:15:17 PM	193215	9.02179	20200805_037	2.878	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	8/5/2020 4:15:17 PM	176954	1.00000	20200805_037	2.876	25.0000	1.0000	4

Perchlorate

Conc 9.02179
Area 193215

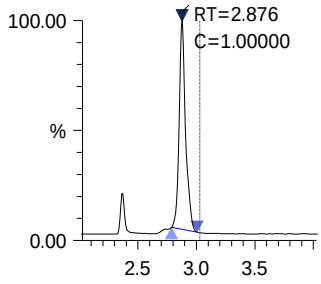
Q 99.00>83.00 (-) 5.15e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 176954

ISTD 107.00>89.00 (-) 4.68e4



ALS Group Houston

EQ2000328-01

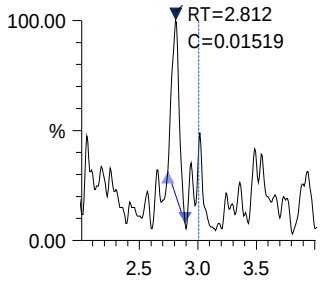
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Vial: 39 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000328-01	8/5/2020 4:30:04 PM	439	0.01519	20200805_038	2.812	25.0000	1.0000	39
Sodium Perchlorate-18O4_IS	EQ2000328-01	8/5/2020 4:30:04 PM	238718	1.00000	20200805_038	2.814	25.0000	1.0000	39

Perchlorate

Conc 0.01519
Area 439

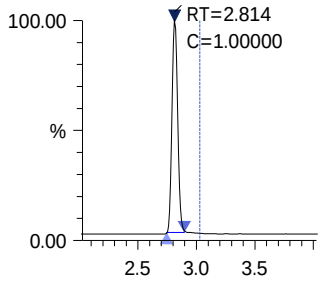
Q 99.00>83.00 (-) 1.20e2



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 238718

ISTD 107.00>89.00 (-) 7.32e4



ALS Group Houston

EQ2000328-04X10

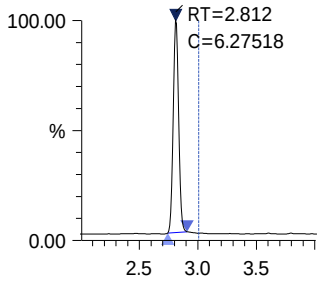
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Vial: 42 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000328-04X10	8/5/2020 4:38:38 PM	103691	6.27518	20200805_039	2.812	25.0000	1.0000	42
Sodium Perchlorate-18O4_IS	EQ2000328-04X10	8/5/2020 4:38:38 PM	136530	1.00000	20200805_039	2.810	25.0000	1.0000	42

Perchlorate

Conc 6.27518
Area 103691

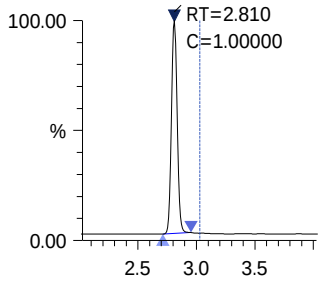
Q 99.00>83.00 (-) 3.19e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 136530

ISTD 107.00>89.00 (-) 4.13e4



ALS Group Houston

EQ2000328-05X10

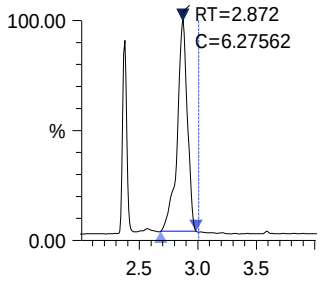
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Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200805\20200805_040.lcd
Vial: 43 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000328-05X10	8/5/2020 4:46:32 PM	80892	6.27562	20200805_040	2.872	25.0000	1.0000	43
Sodium Perchlorate-18O4_IS	EQ2000328-05X10	8/5/2020 4:46:32 PM	106502	1.00000	20200805_040	2.872	25.0000	1.0000	43

Perchlorate

Conc 6.27562
Area 80892

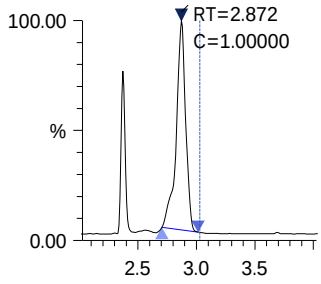
Q 99.00>83.00 (-) 1.36e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 106502

ISTD 107.00>89.00 (-) 1.93e4



ALS Group Houston

PERCHLORATE7

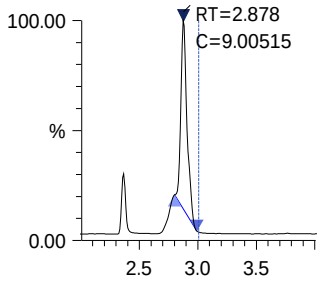
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Data File: I:\LCMS01\DATA\20200805\20200805_043.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	8/5/2020 5:10:14 PM	149444	9.00515	20200805_043	2.878	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	8/5/2020 5:10:14 PM	137120	1.00000	20200805_043	2.876	25.0000	1.0000	4

Perchlorate

Conc 9.00515
Area 149444

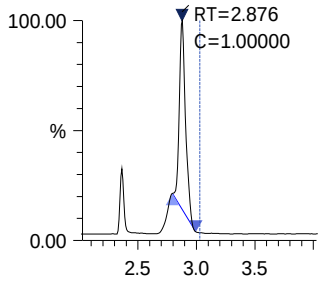
Q 99.00>83.00 (-) 4.64e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 137120

ISTD 107.00>89.00 (-) 4.18e4



ALS Group Houston

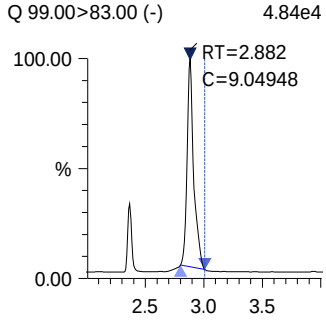
PERCHLORATE7

Date acquired: 8/6/2020 10:24:58 AM
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Data File: I:\LCMS01\DATA\20200806\20200806_007.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	8/6/2020 10:24:58 AM	184514	9.04948	20200806_007	2.882	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	8/6/2020 10:24:58 AM	168468	1.00000	20200806_007	2.881	25.0000	1.0000	4

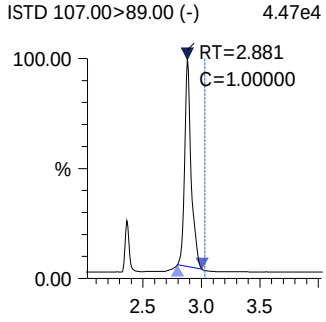
Perchlorate

Conc 9.04948
Area 184514



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 168468



ALS Group Houston

EQ2000328-06X10

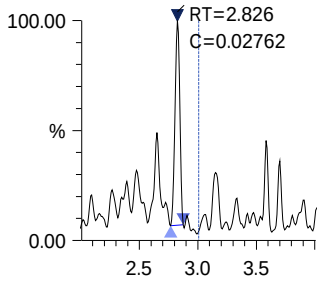
Date acquired: 8/6/2020 11:42:32 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200806\20200806_016.lcd
Vial: 44 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000328-06X10	8/6/2020 11:42:32 AM	578	0.02762	20200806_016	2.826	25.0000	1.0000	44
Sodium Perchlorate-18O4_IS	EQ2000328-06X10	8/6/2020 11:42:32 AM	173044	1.00000	20200806_016	2.820	25.0000	1.0000	44

Perchlorate

Conc 0.02762
Area 578

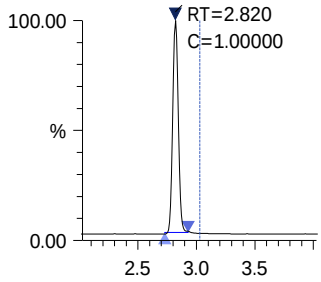
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Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 173044

ISTD 107.00>89.00 (-) 5.45e4



ALS Group Houston

EQ2000328-07X10

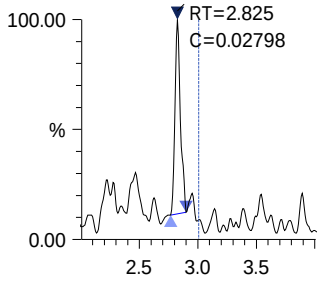
Date acquired: 8/6/2020 12:25:04 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200806\20200806_017.lcd
Vial: 45 | Inj. Volume: 25.0000uL | Tray: 2

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	EQ2000328-07X10	8/6/2020 12:25:04 PM	710	0.02798	20200806_017	2.825	25.0000	1.0000	45
Sodium Perchlorate-18O4_IS	EQ2000328-07X10	8/6/2020 12:25:04 PM	209760	1.00000	20200806_017	2.824	25.0000	1.0000	45

Perchlorate

Conc 0.02798
Area 710

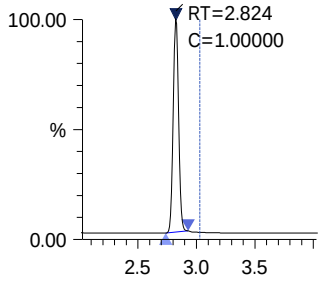
Q 99.00>83.00 (-) 2.37e2



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 209760

ISTD 107.00>89.00 (-) 6.73e4



ALS Group Houston

PERCHLORATE7

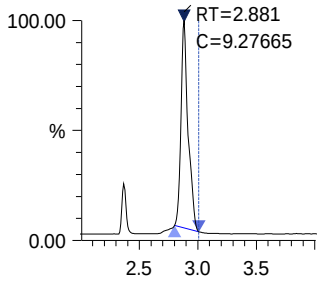
Date acquired: 8/6/2020 12:32:59 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20200806\20200806_018.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 1

Name	Sample ID	Acquired Date	Area	Conc.	Data Filename	Found RT	Inj Vol	ISTD Amount	Vial
Perchlorate	PERCHLORATE7	8/6/2020 12:32:59 PM	176892	9.27665	20200806_018	2.881	25.0000	1.0000	4
Sodium Perchlorate-18O4_IS	PERCHLORATE7	8/6/2020 12:32:59 PM	157554	1.00000	20200806_018	2.880	25.0000	1.0000	4

Perchlorate

Conc 9.27665
Area 176892

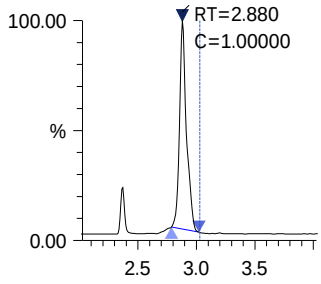
Q 99.00>83.00 (-) 4.32e4



Sodium Perchlorate-18O4_IS

Conc 1.00000
Area 157554

ISTD 107.00>89.00 (-) 3.87e4



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August 12, 2020

Analytical Report for Service Request No: K2006280

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

RE: HS20071033

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory July 24, 2020
For your reference, these analyses have been assigned our service request number **K2006280.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS20071033
Sample Matrix: Ground Water

Service Request: K2006280
Date Received: 07/24/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Three ground water samples were received for analysis at ALS Environmental on 07/24/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Noe D. Oaxaca Date 08/12/2020

Chain of Custody

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Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **14356**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company: ALS Houston
Contact: RJ Modashia
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Email: RJ.Modashia@alsglobal.com
Alternate Contact:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS20071033
TSR: Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20071033-03**	**16RW10-200720**	**Groundwater**	**20 Jul 2020 09:20**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			05 Aug 2020
2.	**HS20071033-05**	**16PM06-200720**	**Groundwater**	**20 Jul 2020 11:00**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			05 Aug 2020
3.	**HS20071033-06**	**16PM14-200720**	**Groundwater**	**20 Jul 2020 11:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			05 Aug 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
HS20071033-03 & HS20071033-05 = MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 7/23/2020 1800

Received By: _____ Date/Time: 7/24/20 0930

Cooler ID(s): _____ Temperature(s): _____

PC_____

Cooler Receipt and Preservation Form

Client AK-Houston Service Request *K20*

Received: 7/24/20 Opened: 7/24/20 By: BR Unloaded: 7/24/20 By: BR

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID (NA)	Tracking Number NA	Filed
0.1	—	—	—	—	1801		1891 8578 0540	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2006280
Project:	HS20071033	**Date Collected:**	07/20/20
Sample Matrix:	Ground Water	**Date Received:**	07/24/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
16RW10-200720	K2006280-001	**4.58**	0.50	0.20	0.07	1	08/10/20 11:49	
16PM06-200720	K2006280-002	**8.08**	0.50	0.20	0.07	1	08/10/20 11:49	
16PM14-200720	K2006280-003	**9.97**	0.50	0.20	0.07	1	08/10/20 11:49	
Method Blank	K2006280-MB	ND U	0.50	0.20	0.07	1	08/10/20 11:49	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2006280
Project:	HS20071033	**Date Analyzed:**	08/10/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	690342

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2006280-LCS	24.6	25.0	98	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2006280
Project: HS20071033

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	690342	KQ2010989-03	08/10/20 11:49	25.0	24.8	99	90-110
CCV2	690342	KQ2010989-04	08/10/20 11:49	25.0	24.4	98	90-110
CCV3	690342	KQ2010989-10	08/10/20 11:49	25.0	24.4	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2006280
Project: HS20071033

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	690342	KQ2010989-05	08/10/20 11:49	0.50	0.20	0.07	ND	U
CCB2	690342	KQ2010989-06	08/10/20 11:49	0.50	0.20	0.07	ND	U
CCB3	690342	KQ2010989-09	08/10/20 11:49	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # 6332 6345 6376 6497 6257 6280 6330

Tier: IV II IV IV IV IV IV

Date Analyzed: 8-10-20 6331 IV 6357 I 6373 II 6498 IV 6506 II 6651 II

Analyst: MK

Run # 690342 | 690414

Analysis: TOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

Final Approved by: _____ Date: 8/11/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690414 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006332-001	Carbon, Total Organic	N/A		Water	0.65 mg/L	10 mL	0.65 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	IV
K2006345-001	Carbon, Total Organic	N/A		Water	0.59 mg/L	10 mL	0.59 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	II
K2006345-002	Carbon, Total Organic	N/A		Water	0.66 mg/L	10 mL	0.66 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	II
K2006345-003	Carbon, Total Organic	N/A		Water	0.81 mg/L	10 mL	0.81 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	II
K2006345-004	Carbon, Total Organic	N/A		Water	0.72 mg/L	10 mL	0.72 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	II
K2006345-005	Carbon, Total Organic	N/A		Water	0.68 mg/L	10 mL	0.68 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	II
K2006345-006	Carbon, Total Organic	N/A		Water	0.40 mg/L	10 mL	0.40 mg/L J	1	0.07	0.50			8/10/20 08:15:00	N	II
K2006345-007	Carbon, Total Organic	N/A		Water	0.96 mg/L	10 mL	0.96 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	II
K2006345-008	Carbon, Total Organic	N/A		Water	0.55 mg/L	10 mL	0.55 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	II
K2006376-001	Carbon, Total Organic	N/A		Water	1.15 mg/L	10 mL	1.15 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	IV
K2006376-002	Carbon, Total Organic	N/A		Water	1.58 mg/L	10 mL	1.58 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	IV
K2006376-003	Carbon, Total Organic	N/A		Water	1.28 mg/L	10 mL	1.28 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	IV
K2006497-001	Carbon, Total Organic	N/A		Ground Water	4.11 mg/L	10 mL	4.11 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	IV
K2006497-004	Carbon, Total Organic	N/A		Ground Water	28.43 mg/L	10 mL	711 mg/L	25	2	13			8/10/20 08:15:00	N	IV
K2006497-005	Carbon, Total Organic	N/A		Ground Water	3.34 mg/L	10 mL	3.34 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	IV
K2006497-006	Carbon, Total Organic	N/A		Ground Water	47.81 mg/L	10 mL	47.8 mg/L	1	0.07	0.50			8/10/20 08:15:00	N	IV
KQ2011025-01	Carbon, Total Organic	DUP	K2006376-003	Water	1.25 mg/L	10 mL	1.25 mg/L	1	0.07	0.50		2	8/10/20 08:15:00	N	IV
KQ2011025-02	Carbon, Total Organic	MS	K2006376-003	Water	27.72 mg/L	10 mL	27.7 mg/L	1	0.07	0.50	106		8/10/20 08:15:00	N	IV
KQ2011025-03	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 08:15:00	N	IV
KQ2011025-04	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 08:15:00	N	IV
KQ2011025-05	Carbon, Total Organic	CCB		Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 08:15:00	N	IV
KQ2011025-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 08:15:00	N	IV
KQ2011025-07	Carbon, Total Organic	CCV		Water	24.39 mg/L	10 mL	24.4 mg/L	1					8/10/20 08:15:00	N	IV
KQ2011025-08	Carbon, Total Organic	CCV		Water	24.42 mg/L	10 mL	24.4 mg/L	1					8/10/20 08:15:00	N	IV
KQ2011025-09	Carbon, Total Organic	CCV		Water	24.80 mg/L	10 mL	24.8 mg/L	1					8/10/20 08:15:00	N	IV
KQ2011025-10	Carbon, Total Organic	CCV		Water	24.03 mg/L	10 mL	24.0 mg/L	1					8/10/20 08:15:00	N	IV
KQ2011025-11	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 08:15:00	N	IV
KQ2011025-12	Carbon, Total Organic	LCS		Water	24.40 mg/L	10 mL	24.4 mg/L	1	0.07	0.50	98		8/10/20 08:15:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-01 **Analyst:** MKANALY **Analysis Lot:** 690342 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2006257-001	Carbon, Total Organic	N/A		Water	0.91 mg/L	10 mL	0.91 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	IV
K2006280-001	Carbon, Total Organic	N/A		Ground Water	4.58 mg/L	10 mL	4.58 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	IV
K2006280-002	Carbon, Total Organic	N/A		Ground Water	8.08 mg/L	10 mL	8.08 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	IV
K2006280-003	Carbon, Total Organic	N/A		Ground Water	9.97 mg/L	10 mL	9.97 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	IV
K2006330-001	Carbon, Total Organic	N/A		Water	1.70 mg/L	10 mL	1.70 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	IV
K2006330-002	Carbon, Total Organic	N/A		Water	1.51 mg/L	10 mL	1.51 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	IV
K2006330-003	Carbon, Total Organic	N/A		Water	1.87 mg/L	10 mL	1.87 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	IV
K2006331-001	Carbon, Total Organic	N/A		Water	0.88 mg/L	10 mL	0.88 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	IV
K2006331-002	Carbon, Total Organic	N/A		Water	1.01 mg/L	10 mL	1.01 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	V
K2006357-001	Carbon, Total Organic	N/A		Water	40.99 mg/L	10 mL	41.0 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	I
K2006373-001	Carbon, Total Organic	N/A		Water	1.95 mg/L	10 mL	1.95 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	II
K2006498-001	Carbon, Total Organic	N/A		Water	2.77 mg/L	10 mL	2.77 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	IV
K2006506-001	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 11:49:00	N	II
K2006651-001	Carbon, Total Organic	N/A		Water	2.24 mg/L	10 mL	2.24 mg/L	1	0.07	0.50			8/10/20 11:49:00	N	II
KQ2010989-01	Carbon, Total Organic	DUP	K2006373-001	Water	1.96 mg/L	10 mL	1.96 mg/L	1	0.07	0.50		<1	8/10/20 11:49:00	N	II
KQ2010989-02	Carbon, Total Organic	MS	K2006373-001	Water	28.22 mg/L	10 mL	28.2 mg/L	1	0.07	0.50	105		8/10/20 11:49:00	N	II
KQ2010989-03	Carbon, Total Organic	CCV		Water	24.83 mg/L	10 mL	24.8 mg/L	1					8/10/20 11:49:00	N	II
KQ2010989-04	Carbon, Total Organic	CCV		Water	24.39 mg/L	10 mL	24.4 mg/L	1					8/10/20 11:49:00	N	II
KQ2010989-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 11:49:00	N	II
KQ2010989-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 11:49:00	N	II
KQ2010989-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 11:49:00	N	II
KQ2010989-08	Carbon, Total Organic	LCS		Water	24.61 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	98		8/10/20 11:49:00	N	II
KQ2010989-09	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			8/10/20 11:49:00	N	V
KQ2010989-10	Carbon, Total Organic	CCV		Water	24.42 mg/L	10 mL	24.4 mg/L	1					8/10/20 11:49:00	N	V

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

690342
690414

Schedule: 081020PART

Version: 5
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/08/11 08:15 - Tuesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	k2006373-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2006373-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2006373-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2006330-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2006330-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2006330-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2006331-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2006331-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2006280-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2006280-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2006280-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2006257-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2006357-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2006498-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2006651-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2006506-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K2006376-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K2006376-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K2006376-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2006376-003D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2006376-003MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2006497-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2006497-004 25X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2006497-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2006497-006 20X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2006345-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K2006345-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K2006345-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K2006345-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2006345-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K2006345-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K2006345-007	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K2006345-008	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K2006332-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 081020PART

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample		CAS_salt_010711 (CAS_salt_010711)	1	False	Ready
					False	

Fusion Report - 081020
Monday, August 10, 2020 08:55 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/08/11 08:18 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	081020	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v1) Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3) Fusion1 (Fusion1) (v8) Fusion1 (Fusion1) (v10)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/08/10 08:55

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.59	27.10	13.51	49.75	07:58
2	TC Clean	14.25	27.50	13.25	49.52	07:15
3	TC Clean	3.51	16.73	13.23	49.83	07:00
4	TC Clean	2.18	15.49	13.31	49.61	07:02

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/08/10 09:29

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.11	13.08	13.19	49.85	07:59
2	TC Clean	6.75	19.98	13.23	49.89	07:14
3	TC Clean	2.26	15.29	13.04	49.69	07:00

4	TC Clean	1.70	14.66	12.96	49.89	07:03

Sample Type: Clean From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/08/10 10:03

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.12	12.95	13.07	49.69	05:20
2	TC Clean	5.87	18.80	12.93	49.79	07:15
3	TC Clean	1.45	14.56	13.12	49.95	07:01
4	TC Clean	1.06	14.24	13.18	49.85	07:00

Sample Type: Blank (Creating v1431) From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/08/10 10:34

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	-0.38	12.81	13.19	49.55	05:15
2	TC Clean	5.58	18.69	13.10	49.98	07:17
3	TC Clean	1.28	14.48	13.19	49.82	07:00
4	TC Clean	1.17	14.37	13.20	49.76	07:02
5	Reagent Blank	5.19	18.27	13.09	49.97	08:09
6	Acid Blank	0.27	13.25	12.98	49.61	05:31

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.2109 ppm	0.0000 ppm	0.0000%	2020/08/10 11:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2109	2.1088	10.73	23.88	13.15	50.04	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8308 ppm (PASS)	0.0000 ppm	0%	2020/08/10 11:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8308	248.3083	184.08	197.28	13.20	49.97	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/10 11:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.88	22.18	13.30	49.99	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/10 12:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.47	21.52	13.04	49.99	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.6086 ppm (PASS)	0.0000 ppm	0%	2020/08/10 12:20

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.6086	246.0858	182.52	195.71	13.19	49.95	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.5519 ppm	0.0000 ppm	0.0000%	2020/08/10 12:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5519	5.5187	13.12	26.29	13.17	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	3	TOC	k2006373-001	1.9518 ppm	0.0561 ppm	2.8800%	2020/08/10 12:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9915	19.9154	23.22	36.45	13.24	49.99	10:28
2	TOC	1.9121	19.1213	22.66	35.92	13.26	50.00	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	4	TOC	K2006373-001D	1.9556 ppm	0.0411 ppm	2.1000%	2020/08/10 13:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9847	19.8469	23.17	36.39	13.22	50.01	10:26
2	TOC	1.9265	19.2653	22.76	35.91	13.15	50.05	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	5	TOC	K2006373-001MS	28.2182 ppm	0.2043 ppm	0.7200%	2020/08/10 13:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.3627	283.6268	208.21	221.40	13.20	49.96	10:29
2	TOC	28.0737	280.7372	206.18	219.49	13.30	50.03	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K2006330-001	1.6954 ppm	0.0526 ppm	3.1000%	2020/08/10 14:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7327	17.3266	21.40	34.67	13.27	50.04	10:28
2	TOC	1.6582	16.5824	20.88	34.22	13.34	50.02	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K2006330-002	1.5085 ppm	0.0001 ppm	0.0100%	2020/08/10 14:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5086	15.0856	19.83	33.00	13.17	49.98	10:29
2	TOC	1.5084	15.0842	19.83	32.96	13.13	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample — From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K2006330-003	1.8656 ppm	0.0104 ppm	0.5600%	2020/08/10 15:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8582	18.5825	22.28	35.40	13.12	50.00	10:28
2	TOC	1.8729	18.7293	22.39	35.66	13.27	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	K2006331-001	0.8840 ppm	0.0414 ppm	4.6900%	2020/08/10 15:37

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	0.8547	8.5466	15.24	28.55	13.31	49.94	10:29
2	TOC	0.9132	9.1325	15.66	28.70	13.05	49.91	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.3916 ppm (PASS)	0.0000 ppm	0%	2020/08/10 16:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3916	243.9161	181.00	194.02	13.02	49.89	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/10 16:20

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.18	22.18	13.00	49.89	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K2006331-002	1.0122 ppm	0.0062 ppm	0.6200%	2020/08/10 16:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0078	10.0776	16.32	29.38	13.06	49.94	10:26
2	TOC	1.0166	10.1660	16.38	29.41	13.03	49.94	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC)	CAS_salt_010711	CAS_salt_010711

(v1431) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K2006280-001	4.5755 ppm	0.0744 ppm	1.6300%	2020/08/10 17:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6281	46.2810	41.71	54.81	13.10	49.94	10:26
2	TOC	4.5229	45.2289	40.98	54.22	13.25	50.00	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K2006280-002	8.0784 ppm	0.0939 ppm	1.1600%	2020/08/10 17:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.1448	81.4479	66.38	79.61	13.22	49.99	10:27
2	TOC	8.0119	80.1193	65.45	78.57	13.12	50.00	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2006280-003	9.9674 ppm	0.0659 ppm	0.6600%	2020/08/10 17:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.0140	100.1397	79.49	92.60	13.11	50.00	10:26
2	TOC	9.9207	99.2074	78.84	92.01	13.17	50.04	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2006257-001	0.9093 ppm	0.0326 ppm	3.5800%	2020/08/10 18:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8863	8.8631	15.47	28.71	13.25	50.04	10:26
2	TOC	0.9324	9.3235	15.79	28.80	13.01	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K2006357-001	40.9877 ppm	0.0236 ppm	0.0600%	2020/08/10 18:55

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	41.0043	410.0433	296.89	310.11	13.22	50.02	10:27
2	TOC	40.9710	409.7098	296.65	309.94	13.29	50.01	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K2006498-001	2.7725 ppm	0.3219 ppm	11.6100%	2020/08/10 19:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0001	30.0011	30.29	43.72	13.43	49.99	10:27
2	TOC	2.5449	25.4494	27.10	40.40	13.30	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K2006651-001	2.2441 ppm	0.0246 ppm	1.1000%	2020/08/10 19:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2615	22.6154	25.11	38.47	13.36	49.95	10:31
2	TOC	2.2268	22.2675	24.87	38.13	13.26	49.96	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K2006506-001	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/10 20:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.83	22.12	13.29	49.94	10:26
2	TOC	0.0000	0.0000	8.72	21.85	13.13	49.95	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K2006376-001	1.1534 ppm	0.0430 ppm	3.7300%	2020/08/10 20:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1229	11.2295	17.13	30.17	13.05	49.93	10:29
2	TOC	1.1838	11.8382	17.55	30.64	13.09	49.97	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4188 ppm (PASS)	0.0000 ppm	0%	2020/08/10 21:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4188	244.1884	181.19	194.34	13.16	49.89	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/10 21:30

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.15	22.32	13.18	49.86	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/10 21:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.98	21.99	13.01	49.89	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	24.4024 ppm (PASS)	0.0000 ppm	0%	2020/08/10 21:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.4024	244.0245	181.07	194.01	12.94	49.84	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	K2006376-002	1.5778 ppm	0.0050 ppm	0.3200%	2020/08/10 22:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5743	15.7428	20.29	33.29	12.99	49.80	10:27
2	TOC	1.5814	15.8141	20.34	33.46	13.11	49.89	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K2006376-003	1.2830 ppm	0.0367 ppm	2.8600%	2020/08/10 22:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3090	13.0898	18.43	31.63	13.20	49.83	10:27
2	TOC	1.2571	12.5709	18.07	31.19	13.12	49.81	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K2006376-003D	1.2546 ppm	0.0045 ppm	0.3600%	2020/08/10 23:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2514	12.5139	18.03	31.22	13.19	49.77	10:29
2	TOC	1.2578	12.5781	18.07	31.32	13.25	49.93	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K2006376-003MS	27.7238 ppm	0.1223 ppm	0.4400%	2020/08/10 23:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.6374	276.3736	203.12	216.24	13.12	49.88	10:29
2	TOC	27.8103	278.1028	204.33	217.53	13.20	49.88	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2006497-001	4.1088 ppm	0.0689 ppm	1.6800%	2020/08/11 00:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1575	41.5752	38.41	51.46	13.05	49.89	10:25
2	TOC	4.0600	40.6001	37.73	50.78	13.05	49.88	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K2006497-004 25X	28.4315 ppm	0.0059 ppm	0.0200%	2020/08/11 00:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.4357	284.3567	208.72	221.85	13.13	49.88	10:29
2	TOC	28.4273	284.2726	208.66	221.86	13.20	49.88	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K2006497-005	3.3441 ppm	0.1282 ppm	3.8300%	2020/08/11 01:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.4348	34.3477	33.34	46.49	13.15	49.85	10:26
2	TOC	3.2534	32.5344	32.07	45.30	13.23	49.87	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K2006497-006	47.8055 ppm	0.4564 ppm	0.9500%	2020/08/11 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	48.1282	481.2824	346.86	359.97	13.11	49.91	10:28
2	TOC	47.4828	474.8275	342.33	355.53	13.20	49.88	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.7965 ppm (PASS)	0.0000 ppm	0%	2020/08/11 01:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7965	247.9647	183.83	197.18	13.34	49.93	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0208 ppm (PASS)	0.0000 ppm	0%	2020/08/11 02:13

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0208	0.2081	10.04	23.22	13.18	49.94	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2006345-001	0.5919 ppm	0.0067 ppm	1.1200%	2020/08/11 02:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5966	5.9663	13.43	26.85	13.41	49.97	10:31
2	TOC	0.5872	5.8723	13.37	26.74	13.38	49.95	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	K2006345-002	0.6574 ppm	0.0176 ppm	2.6800%	2020/08/11 02:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6699	6.6991	13.95	27.23	13.28	49.97	10:28
2	TOC	0.6450	6.4496	13.77	27.14	13.37	49.99	10:27

Dilution	Blank Contribution	Method	Calibration

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K2006345-003	0.8083 ppm	0.0132 ppm	1.6300%	2020/08/11 03:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7989	7.9892	14.85	28.51	13.66	49.99	10:29
2	TOC	0.8176	8.1759	14.98	28.41	13.42	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2006345-004	0.7226 ppm	0.0188 ppm	2.6100%	2020/08/11 03:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7359	7.3591	14.41	27.78	13.37	50.03	10:30
2	TOC	0.7093	7.0925	14.22	27.64	13.42	50.03	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2006345-005	0.6797 ppm	0.0142 ppm	2.0900%	2020/08/11 04:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6696	6.6962	13.95	27.22	13.27	50.06	10:26
2	TOC	0.6897	6.8972	14.09	27.33	13.24	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K2006345-006	0.3956 ppm	0.0006 ppm	0.1500%	2020/08/11 04:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3952	3.9520	12.02	25.28	13.26	50.06	10:30
2	TOC	0.3961	3.9606	12.03	25.34	13.31	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K2006345-007	0.9566 ppm	0.0433 ppm	4.5300%	2020/08/11 05:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9259	9.2594	15.74	29.02	13.28	50.04	10:26
2	TOC	0.9872	9.8724	16.17	29.78	13.61	50.06	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	36	TOC	K2006345-008	0.5492 ppm	0.0325 ppm	5.9100%	2020/08/11 05:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5262	5.2621	12.94	26.39	13.45	50.04	10:25
2	TOC	0.5721	5.7211	13.26	26.71	13.45	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	K2006332-001	0.6516 ppm	0.0132 ppm	2.0300%	2020/08/11 06:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6423	6.4225	13.75	27.06	13.31	50.04	10:28
2	TOC	0.6609	6.6093	13.89	27.18	13.30	50.05	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/08/11 06:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.95	21.50	13.55	50.04	10:28
2	TOC	0.0000	0.0000	8.38	21.83	13.45	50.07	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.0278 ppm (PASS)	0.0000 ppm	0%	2020/08/11 07:08

Pos	Base Analysis	ID	Rep	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run

	Type		#							Time
B	TOC	25 ppm	1	24.0278	240.2781	178.44	191.91	13.47	50.04	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/08/11 07:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.09	22.59	13.50	49.97	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0016 ppm	0.0000 ppm	0.0000%	2020/08/11 07:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0016	0.0161	9.26	22.48	13.22	49.98	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.2487 (IC) (v1431)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	23.7533 ppm (PASS)	0.0000 ppm	0%	2020/08/11 07:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.7533	237.5325	176.52	189.89	13.38	49.92	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC		NaN	NaN	NaN%	2020/08/11 08:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

Dilution 1:10 **Method** CAS_salt_010711 (v4) **Calibration** CAS_salt_010711 (v38)

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1430	1.9877	0.5570	0.0000	0.0000	0.0000	2020/08/08 14:36	Fusion1 (Fusion1)
v1431	1.7293	0.2720	0.0000	0.0000	0.0000	2020/08/10 11:21	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v38
Ver Creation: 2020/06/13 16:40
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 7.015x + 9.892
r^2 value: TOC: r^2 = 0.99974

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	9.5750	0.0000		2020/06/13 15:13
0.500 ppm	12.9010	0.5000		2020/06/13 15:28
1.0 ppm	15.6320	1.0000		2020/06/13 15:42
5.0 ppm	43.2510	5.0000		2020/06/13 15:56
10 ppm	82.4040	10.0000		2020/06/13 16:11
25 ppm	188.6880	25.0000		2020/06/13 16:25
50 ppm	358.6500	50.0000		2020/06/13 16:39

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/08/11 08:17

ALS Environmental

StarLIMS Run: 690342/690414

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 19-GEN-8-15-C 50 ppm LCS: 19-GEN-8-31I 25.0 ppm

ICAL Date: 6/16/2020

ICAL ID: 19-GEN-8-22-G

ICS ID: 19-GEN-8-4-G

ICS TV: 25.0 ppm ICS % R < I

Spike ID: 19-GEN-8-15-B 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-32J

21 % H3PO4: 19-GEN-08-32I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: MK	Date Analyzed: 8-10-20
Reviewed By:	Date Reviewed: 8/11/20

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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August 20, 2020

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS20071147**

Laboratory Results for: **Longhorn Army Ammunition Plant 16 July 2020**

Dear Susan Huang,

ALS Environmental received 12 sample(s) on Jul 24, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20071147

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20071147-01	16WW37-200723	Groundwater		23-Jul-2020 07:30	24-Jul-2020 09:20	☐
HS20071147-02	16WW38-200723	Groundwater		23-Jul-2020 08:15	24-Jul-2020 09:20	☐
HS20071147-03	16WW13-200723	Groundwater		23-Jul-2020 09:05	24-Jul-2020 09:20	☐
HS20071147-04	16WW13-200723-FD	Groundwater		23-Jul-2020 09:05	24-Jul-2020 09:20	☐
HS20071147-05	16WW42-200723	Groundwater		23-Jul-2020 09:50	24-Jul-2020 09:20	☐
HS20071147-06	16WW42-200723-FD	Groundwater		23-Jul-2020 09:50	24-Jul-2020 09:20	☐
HS20071147-07	16WW27-200723	Groundwater		23-Jul-2020 10:45	24-Jul-2020 09:20	☐
HS20071147-08	16WW43-200723	Groundwater		23-Jul-2020 11:30	24-Jul-2020 09:20	☐
HS20071147-09	16WW34-200723	Groundwater		23-Jul-2020 12:20	24-Jul-2020 09:20	☐
HS20071147-10	16WW33-200723	Groundwater		23-Jul-2020 13:05	24-Jul-2020 09:20	☐
HS20071147-11	16WW33-200723-FD	Groundwater		23-Jul-2020 13:05	24-Jul-2020 09:20	☐
HS20071147-12	Trip Blank-200723	Water	CG 060320 -160	23-Jul-2020 00:00	24-Jul-2020 09:20	☐

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant 16 July 2020
Work Order: HS20071147

Work Order Comments

• Analysis of Perchlorate was performed by ALS Houston TX, High Resolution. Laboratory. Final report attached.

The analysis for TOC was subcontracted to ALS Environmental in Kelso WA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R365877

Sample ID: 16WW13-200723-FD (HS20071147-04)

• Surrogate Toluene-d8 failed QC limits. Compound reported is not associated with the failed surrogate.

Sample ID: 16WW42-200723 (HS20071147-05MSD)

• MSD failed QC limits for some compounds.

Sample ID: Trip Blank-200723 (HS20071147-12)

• Surrogate Dibromofluoromethane exceeded QC limits. Sample is ND.

Sample ID: VLCSW-200729

• Methylene Chloride exceeded QC limits for LCS. CCV is OK. Samples are ND for this compound.

Batch ID: R365975

Sample ID: HS20071328-01MS

• MS and MSD are for an unrelated sample

Sample ID: VLCSW-200730

• Methylene Chloride exceeded QC limits for LCS. Samples are ND for this compound.

WetChemistry by Method SW9056

Batch ID: R365767

Sample ID: HS20071033-03 MS

• MS and MSD are for an unrelated sample

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071147
Sample ID: 16WW37-200723 Lab ID:HS20071147-01
Collection Date: 23-Jul-2020 07:30 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	29-Jul-2020 22:15
1,1-Dichloroethene	**0.76**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 22:15
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 22:15
cis-1,2-Dichloroethene	**5.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 22:15
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	29-Jul-2020 22:15
Trichloroethene	**87**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 22:15
Vinyl chloride	**0.41**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 22:15
Surr: 1,2-Dichloroethane-d4	*107*			**0**	*81-118*	*%REC*	*1*	*29-Jul-2020 22:15*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*85-114*	*%REC*	*1*	*29-Jul-2020 22:15*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*29-Jul-2020 22:15*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*29-Jul-2020 22:15*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071147
Sample ID: 16WW38-200723 Lab ID:HS20071147-02
Collection Date: 23-Jul-2020 08:15 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jul-2020 17:26
1,1-Dichloroethene	**17**		**1.0**	**2.5**	**5.0**	**UG/L**	5	29-Jul-2020 17:26
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jul-2020 17:26
cis-1,2-Dichloroethene	**940**		**1.0**	**2.5**	**5.0**	**UG/L**	5	29-Jul-2020 17:26
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	29-Jul-2020 17:26
Trichloroethene	**2,400**		**5.0**	**12**	**25**	**UG/L**	25	29-Jul-2020 18:39
Vinyl chloride	**57**		**1.0**	**2.5**	**5.0**	**UG/L**	5	29-Jul-2020 17:26
Surr: 1,2-Dichloroethane-d4	*107*			**0**	*81-118*	*%REC*	*25*	*29-Jul-2020 18:39*
Surr: 1,2-Dichloroethane-d4	*109*			**0**	*81-118*	*%REC*	*5*	*29-Jul-2020 17:26*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*5*	*29-Jul-2020 17:26*
Surr: 4-Bromofluorobenzene	*99.4*			**0**	*85-114*	*%REC*	*25*	*29-Jul-2020 18:39*
Surr: Dibromofluoromethane	*99.8*			**0**	*80-119*	*%REC*	*5*	*29-Jul-2020 17:26*
Surr: Dibromofluoromethane	*97.9*			**0**	*80-119*	*%REC*	*25*	*29-Jul-2020 18:39*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*25*	*29-Jul-2020 18:39*
Surr: Toluene-d8	*99.8*			**0**	*89-112*	*%REC*	*5*	*29-Jul-2020 17:26*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071147
Sample ID: 16WW13-200723 Lab ID:HS20071147-03
Collection Date: 23-Jul-2020 09:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	29-Jul-2020 16:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 16:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 16:38
cis-1,2-Dichloroethene	**180**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 16:38
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	29-Jul-2020 16:38
Trichloroethene	**190**		**1.0**	**2.5**	**5.0**	**UG/L**	5	29-Jul-2020 19:03
Vinyl chloride	**4.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 16:38
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*81-118*	*%REC*	*1*	*29-Jul-2020 16:38*
Surr: 1,2-Dichloroethane-d4	*84.4*			**0**	*81-118*	*%REC*	*5*	*29-Jul-2020 19:03*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*29-Jul-2020 16:38*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*85-114*	*%REC*	*5*	*29-Jul-2020 19:03*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*29-Jul-2020 16:38*
Surr: Dibromofluoromethane	*98.3*			**0**	*80-119*	*%REC*	*5*	*29-Jul-2020 19:03*
Surr: Toluene-d8	*96.6*			**0**	*89-112*	*%REC*	*1*	*29-Jul-2020 16:38*
Surr: Toluene-d8	*97.9*			**0**	*89-112*	*%REC*	*5*	*29-Jul-2020 19:03*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071147
Sample ID: 16WW13-200723-FD Lab ID:HS20071147-04
Collection Date: 23-Jul-2020 09:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	29-Jul-2020 17:02
1,1-Dichloroethene	**0.61**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 17:02
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 17:02
cis-1,2-Dichloroethene	**200**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 17:02
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	29-Jul-2020 17:02
Trichloroethene	**190**		**1.0**	**2.5**	**5.0**	**UG/L**	5	29-Jul-2020 19:27
Vinyl chloride	**3.9**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 17:02
Surr: 1,2-Dichloroethane-d4	*95.0*			**0**	*81-118*	*%REC*	*5*	*29-Jul-2020 19:27*
Surr: 1,2-Dichloroethane-d4	*112*			**0**	*81-118*	*%REC*	*1*	*29-Jul-2020 17:02*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*29-Jul-2020 17:02*
Surr: 4-Bromofluorobenzene	*94.5*			**0**	*85-114*	*%REC*	*5*	*29-Jul-2020 19:27*
Surr: Dibromofluoromethane	*94.8*			**0**	*80-119*	*%REC*	*5*	*29-Jul-2020 19:27*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*29-Jul-2020 17:02*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*29-Jul-2020 17:02*
Surr: Toluene-d8	*77.5*	*S*		**0**	*89-112*	*%REC*	*5*	*29-Jul-2020 19:27*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071147
Sample ID: 16WW42-200723 Lab ID:HS20071147-05
Collection Date: 23-Jul-2020 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	29-Jul-2020 15:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 15:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 15:50
cis-1,2-Dichloroethene	**24**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 15:50
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	29-Jul-2020 15:50
Trichloroethene	**1.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 15:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 15:50
Surr: 1,2-Dichloroethane-d4	*87.7*			**0**	*81-118*	*%REC*	*1*	*29-Jul-2020 15:50*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*29-Jul-2020 15:50*
Surr: Dibromofluoromethane	*99.7*			**0**	*80-119*	*%REC*	*1*	*29-Jul-2020 15:50*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*29-Jul-2020 15:50*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**2.45**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	28-Jul-2020 02:22
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Aug-2020 09:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071147
Sample ID: 16WW42-200723-FD Lab ID:HS20071147-06
Collection Date: 23-Jul-2020 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	29-Jul-2020 19:51
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 19:51
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 19:51
cis-1,2-Dichloroethene	**20**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 19:51
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	29-Jul-2020 19:51
Trichloroethene	**1.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	29-Jul-2020 19:51
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 19:51
Surr: 1,2-Dichloroethane-d4	*99.7*			**0**	*81-118*	*%REC*	*1*	*29-Jul-2020 19:51*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*29-Jul-2020 19:51*
Surr: Dibromofluoromethane	*96.4*			**0**	*80-119*	*%REC*	*1*	*29-Jul-2020 19:51*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*29-Jul-2020 19:51*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Bromide	**2.43**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	28-Jul-2020 03:16
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Aug-2020 09:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071147
Sample ID: 16WW27-200723 Lab ID:HS20071147-07
Collection Date: 23-Jul-2020 10:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	29-Jul-2020 20:15
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:15
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:15
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:15
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	29-Jul-2020 20:15
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:15
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:15
Surr: 1,2-Dichloroethane-d4	*110*			**0**	*81-118*	*%REC*	*1*	*29-Jul-2020 20:15*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*29-Jul-2020 20:15*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*1*	*29-Jul-2020 20:15*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*29-Jul-2020 20:15*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Sample ID: 16WW43-200723
Collection Date: 23-Jul-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20071147
Lab ID:HS20071147-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	29-Jul-2020 20:39
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:39
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:39
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:39
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	29-Jul-2020 20:39
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:39
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 20:39
Surr: 1,2-Dichloroethane-d4	*105*			**0**	*81-118*	*%REC*	*1*	*29-Jul-2020 20:39*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*29-Jul-2020 20:39*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*29-Jul-2020 20:39*
Surr: Toluene-d8	*97.8*			**0**	*89-112*	*%REC*	*1*	*29-Jul-2020 20:39*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Sample ID: 16WW34-200723
Collection Date: 23-Jul-2020 12:20

ANALYTICAL REPORT
WorkOrder:HS20071147
Lab ID:HS20071147-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	29-Jul-2020 21:03
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 21:03
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 21:03
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 21:03
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	29-Jul-2020 21:03
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 21:03
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 21:03
Surr: 1,2-Dichloroethane-d4	*107*			**0**	*81-118*	*%REC*	*1*	*29-Jul-2020 21:03*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*1*	*29-Jul-2020 21:03*
Surr: Dibromofluoromethane	*82.7*			**0**	*80-119*	*%REC*	*1*	*29-Jul-2020 21:03*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*29-Jul-2020 21:03*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
Sample ID: 16WW33-200723
Collection Date: 23-Jul-2020 13:05

ANALYTICAL REPORT
WorkOrder:HS20071147
Lab ID:HS20071147-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	30-Jul-2020 14:25
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:25
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	30-Jul-2020 14:25
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:25
Surr: 1,2-Dichloroethane-d4	*107*			**0**	*81-118*	*%REC*	*1*	*30-Jul-2020 14:25*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*85-114*	*%REC*	*1*	*30-Jul-2020 14:25*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*1*	*30-Jul-2020 14:25*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*30-Jul-2020 14:25*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071147
Sample ID: 16WW33-200723-FD Lab ID:HS20071147-11
Collection Date: 23-Jul-2020 13:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	30-Jul-2020 14:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:49
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:49
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	30-Jul-2020 14:49
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	30-Jul-2020 14:49
Surr: 1,2-Dichloroethane-d4	*105*			**0**	*81-118*	*%REC*	*1*	*30-Jul-2020 14:49*
Surr: 4-Bromofluorobenzene	*92.2*			**0**	*85-114*	*%REC*	*1*	*30-Jul-2020 14:49*
Surr: Dibromofluoromethane	*95.2*			**0**	*80-119*	*%REC*	*1*	*30-Jul-2020 14:49*
Surr: Toluene-d8	*96.6*			**0**	*89-112*	*%REC*	*1*	*30-Jul-2020 14:49*
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: GR
Subcontract Analysis	See Attached		0	0		NA	1	20-Aug-2020 14:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant 16 July 2020 WorkOrder:HS20071147
Sample ID: Trip Blank-200723 Lab ID:HS20071147-12
Collection Date: 23-Jul-2020 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	29-Jul-2020 15:26
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 15:26
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 15:26
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 15:26
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	29-Jul-2020 15:26
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 15:26
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	29-Jul-2020 15:26
Surr: 1,2-Dichloroethane-d4	*114*			**0**	*81-118*	*%REC*	*1*	*29-Jul-2020 15:26*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*29-Jul-2020 15:26*
Surr: Dibromofluoromethane	*120*	*S*		**0**	*80-119*	*%REC*	*1*	*29-Jul-2020 15:26*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*29-Jul-2020 15:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071147

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365767 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20071147-05	16WW42-200723	23 Jul 2020 09:50			28 Jul 2020 02:22	1
HS20071147-06	16WW42-200723-FD	23 Jul 2020 09:50			28 Jul 2020 03:16	1
Batch ID: R365877 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20071147-12	Trip Blank-200723	23 Jul 2020 00:00			29 Jul 2020 15:26	1
Batch ID: R365877 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20071147-01	16WW37-200723	23 Jul 2020 07:30			29 Jul 2020 22:15	1
HS20071147-02	16WW38-200723	23 Jul 2020 08:15			29 Jul 2020 18:39	25
HS20071147-02	16WW38-200723	23 Jul 2020 08:15			29 Jul 2020 17:26	5
HS20071147-03	16WW13-200723	23 Jul 2020 09:05			29 Jul 2020 19:03	5
HS20071147-03	16WW13-200723	23 Jul 2020 09:05			29 Jul 2020 16:38	1
HS20071147-04	16WW13-200723-FD	23 Jul 2020 09:05			29 Jul 2020 19:27	5
HS20071147-04	16WW13-200723-FD	23 Jul 2020 09:05			29 Jul 2020 17:02	1
HS20071147-05	16WW42-200723	23 Jul 2020 09:50			29 Jul 2020 15:50	1
HS20071147-06	16WW42-200723-FD	23 Jul 2020 09:50			29 Jul 2020 19:51	1
HS20071147-07	16WW27-200723	23 Jul 2020 10:45			29 Jul 2020 20:15	1
HS20071147-08	16WW43-200723	23 Jul 2020 11:30			29 Jul 2020 20:39	1
HS20071147-09	16WW34-200723	23 Jul 2020 12:20			29 Jul 2020 21:03	1
Batch ID: R365975 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20071147-10	16WW33-200723	23 Jul 2020 13:05			30 Jul 2020 14:25	1
HS20071147-11	16WW33-200723-FD	23 Jul 2020 13:05			30 Jul 2020 14:49	1
Batch ID: R366513 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20071147-05	16WW42-200723	23 Jul 2020 09:50			11 Aug 2020 09:29	1
HS20071147-06	16WW42-200723-FD	23 Jul 2020 09:50			11 Aug 2020 09:29	1
Batch ID: R367128 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Groundwater	
HS20071147-01	16WW37-200723	23 Jul 2020 07:30			20 Aug 2020 14:41	1
HS20071147-02	16WW38-200723	23 Jul 2020 08:15			20 Aug 2020 14:41	1
HS20071147-03	16WW13-200723	23 Jul 2020 09:05			20 Aug 2020 14:41	1
HS20071147-04	16WW13-200723-FD	23 Jul 2020 09:05			20 Aug 2020 14:41	1
HS20071147-05	16WW42-200723	23 Jul 2020 09:50			20 Aug 2020 14:41	1
HS20071147-06	16WW42-200723-FD	23 Jul 2020 09:50			20 Aug 2020 14:41	1
HS20071147-07	16WW27-200723	23 Jul 2020 10:45			20 Aug 2020 14:41	1
HS20071147-08	16WW43-200723	23 Jul 2020 11:30			20 Aug 2020 14:41	1
HS20071147-09	16WW34-200723	23 Jul 2020 12:20			20 Aug 2020 14:41	1
HS20071147-10	16WW33-200723	23 Jul 2020 13:05			20 Aug 2020 14:41	1
HS20071147-11	16WW33-200723-FD	23 Jul 2020 13:05			20 Aug 2020 14:41	1

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071147

QC BATCH REPORT

Batch ID: R365877 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200729** Units: **UG/L** Analysis Date: **29-Jul-2020 15:02**
Client ID: Run ID: **VOA6_365877** SeqNo: **5678976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*56.36*	*1.0*	*50*	*0*	*113*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.13*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*51.34*	*1.0*	*50*	*0*	*103*	*80 - 119*				
Surr: Toluene-d8	*53*	*1.0*	*50*	*0*	*106*	*89 - 112*				

LCS Sample ID: **VLCSW-200729** Units: **UG/L** Analysis Date: **29-Jul-2020 14:14**
Client ID: Run ID: **VOA6_365877** SeqNo: **5678975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.74	1.0	20	0	98.7	80 - 119				
1,1-Dichloroethene	22.3	1.0	20	0	112	71 - 131				
1,2-Dichloroethane	24.09	1.0	20	0	120	73 - 128				
cis-1,2-Dichloroethene	21.69	1.0	20	0	108	78 - 123				
Methylene chloride	27.61	2.0	20	0	138	74 - 124				S
Trichloroethene	17.01	1.0	20	0	85.1	79 - 123				
Vinyl chloride	18.99	1.0	20	0	94.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*57.23*	*1.0*	*50*	*0*	*114*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*42.96*	*1.0*	*50*	*0*	*85.9*	*85 - 114*				
Surr: Dibromofluoromethane	*54.13*	*1.0*	*50*	*0*	*108*	*80 - 119*				
Surr: Toluene-d8	*46.35*	*1.0*	*50*	*0*	*92.7*	*89 - 112*				

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071147

QC BATCH REPORT

Batch ID: R365877 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20071147-05MS** Units: **UG/L** Analysis Date: **29-Jul-2020 17:51**
Client ID: **16WW42-200723** Run ID: **VOA6_365877** SeqNo: **5679412** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	18.99	1.0	20	0	94.9	80 - 119				
1,1-Dichloroethene	24.63	1.0	20	0	123	71 - 131				
1,2-Dichloroethane	22.78	1.0	20	0	114	73 - 128				
cis-1,2-Dichloroethene	46.21	1.0	20	24.05	111	78 - 123				
Methylene chloride	24.73	2.0	20	0	124	74 - 124				
Trichloroethene	21.43	1.0	20	1.279	101	79 - 123				
Vinyl chloride	21.68	1.0	20	0	108	58 - 137				
Surr: 1,2-Dichloroethane-d4	*50.33*	*1.0*	*50*	*0*	*101*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*46*	*1.0*	*50*	*0*	*92.0*	*85 - 114*				
Surr: Dibromofluoromethane	*49.35*	*1.0*	*50*	*0*	*98.7*	*80 - 119*				
Surr: Toluene-d8	*48.35*	*1.0*	*50*	*0*	*96.7*	*89 - 112*				

MSD Sample ID: **HS20071147-05MSD** Units: **UG/L** Analysis Date: **29-Jul-2020 18:15**
Client ID: **16WW42-200723** Run ID: **VOA6_365877** SeqNo: **5679413** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	22.53	1.0	20	0	113	80 - 119	18.99	17.1	20	
1,1-Dichloroethene	27.6	1.0	20	0	138	71 - 131	24.63	11.4	20	S
1,2-Dichloroethane	24.26	1.0	20	0	121	73 - 128	22.78	6.26	20	
cis-1,2-Dichloroethene	52.85	1.0	20	24.05	144	78 - 123	46.21	13.4	20	S
Methylene chloride	28.74	2.0	20	0	144	74 - 124	24.73	15	20	S
Trichloroethene	23.49	1.0	20	1.279	111	79 - 123	21.43	9.16	20	
Vinyl chloride	25.54	1.0	20	0	128	58 - 137	21.68	16.3	20	
Surr: 1,2-Dichloroethane-d4	*58.89*	*1.0*	*50*	*0*	*118*	*81 - 118*	*50.33*	*15.7*	*20*	
Surr: 4-Bromofluorobenzene	*47.94*	*1.0*	*50*	*0*	*95.9*	*85 - 114*	*46*	*4.14*	*20*	
Surr: Dibromofluoromethane	*48.99*	*1.0*	*50*	*0*	*98.0*	*80 - 119*	*49.35*	*0.729*	*20*	
Surr: Toluene-d8	*52.44*	*1.0*	*50*	*0*	*105*	*89 - 112*	*48.35*	*8.12*	*20*	

The following samples were analyzed in this batch:

HS20071147-01	HS20071147-02	HS20071147-03	HS20071147-04
HS20071147-05	HS20071147-06	HS20071147-07	HS20071147-08
HS20071147-09	HS20071147-12		

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071147

QC BATCH REPORT

Batch ID: R365975 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200730** Units: **UG/L** Analysis Date: **30-Jul-2020 13:13**
Client ID: Run ID: **VOA6_365975** SeqNo: **5681126** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
Methylene chloride	1.0	2.0								U
Trichloroethene	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*53.79*	*1.0*	*50*	*0*	*108*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.09*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*50.32*	*1.0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*53.45*	*1.0*	*50*	*0*	*107*	*89 - 112*				

LCS Sample ID: **VLCSW-200730** Units: **UG/L** Analysis Date: **30-Jul-2020 12:25**
Client ID: Run ID: **VOA6_365975** SeqNo: **5681125** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	20.54	1.0	20	0	103	80 - 119				
1,1-Dichloroethene	21.44	1.0	20	0	107	71 - 131				
1,2-Dichloroethane	22.82	1.0	20	0	114	73 - 128				
cis-1,2-Dichloroethene	20.76	1.0	20	0	104	78 - 123				
Methylene chloride	26.7	2.0	20	0	133	74 - 124				S
Trichloroethene	18.17	1.0	20	0	90.8	79 - 123				
Vinyl chloride	19.3	1.0	20	0	96.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*57.81*	*1.0*	*50*	*0*	*116*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*46.76*	*1.0*	*50*	*0*	*93.5*	*85 - 114*				
Surr: Dibromofluoromethane	*50.16*	*1.0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*44.93*	*1.0*	*50*	*0*	*89.9*	*89 - 112*				

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071147

QC BATCH REPORT

Batch ID: R365975 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20071328-01MS** Units: **UG/L** Analysis Date: **30-Jul-2020 16:49**
Client ID: Run ID: **VOA6_365975** SeqNo: **5681132** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	19.22	1.0	20	0	96.1	80 - 119				
1,1-Dichloroethene	26.96	1.0	20	0	135	71 - 131				S
1,2-Dichloroethane	24.42	1.0	20	0	122	73 - 128				
cis-1,2-Dichloroethene	27.61	1.0	20	0	138	78 - 123				S
Methylene chloride	26.23	2.0	20	0	131	74 - 124				S
Trichloroethene	17.88	1.0	20	0	89.4	79 - 123				
Vinyl chloride	25.05	1.0	20	0	125	58 - 137				
Surr: 1,2-Dichloroethane-d4	*62.13*	*1.0*	*50*	*0*	*124*	*81 - 118*				S
Surr: 4-Bromofluorobenzene	*43.8*	*1.0*	*50*	*0*	*87.6*	*85 - 114*				
Surr: Dibromofluoromethane	*62.87*	*1.0*	*50*	*0*	*126*	*80 - 119*				S
Surr: Toluene-d8	*40.36*	*1.0*	*50*	*0*	*80.7*	*89 - 112*				S

MSD Sample ID: **HS20071328-01MSD** Units: **UG/L** Analysis Date: **30-Jul-2020 17:13**
Client ID: Run ID: **VOA6_365975** SeqNo: **5681133** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,2-Trichloroethane	24.25	1.0	20	0	121	80 - 119	19.22	23.2	20	SR
1,1-Dichloroethene	25.29	1.0	20	0	126	71 - 131	26.96	6.41	20	
1,2-Dichloroethane	26.27	1.0	20	0	131	73 - 128	24.42	7.28	20	S
cis-1,2-Dichloroethene	23.48	1.0	20	0	117	78 - 123	27.61	16.1	20	
Methylene chloride	24.39	2.0	20	0	122	74 - 124	26.23	7.27	20	
Trichloroethene	21.54	1.0	20	0	108	79 - 123	17.88	18.6	20	
Vinyl chloride	23.9	1.0	20	0	120	58 - 137	25.05	4.68	20	
Surr: 1,2-Dichloroethane-d4	*56.79*	*1.0*	*50*	*0*	*114*	*81 - 118*	*62.13*	*8.98*	*20*	
Surr: 4-Bromofluorobenzene	*51.82*	*1.0*	*50*	*0*	*104*	*85 - 114*	*43.8*	*16.8*	*20*	
Surr: Dibromofluoromethane	*50.4*	*1.0*	*50*	*0*	*101*	*80 - 119*	*62.87*	*22*	*20*	R
Surr: Toluene-d8	*50.88*	*1.0*	*50*	*0*	*102*	*89 - 112*	*40.36*	*23*	*20*	R

The following samples were analyzed in this batch: HS20071147-10 HS20071147-11

ALS Houston, US Date: 20-Aug-20

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant 16 July 2020
WorkOrder: HS20071147

QC BATCH REPORT

Batch ID: R365767 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-072720** Units: **mg/L** Analysis Date: **27-Jul-2020 17:01**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676598** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	0.100	0.100								U

LCS Sample ID: **LCS-072720** Units: **mg/L** Analysis Date: **27-Jul-2020 17:19**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676599** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.398	0.100	4	0	110	80 - 120				

MS Sample ID: **HS20071147-05MS** Units: **mg/L** Analysis Date: **28-Jul-2020 02:40**
Client ID: **16WW42-200723** Run ID: **ICS-Integrion_365767** SeqNo: **5676619** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.562	0.100	2	2.445	106	80 - 120				

MS Sample ID: **HS20071033-03MS** Units: **mg/L** Analysis Date: **27-Jul-2020 23:57**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676610** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2015	0.100	2	2051	-1820	80 - 120				SEO

MSD Sample ID: **HS20071147-05MSD** Units: **mg/L** Analysis Date: **28-Jul-2020 02:58**
Client ID: **16WW42-200723** Run ID: **ICS-Integrion_365767** SeqNo: **5676620** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.571	0.100	2	2.445	106	80 - 120	4.562	0.197	20	

MSD Sample ID: **HS20071033-03MSD** Units: **mg/L** Analysis Date: **28-Jul-2020 00:15**
Client ID: Run ID: **ICS-Integrion_365767** SeqNo: **5676611** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2022	0.100	2	2051	-1470	80 - 120	2015	0.343	20	SEO

The following samples were analyzed in this batch: HS20071147-05 HS20071147-06