LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 4

2020

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

VOLUME 4

2020

A. Title: Minutes – Final Monthly Managers' Meeting (MMM), Longhorn Army Ammunition Plant (LHAAP), March 31, 2020
Author(s): Department of the Army
Recipient: All Parties
Date: April 13, 2020
Date Stamp: 00955043 – 00955066

B. Title: Report – Final Second Annual Remedial Action Operation Report, LHAAP-35B (37), Chemical Laboratory, Longhorn Army Ammunition Plant, Karnack, Texas, April 2020
Author(s): Department of the Army
Recipient: U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
Date: April 21, 2020
Date Stamp: 00955067 – 00956793

Subject:	**Final Monthly Managers' Meeting (MMM), Longhorn Army Ammunition Plant (LHAAP)**
Location of Meeting:	**Teleconference**
Date of Meeting:	**31 March 2020– 11:00 Central Daylight Time (CDT)**

Attendees:

Army BRAC:	Rose M. Zeiler (RMZ)
USEPA:	Bill Rhotenberry (BR) and Kent Becher (KB)-USGS Liaison
AEC:	Andrew Maly (AM)
TCEQ:	April Palmie (AP)
USACE:	Aaron Williams (AW),
Bhate:	Kim Nemmers (KN), Scott Beesinger (SB)
APTIM:	Bill Foss (BF) and Praveen Srivastav (PS)

Defense Environmental Restoration Program (DERP) Performance-Based Remediation (PBR) Update

COVID 19–RMZ requested that everyone discuss current situation with respect to travel and teleworking. BR said that he is not planning any travel for 2 to 3 weeks due to COVID 19. AP said that this is the same for her. AW and RMZ said that they were grounded. AM said he is not allowed in his building. RMZ stated that contractors continue to work. KN explained that Bhate is working with Kennie Moore (KM) and SB to ensure that they have documentation necessary to indicate that they are essential personnel. RMZ said that they need to work with HDR, Inc. (HDR) regarding fieldwork. RMZ asked AW if there would be an issue for HDR. AW thinks that HDR will be using local folks and that HDR may be in the field earlier than June, if possible. RMZ asked if BR or AP has any concerns with fieldwork going on without opportunity for their oversight, to which BR and AP said that they had no issues. BR mentioned that fieldwork was shut down at Lone Star Army Ammunition Plant (AAP). AW said that McAlester AAP is not allowing fieldwork. AM said that the contracts are having wording included to allow for fieldwork. AP stated that from a state perspective essential services are allowed to continue and that a letter went from TCEQ to their contractors that says local orders don't apply and that state work falls under essential services.

RMZ asked if AP or BR has any internet limitations. AP said she has not had any issues. AP said that they have been using one-drive a lot. AP also asked for the analytical data to be separated from the main report. RMZ said that there is an issue regarding production. AP said that she does not need to have a hard copy. AP said that she just needs a compact disc (CD). BR said that he okay with a CD going forward. BR stated that he does not need hard copies and that he has not had any issues working from home. BR said that putting the document on a site is acceptable. AP said that the SharePoint site is okay for now. AP said that she still wants a CD for Final documents. AP said that there is someone at the TCEQ able to receive a physical copy. RMZ said that a letter with the CD. Receipt email for secondary documents should work.

PS explained that issuing the draft document can be via portal or email will work. PS said that a final document with letter can be produced, but it will be a challenge due to everyone working from home. PS suggested that we keep a list and then send CDs once we have a people working in the office again. AP also suggested that a letter have a chronology of documents that provides the list of documents that will require issuing as final. RMZ said that her concern is the Federal Facilities Agreement. AP said that there could be a letter for the AR that is addressed to the AP and BR. AP said that we should also contemplate reducing paperwork in the future regarding this issue.

Action Item 3-31-2020: RMZ will prepare a letter addressed to AP and BR that indicates final documents will be provided electronically while personnel are teleworking during the COVID-19 pandemic.

Groundwater Treatment Plant (GWTP) – KN explained the air stripper received an acid wash and that material was flushed off. However, trichloroethene (TCE) continues to be detected at or just above the MCL of 5 µg/L. KN explained that the granular activated carbon (GAC) unit will be brought online. KN stated that there are two GAC vessels in series and that the first vessel cannot be used. However, the second GAC vessel will be hydrated and flushed before connecting the vessel to the system. In addition, KN explained that the air stripper will have another acid wash. KN said that the flow to the air stripper can be adjusted to improve contact time, but that the goal is to get the system operating as designed. KN said that the month of April did not include any groundwater sampling so SB would be able to focus on additional optimizations to the GAC and air stripper. In addition, KN explained that pumps for LHAAP-18/24 would be repaired as able in April.

LHAAP-16 - PS said that the performance monitoring was completed in March 2020 except for the two monitoring wells across Harrison Bayou from LHAAP-16. SB stated that the trees were ripped in half by the tornado in this area. On the east side of the creek, SB said that about 18 to 20 trees were down. SB tried to go in with a dozer but ended up sinking into the ground due to the muddy and wet conditions. SB said he doesn't know what the best option is at this time. SB stated that it will take about two weeks to clear the area once it is dry enough to get equipment in. AW said that the wells are important to sample. SB said that the dozer able to be rented is not big enough to move all of the trees. So, a saw will also be used to cut the trees into sections that can be moved. AW asked if the United States Fish and Wildlife Service (USFWS) will help with the tree removal. SB said the USFWS might help but that were not working now.

LHAAP-50 – PS said that mobilization to the field was on March 6 and that injections began on March 9 and finished up on March 28. PS reminded everyone of the status reports updates and thanked for input in resolving challenges during injections. PS said that work went well though sometimes the injections took a little longer than expected. PS said the field team didn't have issues getting to the areas to complete the work and used a track-mounted rig. PS stated that the creek was monitored and that there was no indication of a release to the creek.

Well abandonment – KN reminded everyone that the well abandonment had been pushed back to June 2020 due to the wet conditions at LHAAP.

KN asked everyone to refer to the Document and Issues Tracking Table dated Mach 31, 2020.

- **Task 1** (Project Management) – KN stated that the RAB is planned for 15 July 2020 at this time.
- **Task 3** (LHAAP-03) – PS said that no documents are in process. Field work is still on hold due to wet weather.
- **Task 4** (LHAAP-04) – PS said that RACR is planned for submittal in April. BF said that the data from February 2020 results look good and that it is included in the validated data for the meeting. Three wells have minor hits of perchlorate just above the PCL of 17 µg/L. Groundwater from monitoring wells 04WW01 and 04WW09 had perchlorate detected at levels that are slightly above the PCL. Perchlorate was detected in monitoring well 04WW07, at 86 µg/L, which is less than the detections of perchlorate in 2019. Overall BF said that perchlorate concentrations in 04WW05, 04WW09, and 04WW10 have declined significantly and there were low ORP and DO in each of them. BF said that the one downside is that 04WW01 is on the perimeter and was previously clean, indicating that

some of the contaminated groundwater may have been pushed out by the injections. Additional results in the future will be used to evaluate this concern further.

- **Task 5** (LHAAP-12) – PS said that the Remedial Action Operation (RA-O) Report is planned for release to the Regulators in April.
- **Task 6** (LHAAP-16) – PS said that an additional round of design effectiveness sampling was completed early in March 2020 and that data will be provided at the next monthly MMM. PS said that the quarterly performance event was also performed in March 2020 but that the validated data will be provided in May 2020 due to the size of the analytical data. SB discussed the removal of trees needed to get to the two monitoring wells across the creek on the east side. PS said that the RACR was being prepared with the draft report expected to be to the Regulators in May 2020.
- **Task 7** (LHAAP-17) – PS explained that no documents are in progress but the backfilling of the clean excavations will occur when the site is drier.
- **Task 9** (LHAAP-37) – PS stated that the Year 3 2nd semiannual sampling is scheduled for May and that the data will be provided in July 2020. PS stated that the Year 2 Annual RA-O Report was submitted for regulatory review on 17 March 2020.
- **Task 10** (LHAAP-46) –PS stated that Year 5 Annual RA-O data report was in internal review and should be submitted for regulatory review in April 2020. PS stated that the Year 6 sampling was completed in February 2020 and that the validated data would be available for the April 2020 MMM.
- **Task 11** (LHAAP-50) –PS stated that the Year 5 RA-O Report will be submitted in April.
- **Task 12** (LHAAP-58) – KN stated that western plume was sampled in March 2020. RMZ asked if that was the last quarterly sampling event. KN confirmed that it was the last quarterly event that the semi-annual event for June 2020 will include both the eastern and western plumes. KN stated that the Year 6 RA-O Report will be prepared following receipt of the June 2020 validated results.
- **Task 13** (LHAAP-67) – PS stated the Year 5 Annual RA-O Report went final in early March. PS stated that the Year 6 Report was being prepared.
- **Task 14** (LHAAP-001-R and –003-R) - KN stated that Land Use Control (LUC) inspections had been completed in January 2020 and that no damage was noted. KN stated that the report was under internal review.
- **Task 16** (GWTP) **–** KN indicated that the 4th Quarter 2019 GWTP Report was under internal review and would be released to the Army within the next week and then onto the Regulators for review.
- **Task 17** (LHAAP-18/24) – KN stated that the validated data from the LHAAP-18/24 sampling completed in December 2019 will be included in the 4th Quarter 2019 GWTP Report.
- **Task 18** (Surface Water) – KN stated that 2nd Quarter 2020 surface water samples would be collected in April 2020.
- **Task 19** (LUC Management Plan) – Not discussed
- **Administrative Record (AR) –**PS said that the hard copies of April-June 2019 AR have been made and that the portable document formats (PDFs) are being reviewed. PS said that the Digital Versatile Disc (DVD) burning is on hold for the June cutoffs batch of documents due to the Houston's shelter in place order. In the meantime, the July - September 2019 AR is being compiled and Bate stamped. Hard copy production, and thus DVDs, for that cutoff are also delayed due to the shelter in place order in Houston and Louisiana where hard copies are produced.

Update on other DERP Sites:

- **LHAAP 18/24** –AW stated that the final Record of Decision (ROD) was distributed 2 March 2020 and that a copy was placed in the Marshall Public Library. AW stated that a notice was published in the Shreveport Times on 9 March and the Marshall Messenger on 8 March. AW stated that LUC notifications were send out 16 March. Targets and deadlines for the post-ROD documents were submitted 19 March. AW explained that the remedial design contract acquisition is underway with award expected by June 2020.
- **LHAAP-29** – AW said that the ROD will be included in the AR update through September that APTIM has in process.
- **LHAAP-47** – AW explained that the Post-Screening Investigation (PSI) Report Addendum 1 will be in the September AR update. AW stated that comments were received on the Draft Interim PSI Addendum 2 Report and they will be addressed in the Psi Report Addendum 2, following the additional data collection in June 2020. AW stated that a contract modification for HDR was awarded two weeks ago. AW said that the Army was awaiting the Work Plan from HDR and will review and then submit to the Regulators in the next couple of weeks.
- **Five Year Review (FYR) Report** – AW stated that FYR Report will be in the June AR update.

Schedule Next Managers' Meeting

The next MMM will be held on Wednesday April 22, 2020 at 10:30 am CDT via conference call.

Meeting concluded at approximately 12:00 am CDT.

ACRONYM LIST

µg/L	micrograms per liter
AAP	Amy Ammunition Plant
AM	Andrew Maly
AP	April Palmie
APTIM	APTIM Federal Services, LLC
AR	Administrative Record
AW	Aaron Williams
BF	Bill Foss
Bhate	Bhate Environmental Associates, Inc.
BR	Bill Rhotenberry
BRAC	Base Realignment and Closure
CD	Compact Disc
CDT	Central Daylight Time
DERP	Defense Environmental Restoration Program
DVD	Digital Versatile Disc
FYR	Five Year Review
GAC	Granular Activated Carbon
GWTP	Groundwater Treatment Plant
HDR	HDR, Inc.
KB	Kent Becher
KM	Kennie Moore
KN	Kim Nemmers
LHAAP	Longhorn Army Ammunition Plant
LUC	Land Use Control

MMM	Monthly Managers' Meeting
No.	Number
PBR	Performance-Based Remediation
PDF	Portable Document Format
PP	Proposed Plan
PS	Praveen Srivastav
PSI	Post-Screening Investigation
QC	Quality Control
RAB	Restoration Advisory Board
RACR	Remedial Action Completion Report
RA-O	Remedial Action – Operation
RAWP	Remedial Action Work Plan
RD	Remedial Design
RMZ	Rose M. Zeiler
ROD	Record of Decision
SB	Scott Beesinger
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency

LHAAP Data Validated
Validated Data for the MMM - March 2020

GWTP Effluent	*Weekly Perchlorate Sampling – January and February 2020* Perchlorate (6850)
GWTP Effluent	*Weekly, Bi-Weekly, and Monthly Sampling – January and February 2020* Ammonia (350.3) Ortho-Phosphate (365.3) Total Organic Carbon (SM5310C) VOC (8260C) Metals (6020A) Hexavalent Chromium (7196A) 1,4-Dioxane (8270D-SIM) Anions (9056)
GWTP Influent	*Monthly Sampling – January and February 2020* Metals (6020A) Perchlorate (6850) Hexavalent Chromium (7196A)
GWTP Quarterly	*Influent and Effluent – February 2020* Oil and Grease (1664A) Perchlorate (6850) Metals (6020A) 1,4-Dioxane (8270D-SIM) Chemical Oxygen Demand (410.4) VOC (8260C) Anions (9056)
LHAAP Surface Water	*Quarterly Perchlorate Sampling - January 2020* Perchlorate (6850)
LHAAP-04	*Year 1 Quarter 1 RA-O Sampling - February 2020* Perchlorate (EPA 6850) Alkalinity (SM2320B) Anions (SW9056A) Total Organic Carbon (SM5310C)

GWTP Weekly/Effluent Perchlorate Sampling -January 2020

Location ID: Sample Date:	Units	Daily Maximum Conc	INF pond (PCL)	LH18/24-SP650_010720_BIX 1/7/20	LH18/24-SP650_010720_BIX 1/7/20	LH18/24-SP650_012320_BIX 1/23/20	LH18/24-SP650_012820_BIX 1/28/20
Location Description							
				Monthly EFF	Weekly	Weekly	Weekly
Perchlorate (6850)							
Perchlorate	µg/L	589	17	**2.0 J**	**2.0 J**	**0.136**	**0.322**

µg/L - micrograms per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

AIX - after ion exchange

BIX - before ion exchange

J - estimated value between the detection limit and limit of quantitation and/or due to quality contol issues

GWTP Weekly Sampling - January 2020

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650_010720 1/7/20	LH18/24-SP650_012320 1/23/20	LH18/24-SP650_012820 1/28/20
Location Description			**GWTP–Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.**		
Ammonia as N (350.3)					
Ammonia as N	mg/L	NV	**0.79**	**9.1**	**0.21**
Ortho-Phosphate (365.3)					
Ortho-Phosphate	mg/L	NV	**0.171**	**1.96**	< 0.0250 U
Organic Carbon (SM5310C)					
Total Organic Carbon (TOC)	mg/L	NV	**2.01**	**2.02**	**2.2**

mg/L - milligrams per liter

NV - No Value

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

GWTP Bi-Weekly Sampling - January 2020

Location ID: Sample Date:	Units	(Bayou) Daily Maximum Conc	(INF pond) MCL	LH18/24-SP650_012320 1/23/20	LH18/24-SP650_012820 1/28/20
Location Description				**GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Biweekly.**	
Volatile Organic Compounds (8260C)					
1,1,1-Trichloroethane	µg/L	7,230	200	< 0.50 U	< 0.50 U
1,1,2-Trichloroethane	µg/L	216.9	5	< 0.50 U	< 0.50 U
1,1-Dichloroethane	µg/L	14,032	NV	< 0.50 U	< 0.50 U
1,1-Dichloroethene	µg/L	253	7	< 0.50 U	< 0.50 U
1,2-Dichloroethane	µg/L	181	5	**1.2**	**1.3**
1,2-Dichloropropane	µg/L	5	5	< 0.50 U	< 0.50 U
Acetone	µg/L	2,395	NV	< 1.0 U	< 1.0 U
Benzene	µg/L	181	5	< 0.50 U	< 0.50 U
Carbon tetrachloride	µg/L	181	5	< 0.50 U	< 0.50 U
Chlorobenzene	µg/L	47,180	100	< 0.50 U	< 0.50 U
Chloroform	µg/L	3,615	NV	< 0.50 U	< 0.50 U
cis-1,2-Dichloroethene	µg/L	NV	70	**23**	**27**
Ethylbenzene	µg/L	57,025	700	< 0.50 U	< 0.50 U
m,p-Xylene	µg/L	83.6	NV	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	1,699	5	< 1.0 U	< 1.0 U
o-Xylene	µg/L	83.6	NV	< 0.50 U	< 0.50 U
Styrene	µg/L	5,987	100	< 0.50 U	< 0.50 U
Tetrachloroethene	µg/L	180.7	5	< 0.50 U	< 0.50 U
Toluene	µg/L	4,189	10	< 0.50 U	< 0.50 U
Trichloroethene	µg/L	181	5	**3.7**	**5.0**
Vinyl chloride	µg/L	72	2	< 0.50 U	< 0.50 U
Anions (9056)					
Chloride	mg/L	NV	NV	**463**	**NA**
Sulfate	mg/L	NV	NV	**29.7**	**NA**

µg/L - micrograms per liter

mg/L - milligrams per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

NV - No Value

GWTP Monthly Effluent Sampling - January 2020

Location ID: Sample Date:	Units	Daily Maximum Conc	(INF pond) MCL	LH18/24-SP650_010720 1/7/20
Location Description				**GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled monthly**
Volatile Organic Compounds (8260C)				
1,1,1-Trichloroethane	µg/L	7,230	200	< 0.50 U
1,1,2-Trichloroethane	µg/L	216.9	5	< 0.50 U
1,1-Dichloroethane	µg/L	14,032	NV	< 0.50 U
1,1-Dichloroethene	µg/L	253	7	< 0.50 U
1,2-Dichloroethane	µg/L	181	5	**1.5**
1,2-Dichloropropane	µg/L	5	5	< 0.50 U
Acetone	µg/L	2,395	NV	< 1.0 U
Benzene	µg/L	181	5	< 0.50 U
Carbon tetrachloride	µg/L	181	5	< 0.50 U
Chlorobenzene	µg/L	47,180	100	< 0.50 U
Chloroform	µg/L	3,615	NV	< 0.50 U
cis-1,2-dichloroethene	µg/L	NV	70	**29**
Ethylbenzene	µg/L	57,025	700	< 0.50 U
m,p-Xylene	µg/L	83.6	NV	< 1.0 U
Methylene chloride	µg/L	1,699	5	< 1.0 U
o-Xylene	µg/L	83.6	NV	< 0.50 U
Styrene	µg/L	5,987	100	< 0.50 U
Tetrachloroethene	µg/L	180.7	5	< 0.50 U
Toluene	µg/L	4,189	10	< 0.50 U
Trichloroethene	µg/L	181	5	**5.0**
Vinyl chloride	µg/L	72	2	< 0.50 U
Metals (6020A)				
Barium	mg/L	2	2	**0.0666**
Lead	mg/L	0.0046	0.015	< 0.00100 U
Selenium	mg/L	0.012	0.05	< 0.00250 U
Silver	mg/L	0.003	0.1	< 0.000500 U
Hexavalent Chromium (7196A)				
Hexavalent Chromium	mg/L	0.1244	NV	< 0.0100 U
Semi-Volatile Organic Compounds (8270D SIM)				
1,4-Dioxane	µg/L	134.2	NV	**18**

µg/L - micrograms per liter

mg/L - milligrams per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

NV - no value

GWTP Monthly Influent Sampling - January 2020

Location ID: Sample Date:	Units	LH18/24-SP140_010720 1/7/20
Location Description		**GWTP – Collected from a spigot on the influent to TK-140. Sampled Monthly.**
Metals (6020A)		
Selenium	mg/L	< 0.00250 U
Silver	mg/L	< 0.000500 U
Hexavalent Chromium (7196A)		
Hexavalent Chromium	mg/L	< 0.0100 U
Perchlorate (6850)		
Perchlorate	µg/L	**13,000**

mg/L - milligrams per liter

µg/L - micrograms per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

GWTP Weekly/Effluent Perchlorate Sampling -February 2020

Location ID: Sample Date:	Units	Daily Maximum Conc	INF pond (PCL)	LH18/24-SP650_020420_BIX 2/4/20	LH18/24-SP650_021120_BIX 2/11/20	LH18/24-SP650_021120_BIX 2/11/20	LH18/24-SP650_021920_BIX 2/19/20	LH18/24-SP650_022520_BIX 2/25/20	LH18/24-SP650_022520_BIX 2/25/20
Location Description				**Collected from a spigot on the discharge of effluent TK-650.**					
				Weekly	Monthly EFF	Weekly	Weekly	Quarterly EFF	Weekly
Perchlorate (6850)									
Perchlorate	µg/L	589	17	**0.14**	< 2.0 U	< 2.0 U	< 2.0 U	**0.0969 J**	**0.161**

µg/L - micrograms per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

BIX - before ion exchange

J - estimated value between the detection limit and limit of quantitation and/or due to quality contol issues

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

GWTP Weekly Sampling - Februrary 2020

Location ID: Sample Date:	Units	Daily Maximum Conc	LH18/24-SP650_020420 2/4/20	LH18/24-SP650_021120 2/11/20	LH18/24-SP650_021920 2/19/20	LH18/24-SP650_022520 2/25/20
Location Description			**GWTP–Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.**			
Ammonia as N (350.3)						
Ammonia as N	mg/L	NV	**4.7**	**3.6**	**3.7**	< 0.10 U
Ortho-Phosphate (365.3)						
Ortho-Phosphate	mg/L	NV	**1.06**	**0.97**	**0.486**	**0.0110 J**
Organic Carbon (SM5310C)						
Total Organic Carbon (TOC)	mg/L	NV	**2.44**	**1.66**	**1.71**	**1.3**

mg/L - milligrams per liter

NV - No Value

J - estimated value between the detection limit and limit of quantitation and/or due to quality contol issues

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

GWTP Bi-Weekly Sampling - February 2020

Location ID: Sample Date:	Units	(Bayou) Daily Maximum Conc	(INF pond) MCL	LH18/24-SP650_020420 2/4/20	LH18/24-SP650_021920 2/19/20
Location Description				**GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Biweekly.**	
Volatile Organic Compounds (8260C)					
1,1,1-Trichloroethane	µg/L	7,230	200	< 0.50 U	< 0.50 U
1,1,2-Trichloroethane	µg/L	216.9	5	< 0.50 U	< 0.50 U
1,1-Dichloroethane	µg/L	14,032	NV	< 0.50 U	< 0.50 U
1,1-Dichloroethene	µg/L	253	7	< 0.50 U	< 0.50 U
1,2-Dichloroethane	µg/L	181	5	**1.4**	**1.3**
1,2-Dichloropropane	µg/L	5	5	< 0.50 U	< 0.50 U
Acetone	µg/L	2,395	NV	< 1.0 U	< 1.0 U
Benzene	µg/L	181	5	< 0.50 U	< 0.50 U
Carbon tetrachloride	µg/L	181	5	< 0.50 U	< 0.50 U
Chlorobenzene	µg/L	47,180	100	< 0.50 U	< 0.50 U
Chloroform	µg/L	3,615	NV	< 0.50 U	< 0.50 U
cis-1,2-Dichloroethene	µg/L	NV	70	**28**	**24**
Ethylbenzene	µg/L	57,025	700	< 0.50 U	< 0.50 U
m,p-Xylene	µg/L	83.6	NV	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	1,699	5	< 1.0 U	**1.1 J**
o-Xylene	µg/L	83.6	NV	< 0.50 U	< 0.50 U
Styrene	µg/L	5,987	100	< 0.50 U	< 0.50 U
Tetrachloroethene	µg/L	180.7	5	< 0.50 U	< 0.50 U
Toluene	µg/L	4,189	10	< 0.50 U	< 0.50 U
Trichloroethene	µg/L	181	5	**5.6**	**5.0**
Vinyl chloride	µg/L	72	2	< 0.50 UJ	< 0.50 UJ
Anions (9056)					
Chloride	mg/L	NV	NV	**501**	**447**
Sulfate	mg/L	NV	NV	**25.8**	**23.3**

µg/L - micrograms per liter

mg/L - milligrams per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

NV - No Value

UJ - estimated non-detect due to quality control issues and reported to the limit of detection

J - estimated value between the detection limit and limit of quantitation and/or due to quality contol issues

GWTP Monthly Effluent Sampling - February 2020

Location ID: Sample Date:	Units	Daily Maximum Conc	(INF pond) MCL	LH18/24-SP650_021120 2/11/20
Location Description				**GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled monthly**
Volatile Organic Compounds (8260C)				
1,1,1-Trichloroethane	µg/L	7,230	200	< 0.50 U
1,1,2-Trichloroethane	µg/L	216.9	5	< 0.50 U
1,1-Dichloroethane	µg/L	14,032	NV	< 0.50 U
1,1-Dichloroethene	µg/L	253	7	< 0.50 U
1,2-Dichloroethane	µg/L	181	5	**1.3**
1,2-Dichloropropane	µg/L	5	5	< 0.50 U
Acetone	µg/L	2,395	NV	< 1.0 U
Benzene	µg/L	181	5	< 0.50 U
Carbon tetrachloride	µg/L	181	5	< 0.50 U
Chlorobenzene	µg/L	47,180	100	< 0.50 U
Chloroform	µg/L	3,615	NV	< 0.50 U
cis-1,2-dichloroethene	µg/L	NV	70	**25**
Ethylbenzene	µg/L	57,025	700	< 0.50 U
m,p-Xylene	µg/L	83.6	NV	< 1.0 U
Methylene chloride	µg/L	1,699	5	< 1.0 U
o-Xylene	µg/L	83.6	NV	< 0.50 U
Styrene	µg/L	5,987	100	< 0.50 U
Tetrachloroethene	µg/L	180.7	5	< 0.50 U
Toluene	µg/L	4,189	10	< 0.50 U
Trichloroethene	µg/L	181	5	**5.1**
Vinyl chloride	µg/L	72	2	< 0.50 U
Metals (6020A)				
Barium	mg/L	2	2	**0.304**
Lead	mg/L	0.0046	0.015	< 0.00100 U
Selenium	mg/L	0.012	0.05	< 0.00250 U
Silver	mg/L	0.003	0.1	< 0.000500 U
Hexavalent Chromium (7196A)				
Hexavalent Chromium	mg/L	0.1244	NV	< 0.0100 UJ
Semi-Volatile Organic Compounds (8270D SIM)				
1,4-Dioxane	µg/L	134.2	NV	**24**

µg/L - micrograms per liter

mg/L - milligrams per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

NV - no value

UJ - estimated non-detect due to quality control issues and reported to the limit of detection

GWTP Monthly Influent Sampling - February 2020

Location ID: Sample Date:	Units	LH18/24-SP140_021120 2/11/20
Location Description		**GWTP – Collected from a spigot on the influent to TK-140. Sampled Monthly.**
Metals (6020A)		
Selenium	mg/L	< 0.00250 U
Silver	mg/L	**0.000314 J**
Hexavalent Chromium (7196A)		
Hexavalent Chromium	mg/L	< 0.0100 U
Perchlorate (6850)		
Perchlorate	µg/L	**11,000**

mg/L - milligrams per liter

µg/L - micrograms per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

J - estimated value between the detection limit and limit of quantitation and/or due to quality contol issues

GWTP Quarterly Influent Sampling - February 2020

Location ID: / Sample Date:	Units	LH18/24-SP140_022520 2/25/20
Location Description		**GWTP – Collected from a spigot on the influent to TK-140. Sampled Quarterly.**
Oil and Grease (1664A)		
Oil & Grease	mg/L	< 1.00 U
Chemical Oxygen Demand (410.4)		
Chemical Oxygen Demand	mg/L	**5.0 J**
Perchlorate (6850)		
Perchlorate	µg/L	**10,400**
Volatile Organic Compounds (8260C)		
1,1,1,2-Tetrachloroethane	µg/L	< 10 U
1,1,1-Trichloroethane	µg/L	< 10 U
1,1,2,2-Tetrachloroethane	µg/L	< 10 U
1,1,2-Trichloroethane	µg/L	< 10 U
1,1-Dichloroethane	µg/L	< 10 U
1,1-Dichloroethene	µg/L	< 10 U
1,1-Dichloropropene	µg/L	< 10 U
1,2,3-Trichlorobenzene	µg/L	< 10 U
1,2,3-Trichloropropane	µg/L	< 10 U
1,2,4-Trichlorobenzene	µg/L	< 10 U
1,2,4-Trimethylbenzene	µg/L	< 10 U
1,2-Dibromo-3-chloropropane	µg/L	< 10 U
1,2-Dibromoethane	µg/L	< 10 U
1,2-Dichlorobenzene	µg/L	< 10 U
1,2-Dichloroethane	µg/L	**39 J**
1,2-Dichloropropane	µg/L	< 10 U
1,3,5-Trimethylbenzene	µg/L	< 10 U
1,3-Dichlorobenzene	µg/L	< 10 U
1,3-Dichloropropane	µg/L	< 10 U
1,4-Dichlorobenzene	µg/L	< 10 U
2,2-Dichloropropane	µg/L	< 10 U
2-Butanone	µg/L	< 20 U
2-Chlorotoluene	µg/L	< 10 U
2-Hexanone	µg/L	< 20 U
4-Chlorotoluene	µg/L	< 10 U
4-Isopropyltoluene	µg/L	< 10 U
4-Methyl-2-pentanone	µg/L	< 20 U
Acetone	µg/L	< 20 U
Benzene	µg/L	< 10 U
Bromobenzene	µg/L	< 10 U
Bromochloromethane	µg/L	< 10 U
Bromodichloromethane	µg/L	< 10 U

Bromoform	µg/L	< 10 U
Bromomethane	µg/L	< 10 U
Carbon disulfide	µg/L	< 20 U
Carbon tetrachloride	µg/L	< 10 U
Chlorobenzene	µg/L	< 10 U
Chloroethane	µg/L	< 10 U
Chloroform	µg/L	< 10 U
Chloromethane	µg/L	< 10 U
cis-1,2-Dichloroethene	µg/L	**2,100 J**
cis-1,3-Dichloropropene	µg/L	< 10 U
Dibromochloromethane	µg/L	< 10 U
Dibromomethane	µg/L	< 10 U
Dichlorodifluoromethane	µg/L	< 10 U
Ethylbenzene	µg/L	< 10 U
Hexachlorobutadiene	µg/L	< 10 U
Isopropylbenzene	µg/L	< 10 U
m,p-Xylene	µg/L	< 20 U
Methylene chloride	µg/L	**2,200 J**
Naphthalene	µg/L	< 10 U
n-Butylbenzene	µg/L	< 10 U
n-Propylbenzene	µg/L	< 10 U
o-Xylene	µg/L	< 10 U
sec-Butylbenzene	µg/L	< 10 U
Styrene	µg/L	< 10 U
tert-Butylbenzene	µg/L	< 10 U
Tetrachloroethene	µg/L	**52 J**
Toluene	µg/L	< 10 U
trans-1,2-Dichloroethene	µg/L	< 10 U
trans-1,3-Dichloropropene	µg/L	< 10 U
Trichloroethene	µg/L	**4,900**
Trichlorofluoromethane	µg/L	< 10 U
Vinyl chloride	µg/L	**68 J**
Metals (6020A)		
Aluminum	mg/L	**0.301**
Antimony	mg/L	**0.00262 J**
Arsenic	mg/L	**0.000888 J**
Barium	mg/L	**0.579**
Beryllium	mg/L	**0.000206 J**
Cadmium	mg/L	**0.000947 J**
Calcium	mg/L	**42.4**
Chromium	mg/L	**0.0170**
Cobalt	mg/L	**0.00827**
Iron	mg/L	**0.829**
Lead	mg/L	< 0.00100 U
Magnesium	mg/L	**25.9**
Manganese	mg/L	**0.520**

Nickel	mg/L	**0.0385**
Potassium	mg/L	**1.18**
Selenium	mg/L	< 0.00250 U
Silver	mg/L	< 0.000500 U
Sodium	mg/L	**176**
Thallium	mg/L	< 0.000500 U
Vanadium	mg/L	< 0.00100 U
Zinc	mg/L	**0.689**
Mercury	mg/L	< 0.000100 U
Anions (9056)		
Chloride	mg/L	**357**
Sulfate	mg/L	**26.0**
Semi-Volatile Organic Compounds (8270D SIM)		
1,4-Dioxane	µg/L	**0.45**

µg/L - micrograms per liter

mg/L - milligrams per liter

J -estimated value between the detection limit and limit of quantitation and/or due to quality contol issues

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

GWTP Quarterly Effluent Sampling - February 2020

Location ID: / Sample Date:	Units	Daily Maximum Conc	(INF pond) MCL	LH18/24-SP650_022520 2/25/20
Location Description				**GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Quarterly.**
Oil and Grease (1664A)				
Oil & Grease	mg/L	15	NV	< 1.00 U
Chemical Oxygen Demand (410.4)				
Chemical Oxygen Demand	mg/L	200	NV	**10 J**
Volatile Organic Compounds (8260C)				
1,1,1-Trichloroethane	µg/L	7,230	200	< 0.5 U
1,1,2-Trichloroethane	µg/L	216.9	5	< 0.5 U
1,1-Dichloroethane	µg/L	14,032	NV	< 0.5 U
1,1-Dichloroethene	µg/L	253	7	< 0.5 U
1,2-Dichloroethane	µg/L	181	5	**1.2**
1,2-Dichloropropane	µg/L	5	5	< 0.5 U
Acetone	µg/L	2,395	NV	< 1.0 U
Benzene	µg/L	181	5	< 0.5 U
Carbon tetrachloride	µg/L	181	5	< 0.5 U
Chlorobenzene	µg/L	47,180	100	< 0.5 U
Chloroform	µg/L	3,615	NV	< 0.5 U
cis-1,2-dichloroethene	mg/L	NV	70	**23**
Ethylbenzene	µg/L	57,025	700	< 0.5 U
m,p-Xylene	µg/L	83.6	NV	< 1.0 U
Methylene chloride	µg/L	1,699	5	**1.7 J**
o-Xylene	µg/L	83.6	NV	< 0.5 U
Styrene	µg/L	5,987	100	< 0.5 U
Tetrachloroethene	µg/L	180.7	5	< 0.5 U
Toluene	µg/L	4,189	10	< 0.5 U
Trichloroethene	µg/L	181	5	**4.9**
Vinyl chloride	µg/L	72	2	< 0.5 U
Metals (6020A)				
Aluminum	mg/L	1.644		**0.175**
Antimony	mg/L	NV	0.006	**0.000607 J**
Arsenic	mg/L	0.722	0.01	**0.000698 J**
Barium	mg/L	2	2	**0.197 J**
Beryllium	mg/L	NV	0.004	< 0.000500 U
Cadmium	mg/L	0.0034	0.005	**0.000317 J**
Calcium	mg/L	NV	NV	**15.8**
Chromium	mg/L	0.752	0.1	**0.0159**
Cobalt	mg/L	11.495	NV	**0.00231 J**
Iron	mg/L	2.395	NV	**0.716**
Lead	mg/L	0.0046	0.015	< 0.00100 U
Magnesium	mg/L	NV	NV	**19.2**
Manganese	mg/L	15.494	NV	**0.149**

Nickel	mg/L	0.184	NV	**0.0136**
Potassium	mg/L	NV	NV	**1.38**
Selenium	mg/L	0.012	0.05	< 0.00250 U
Silver	mg/L	0.003	NV	< 0.000500 U
Sodium	mg/L	NV	NV	**314**
Thallium	mg/L	NV	NV	**0.000428 J**
Vanadium	mg/L	3.592	NV	< 0.00100 U
Zinc	mg/L	0.31	NV	**0.282**
Mercury	mg/L	NV	0.002	< 0.000100 U
Anions (9056)				
Chloride	mg/L	NV	NV	**386**
Sulfate	mg/L	NV	NV	**24**
Semi-Volatile Organic Compounds (8270D SIM)				
1,4-Dioxane	µg/L	134.2	NV	**0.4**

µg/L - micrograms per liter

mg/L - milligrams per liter

J - estimated value between the detection limit and limit of quantitation and/or due to quality contol issues

NV - No Value

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

LHAAP-Quarterly Surface Water Sampling - January 2020

Location ID: / Sample Date:	Units	PCL	HBW7_012020 1/20/20	HBW10_012020 1/20/20	HBW1_012020 1/20/20	GPW1_012020 1/20/20	GPW1_012020_a 1/20/20	GPW3_012020 1/20/20
Perchlorate (6850)			Harrison Bayou			Goose Prairie Creek		
Perchlorate	µg/L	17	**0.0761 J**	**0.0782 J**	**0.0600 J**	**0.146**	**0.163**	**0.156**

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

µg/L - micrograms per liter

J - estimated value between the detection limit and limit of quantitation and/or due to quality contol issues

LHAAP-04 Year 1 Quarter 1 RA-O Sampling
February 2020

	Location Code	04WW01		04WW02		04WW04		04WW05		04WW06		04WW07		04WW08	
	Sample ID	04WW01-200204		04WW02-200203		04WW04-200203		04WW05-200204		04WW06-200203		04WW07-200204		04WW08-200203	
	Sample Date	2/4/2020		2/3/2020		2/3/2020		2/4/2020		2/3/2020		2/4/2020		2/3/2020	
	Location Description:	Shallow Zone, Downgradient of Plume		Shallow Zone, Upgradient of Plume		Shallow Zone, Within Plume Area		Shallow Zone, Within Plume Area		Shallow Zone, Cross-Gradient to Plume Area		Shallow Zone, Downgradient of Plume Area		Intermediate Zone, Slightly Upgradient of Plume Area	
Analyte	**Units**	**MCL/PCL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
Perchlorate by EPA Method 6850																
Perchlorate	µg/L	17	**19**		< 2	U	< 2	U	< 2	U	< 2	U	**86**		< 2	U
Alkalinity by Method SM2320B																
Alkalinity	mg/L	NV							535				1130			
Anions by Method SW9056A																
Nitrate	mg/L	10							47.5	J			< 0.1	U		
Nitrite	µg/L	1000							< 100	U			< 0.1	U		
Sulfate	µg/L	NV							41.1				2600			
Total Organic Carbon by Method SM5310C																
Total Organic Carbon	mg/L	NV							3.97				75.5			
Field Parameters																
Dissolved oxygen	mg/L	NV	0.03		0.02		0.06		0.09		0.05		0.05		0.08	
Oxidation-Reduction Potential	mV	NV	-52		23		-26		-88		-16		-260		27	

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL
J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U - Undetected: The analyte was analyzed for, but not detected.
< - The analyte was not detected above the limit of quantitation shown.
MCL - Maximum Contaminant Limit
PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level
mg/L - milligrams per liter
µg/L - micrograms per liter
mV - millivolts
NV - The parameter is not a contaminant of concern for LHAAP-04 and no cleanup value has been established

LHAAP-04 Year 1 Quarter 1 RA-O Sampling
February 2020

	Location Code	04WW09				04WW10		04WW11		LHSMW01		LHSMW02			
	Sample ID	04WW09-200204		04WW09-200204-FD		04WW10-200204		04WW11-200204		LHSMW01-200203		LHSMW02-200203		LHSMW02-200203-FD	
	Sample Date	2/4/2020		2/4/2020		2/4/2020		2/4/2020		2/3/2020		2/3/2020		2/3/2020	
	Location Description:	Shallow Zone, Within Treatment Area				Shallow Zone, Within Treatment Area		Shallow Zone, Downgradient of Plume		Shallow Zone, Cross-Gradient to Plume Area		Shallow Zone, Downgradient to Plume Area			
Analyte	Units	MCL/PCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Perchlorate by EPA Method 6850																
Perchlorate	µg/L	17	**18**		**22**		< 2	U	< 2	U	< 2	U	< 2	U	< 2	U
Alkalinity by Method SM2320B																
Alkalinity	mg/L	NV	332		332		565									
Anions by Method SW9056A																
Nitrate	mg/L	10	< 0.2	U	< 200	U	0.109									
Nitrite	µg/L	1000	< 200	U	< 0.2	U	< 100	U								
Sulfate	µg/L	NV	659	J	732	J	368000									
Total Organic Carbon by Method SM5310C																
Total Organic Carbon	mg/L	NV	910		880		4.82									
Field Parameters																
Dissolved oxygen	mg/L	NV	0.08		0.08		0.09		5.54		0.03		0.03		0.03	
Oxidation-Reduction Potential	mV	NV	-74		-74		-149		-79		63		7		7	

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL
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U - Undetected: The analyte was analyzed for, but not detected.
< - The analyte was not detected above the limit of quantitation shown.
MCL - Maximum Contaminant Limit
PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level
mg/L - milligrams per liter
µg/L - micrograms per liter
mV - millivolts
NV - The parameter is not a contaminant of concern for LHAAP-04 and no cleanup value has been established

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

April 21, 2020

DAIN-ODB-LO

Mr. William Rhotenberry
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Re: Final Second Annual Remedial Action Operation Report, LHAAP-35B (37), Chemical Laboratory, Longhorn Army Ammunition Plant, Karnack, Texas, April 2020

Dear Mr. Rhotenberry,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your records: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). There were no EPA or TCEQ comments on the draft document requiring a response. At the suggestion of TCEQ a note has been added to the cover page of Appendix C to explain the quality control edits made to the sample collection logs. Due to COVID-19 stay home requirements, hard copies and compact disc (CD) copies of the document cannot be prepared at this time. As soon as restrictions are lifted, one hard copy of change out pages and one compact disc (CD) of the above-referenced document will be transmitted to you for your records.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
A. Palmie, TCEQ, Austin, TX (letter)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy and 1 CD)

R. Smith USACE, Tulsa District, OK (1 hard copy and 1 CD)
A. Williams, USACE, Tulsa District, OK (1 CD)
A. Maly USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate, Lakewood, CO (1 hard copy and 1 CD)
P. Srivastav, APTIM, Houston, TX (letter)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

April 21, 2020

DAIN-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality,
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Second Annual Remedial Action Operation Report, LHAAP-35B (37), Chemical Laboratory, Longhorn Army Ammunition Plant, Karnack, Texas, April 2020

Dear Ms. Palmie,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your records: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). There were no EPA or TCEQ comments on the draft document requiring a response. At your suggestion, a note has been added to the cover page of Appendix C to explain the quality control edits made to the sample collection logs. Due to COVID-19 stay home requirements, hard copies and compact disc (CD) copies of the document cannot be prepared at this time. As soon as restrictions are lifted, one hard copy of change out pages and one compact disc (CD) of the above-referenced document will be transmitted to you for your records.

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The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
W. Rhotenberry, USEPA Region 6, Dallas, TX (letter)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy and 1 CD)

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K. Nemmers, Bhate, Lakewood, CO (1 hard copy and 1 CD)
P. Srivastav, APTIM, Houston, TX (letter)

Final

Second Annual Remedial Action Operation Report, LHAAP-35B (37) (Chemical Laboratory)

Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for

U.S. Army Corps of Engineers, Tulsa District
Contracting Division
2488 East 81st Street
Tulsa, Oklahoma 74137-4290

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APTIM

Aptim Federal Services, LLC
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Houston, Texas 77042

Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
April 2020

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Acronyms and Abbreviations

µg/L	micrograms per liter
J	estimated value
U	Not detected; The analyte was analyzed for but not detected above the associated method detection limit.
AECOM	AECOM Technical Services, Inc.
APTIM	Aptim Federal Services, LLC
Bhate	Bhate Environmental, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	contaminant of concern
DCE	dichloroethene
DO	dissolved oxygen
LHAAP	Longhorn Army Ammunition Plant
LTM	long-term monitoring
LUC	land use control
MCL	maximum contaminant level
mg/L	milligram(s) per liter
MNA	monitored natural attenuation
MSL	mean sea level
mV	millivolts
No.	number
ORP	oxidation-reduction potential
PCE	tetrachloroethene
RA-O	remedial action operation
RACR	Remedial Action Completion Report
RAWP	Remedial Action Work Plan
RI	remedial investigation
ROD	Record of Decision
Shaw	Shaw Environmental & Infrastructure, Inc.
SU	standard unit
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TNT	trinitrotoluene
TOC	total organic carbon

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • April 2020

Acronyms and Abbreviations *(continued)*

USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150• Final • Rev 0 • April 2020

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Tulsa District, contracted with Bhate Environmental, Inc. (Bhate) under the Omaha Multiple Environmental Government Acquisition National Small Business Multiple Award Task Order Contract, Environmental Remediation Services with Military Munitions Response Program, Task Order Number (No.) W9128BV17F0150, to conduct environmental restoration at multiple sites at the former Longhorn Army Ammunition Plant (LHAAP). The Bhate Team is comprised of Bhate and Aptim Federal Services, LLC (APTIM).

LHAAP is located in east Texas in the northeastern corner of Harrison County between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake (**Figure 1-1**). The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the east. Caddo Lake is a large freshwater lake that bounds LHAAP to the north and east. The eastern fence of the LHAAP installation is 3.5 miles from the Texas-Louisiana state border.

LHAAP was established in December 1941 with the primary mission of manufacturing trinitrotoluene (TNT). Production of TNT began at Plant 1 in October 1942 through 1945, when the facility was placed on standby status until February 1952. In 1952 the facility was reactivated and production of pyrotechnic ammunition, such as photoflash bombs, simulators, hand signals, and tracers for 40-millimeter ammunition continued at Plant 2, northeast of Plant 1, through 1956. In December 1954, a third facility, Plant 3, began production of solid-fuel rocket motors for tactical missiles until 1965 when Plant 2 was reactivated for the production of pyrotechnic and illuminating ammunition. In the years following the Vietnam conflict, LHAAP continued to produce flares and other basic pyrotechnic or illuminating items for the U.S. Department of Defense inventory. From September 1988 to May 1991, LHAAP was also used for the static firing and elimination of Pershing I and II rocket motors.

Remedial action operation (RA-O) activities are required at LHAAP-35B (37) under the Record of Decision (ROD) issued for the site in June 2010 (USACE 2010). The Remedial Action Completion Report (RACR, AECOM 2016) outlines the implementation of RA-O to address risks associated with contaminated groundwater at the LHAAP-35B (37) site. The RACR (AECOM 2016) was developed using the basis and details of the Remedial Design (USACE 2011) and the Remedial Action Work Plan (RAWP) (AECOM 2013) for LHAAP-35B (37), and included the installation of three wells, 35BWW24, 35BWW25, and 35BWW26, and their inclusion into the monitoring network.

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A field demonstration pilot study of the bio-plug technology was conducted at the site during September 2012 through June 2014 (AECOM 2016). The purpose of the pilot study was to determine the feasibility of the bio-plug technology to accelerate the aerobic biological degradation of chlorinated organic contaminants in the groundwater at the site. The pilot study commenced in September 2012 and concluded with the final groundwater sampling round in October 2014. Interpretation of data generated through these events indicated reduction of contaminant concentrations was not sufficient to justify continuation of the demonstration.

Groundwater monitoring at LHAAP-35B (37) is ongoing as described in the RACR (AECOM 2016). This report represents Year 2 of the RA-O implementation and summarizes the results of site inspections and sampling activities. Baseline sampling was conducted in October 2013. A Groundwater Geochemistry Rebound Evaluation Memorandum for Record was submitted February 2017. which determined that the aquifer is sufficiently recovered to its pre-bio-plug study geochemical state to begin implementation of the monitored natural attenuation (MNA) remedy. The first year RA-O report, representing sampling events conducted in November 2017, February, May, and August 2018, was submitted in March 2019. An MNA evaluation is presented in this Year 2 report and includes historical data from 1994 through August 2019.

1.1 Remedial Action Objectives

The remedial action objectives at LHAAP-35B (37) are based on protection of human health and meeting applicable or relevant and appropriate requirements. There are no ecological risks at the LHAAP-35B (37) site (USACE 2010).

The remedial action objectives for the LHAAP-35B (37) site, consistent with the reasonably anticipated future use as a national wildlife refuge, are:

- Ensure protection of human health by preventing human exposure to the contaminated groundwater.
- Ensure protection of human health and the environment by preventing contaminated groundwater from migrating into nearby surface water.
- Ensure return of groundwater to its potential beneficial use as drinking water, wherever practicable.

1.2 Performance Objectives

The remedy selected for LHAAP-37 (USACE 2010) is land use control (LUC), MNA, and Long-Term Monitoring (LTM).

The remedy includes the following components:

- LUC: LUC in the impacted area ensures protection of human health by restricting the use of groundwater exceeding the applicable cleanup levels to environmental monitoring and testing only. The LUC will remain in effect until such time as the U.S. Army, U.S. Environmental Protection Agency (USEPA), and Texas Commission on Environmental Quality (TCEQ) agree that contaminants of concern (COCs) concentrations have met cleanup levels. As a component of the LUC implementation, the civil survey of the LUC boundary was conducted in January 2015 and recorded in the Harrison County Courthouse in March 2015.
- RA-O: An MNA program has been implemented as part of the RA-O to establish attenuation trends and verify that the volatile organic compounds (VOCs) plume is stable or shrinking and will not migrate to nearby surface water (Goose Prairie Creek) at levels that may present an unacceptable risk to human health or the environment. Natural attenuation is expected to return groundwater to acceptable quality over time. The MNA program performance objectives have been evaluated after two years of RA-O groundwater monitoring. During those two years, groundwater monitoring has been performed on a quarterly basis. RA-O monitoring will continue semiannually for an additional three years.
- LTM: Groundwater monitoring will be performed annually until the next Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Five-Year Review. RA-O associated with this remedy will be used to track the continued effectiveness of MNA. Further reductions in sampling will depend on the Five-Year Reviews, but sampling will be conducted at least once every five years until the cleanup levels are achieved.

According to the RACR (AECOM 2016), groundwater monitoring is being performed to evaluate remedy effectiveness and includes groundwater and surface water monitoring. The groundwater monitoring program is designed to evaluate and monitor natural attenuation of COCs in shallow zone groundwater, and the surface water monitoring program is designed to evaluate potential migration of contaminated groundwater to surface water.

The combined monitoring program shall meet the following objectives (AECOM 2013):

- Demonstrate that natural attenuation is effectively occurring.
- Detect changes in environmental conditions (e.g., geochemical, hydrogeologic, etc.) that may reduce the efficacy of natural attenuation processes.
- Identify potentially toxic and/or mobile transformation products.

- Verify that the plume(s) is not expanding.
- Verify no unacceptable impact to downgradient receptors.
- Detect new releases of contaminants to the environment that could impact effectiveness of the natural attenuation remedy.
- Verify attainment of the remediation objectives.

Work completed as part of the Year 2 (2018/2019) RA-O consisted of the following:

- November 2018 groundwater monitoring event consisting of 22 planned wells, one additional shallow well, and two surface water locations
- February 2019 groundwater monitoring event consisting of 22 wells
- May 2019 groundwater monitoring event consisting of 22 wells
- August 2019 groundwater monitoring event consisting of 22 wells
- LUC inspection
- Well maintenance activities

This report summarizes the LUC compliance inspection, results of groundwater sampling, and an evaluation of MNA.

1.3 Site Description

LHAAP-35B (37) is located in the central portion of LHAAP, as shown on **Figure 1-2**, and covers an area of approximately 16.5 acres. The site topography is relatively flat. The nearest significant surface water body is Goose Prairie Creek, which runs through the site. Goose Prairie Creek eventually flows into Caddo Lake; however, it is often dry at LHAAP-35B (37).

At LHAAP-35B (37), a Chemical Laboratory and associated buildings were built during the construction of Plant 3 (1953–1955) and was originally used to support the production activities at LHAAP. These support activities included research and testing of materials used in the production processes and quality assurance testing. Also, one waste rack sump was located at the site. In 1998, the site was used as a staging area in support of investigation activities.

The LUC area associated with the groundwater use restriction at LHAAP-35B (37) encompasses the northern half of the site and extends beyond the historical site boundaries along the western, eastern, and northern boundaries of the site. The LUC area encompasses a total of 16.5 acres and has no known areas of archaeological or historical importance.

1.4 Conceptual Site Model

A detailed Conceptual Site Model of LHAAP-35B (37) was presented in the ROD (USACE 2010). Although the groundwater is not currently being used, nor is it expected to be used in the future, the groundwater pathway is being considered for remediation because it has the potential to present an unacceptable risk to a maintenance worker.

COCs identified in the ROD for LHAAP-35B (37) groundwater are tetrachloroethene (PCE), trichloroethene (TCE), and 1,1-dichloroethene (DCE). The historical presence of these COCs in the shallow groundwater zone represents the primary driver for remedial action as they are at concentrations above the human health standard for a hypothetical future maintenance worker under an industrial exposure scenario. Although 1,1-DCE is a COC, this compound was not detected above the maximum contaminant level (MCL) of 7.0 µg/L during the Year 2 RA-O.

Antimony and thallium were detected in groundwater at the LHAAP-35B (37) prior to the remedial investigation (RI) conducted in 2002 and the RI concluded that they are not considered to be contaminants at this site. The 2016 RACR stated that since the previous detections of antimony and thallium results were J-qualified results, samples were to be collected during the second quarter Year 1 RA-O sampling event to determine the need for further sampling. During the second quarter Year 1 RA-O sampling event in March 2018, concentrations of antimony and thallium were below their respective MCLs, and these analytes were excluded from the future sampling as indicated the Year 1 RA-O report.

Based on groundwater level data collected 2013 through 2019, the dominant shallow zone groundwater gradient is downward to the northeast. In 2019 the groundwater elevations increased, and the groundwater flow direction has changed. Although most of the site groundwater flows to the northeast, in the area to the west of the site boundary, but within the LUC boundary, the groundwater flow direction in Year 2 has been north/northwest. Groundwater monitoring has shown that contaminants are confined to the shallow groundwater. Monitoring well 35BWW03 is installed in the intermediate zone, and monitoring well 35BWW06 is installed in the lower portion of the shallow zone. According to the RAWP (AECOM 2013), sampling of these two wells will be performed every five years to support the Five Year Review. Monitoring well 35BWW03 was last sampled in August 2016, and COCs were below the MCLs. Monitoring well 35BWW06 was inadvertently sampled quarterly during the Year 1 RA-O and during the first quarter of Year 2 RA-O (November 2018), and results were non-detect or below MCLs. Both these wells will be sampled again in 2021 to support the next Five Year Review. The continued low levels of COCs in well 35BWW06 in the lower portion of the shallow zone and in the intermediate well 35BWW03 indicate that the plume has been vertically delineated, with no intermediate zone impacts

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identified. As described in the RACR, DPT-03 and DPT-06 were installed in the intermediate zone, and because groundwater samples from these DPTs did not indicate VOCs exceeding cleanup levels, no additional intermediate zone wells were installed. Monitoring wells 35BWW03 and 35BWW06 will continue to be sampled once every five years to support the Five-Year Reviews, and the next sampling event for these wells will be in 2021.

In the ROD (USACE 2010), contamination was known to be present only on the west side of the creek, and modeling calculations were completed (Shaw 2007) to assess the potential for the COCs present in shallow groundwater at LHAAP-35B (37) to migrate toward and discharge to Goose Prairie Creek. The modeling assumed contaminants were not leaching from vadose zone soil to groundwater. Based on the results of the model, PCE and 1,1-DCE would not appear at detectable levels where groundwater discharges into Goose Prairie Creek. Even though the contamination has been detected to the east of the creek during Year 1 RA-O monitoring, contaminants were not detected in the surface water sampling conducted in Year 1 and in the first quarter (November 2018) of Year 2. Surface water samples were not collected in the remaining three quarters of Year 2 because the groundwater levels were below the bottom of the creek (see discussion in **Section 2.3**). Monitoring well 35BWW01 is a shallow well and is the only well that has groundwater elevations observed above the creek bottom. Comparison of this well to others at the site suggests this water is likely to be perched. The lack of COCs at this well indicate that if the groundwater does reach the creek, the creek will not be impacted by COCs. A comparison of groundwater elevations in COC impacted wells near the creek with the elevation of the bottom of the creek indicates that COC impacted groundwater is not discharging to Goose Prairie Creek.

2.0 SITE ACTIVITIES AT LHAAP-35B (37)

This section describes the results of the Year 2 RA-O activities including the annual LUC compliance inspection, quarterly groundwater monitoring, and monitoring system repairs and/or maintenance performed at LHAAP-35B (37).

2.1 Annual Land Use Control Compliance Inspection

The annual LUC compliance inspection for LHAAP-35B (37) was performed on February 15, 2019. The LUC for this site is groundwater restriction, which prohibits water well installation for any purpose other than environmental monitoring and testing. Also, the LUC prohibits residential groundwater use until the levels of COCs in the groundwater and soil allow unrestricted use and unlimited exposure. The restriction applies to groundwater underlying an approximately 16.5-acre area defined by the surveyed LUC boundary (AECOM 2016). The Annual LUC Compliance Certification Documentation Form for the Year 2 RA-O monitoring period is included in **Appendix A**. No non-compliance issues or concerns were noted during the annual inspection.

2.2 Groundwater Monitoring

The Year 2 RA-O monitoring is the second of two years of quarterly monitoring. Four groundwater sampling events were completed in November 2018 and February, May, and August 2019. In the RAWP (AECOM 2013), the lower shallow groundwater well 35BWW06 and intermediate well 35BWW03 were scheduled to be sampled during the baseline event and then once every five years to support the Five-Year review. In the RACR (AECOM 2016), 25 wells were selected for sampling, which included wells 35BWW03 and 35BWW06, although they are scheduled to be sampled once every five years. Monitoring well 35BWW06 was sampled quarterly in the Year 1 RA-O and only in November 2018 during the Year 2 RA-O to evaluate the lower shallow groundwater. In the future, the sampling schedule from the RACR will be followed, and wells 35BWW03 and 35BWW06 will be sampled again in 2021. Also, 35BWW02 was not sampled because it was dry during the first two quarters, as shown in **Table 2-1**. The Year 1 RA-O recommended the 35BWW02 be removed from the sampling list and was approved in March 2019. During the first quarter (November 2018) of Year 2, well 35BWW06 was also sampled, for a total of 23 wells. Monitoring well locations are depicted on **Figure 2-1**.

Prior to collecting groundwater samples, monitoring wells were gauged using a water level probe, and the depth to water was recorded to the nearest 0.01 foot from the top of casing. Depth-to-water measurements were used to calculate the groundwater elevations presented in **Table 2-2**.

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Water samples were collected using low-flow sampling techniques as described in the groundwater sampling procedures found in the *Final Installation-Wide Work Plan* (Bhate 2018).

2.2.1 Approved Modifications to the Groundwater Monitoring Program

Minor modifications have been made to the groundwater monitoring program, in coordination with USEPA and the TCEQ, since it was first developed in the RAWP (AECOM 2013).

- Monitoring well 35BWW02 was dry during each quarter of Year 1 RA-O groundwater sampling, and the Year 1 RA-O Report recommended that it be removed from the groundwater-monitoring program for Year 2 RA-O. The Year 1 RA-O Report was approved in March 2019, and monitoring well 35BWW02 was removed from the monitoring program at that time.
- The list of MNA parameters was reduced after the Year 2 RA-O Quarter 2 sampling event. The revised list of parameters included nitrate, sulfate, chloride, methane, ethane, ethene, carbon dioxide, total organic carbon, and dissolved iron taken in the field (APTIM 2019).

2.2.2 Groundwater Elevations and Flow Direction

Potentiometric surfaces drawn based on water level data collected during the Year 2 RA-O are shown on **Figures 2-2** through **2-5**. During the Year 2 RA-O quarterly sampling events, monitoring well 35BWW02 was noted to be dry in the first two quarters; however, this did not limit the ability to construct a potentiometric surface contour map. Also, the screened interval in 35BWW01 is located at a higher elevation than other shallow wells and is not representative of the shallow groundwater. The groundwater at 35BWW01 may represent a perched zone; therefore, the elevations measured there were not used to create the shallow groundwater potentiometric maps. Based on the gauging data from the Year 2 RA-O quarterly sampling events, groundwater within the site boundary flows primarily to the northeast from monitoring well 35BWW11, towards LHSMW58, 35BWW14, and 35BWW24. West of the site boundary, but within in the LUC boundary, the groundwater flows north/northwest, as observed in the November 2018 and May 2019 sampling events and shown on **Figures 2-2** and **2-4**.

2.2.3 Groundwater Analytical Results

Quarterly groundwater samples were collected and analyzed for VOCs according to SW-846 Method 8260. Samples from six monitoring wells were analyzed for MNA geochemical parameters as shown in **Table 2-1**.

During the Year 2 RA-O sampling events, monitoring wells 35BWW04, 35BWW05, 35BWW09, 35BWW10, 35BWW12, 35BWW14, 35BWW15, 35BWW16, 35BWW17,

35BWW20, 35BWW25, and LHSMW58 contained VOCs above their respective MCLs. The highest concentrations of VOCs were detected in well 35BWW09, with TCE at 580 micrograms per liter (µg/L) in November 2018. Historical COC results are presented in **Table 2-4**. Analytical results for Year 2 RA-O sampling activities are presented in **Table 2-3**. **Figures 2-6** through **2-10** depict the VOC data in wells sampled in October 2013, November 2018, February 2019, May 2019, and August 2019, respectively. The trends of COC concentrations in monitoring wells with COC concentrations greater than the MCL are depicted in graphs presented on **Figure 2-11a** and **2-11b**. An expanded discussion on the VOCs and their distribution including trend analysis is included in **Section 3.1**.

Groundwater monitoring well sampling collection logs were completed for each monitoring well sampled and are included in **Appendix C**. Laboratory analytical results are included in **Appendix D**.

2.3 Surface Water Sampling

As per the RACR, sampling of surface water from two locations, 35BSW01 and 35BSW02, in Goose Prairie Creek was conducted quarterly for the first year and then annually during the second year. Annual sampling at these locations will continue until the first CERCLA Five-Year Review. To determine if groundwater contamination may be contributing to the surface water, the groundwater elevations and creek bottom elevations were compared. At monitoring well 35BWW01, groundwater elevations were observed above the creek bottom and could influence the creek. Comparison to other wells suggests this water may be perched and could potentially influence the creek. At this well, COCs have not been detected above the detection limit; therefore, if the perched water influences the creek, the creek would not be impacted by COCs. However, impacted groundwater of the shallow zone was most likely not discharging to the creek based on the elevations, which were below the creek bed. The groundwater elevation at 35BWW05 was also compared to the creek bottom elevation at the surface water location 35BSW01, and 35BWW12 was compared to the creek bottom elevation at 35BSW02. If the groundwater elevation is higher than the creek bottom elevation, then a surface water sample would be collected. During the Year 2 Quarter 1 sampling event, the groundwater elevation measured at 35BWW05 was 180.00 feet above mean sea level (MSL) and was below the creek bottom elevation of 191.49 feet above MSL at 35BSW01. The groundwater elevation at 35BWW12 was 179.32 feet above MSL, also below the creek bottom elevation of 189.16 feet above MSL at 35BSW02. The groundwater elevations at the two monitoring wells were below that of the creek bottom elevations; therefore, surface water samples were not collected.

Comparing the November 2019 groundwater elevations to the creek bottom elevations surveyed in January 2019, it is apparent that groundwater was not discharging to the creek, and samples were not required. However, since the elevation survey was not conducted until

January 2019, and water was present during the Year 2 Quarter 1 RA-O sampling event, surface water samples were collected from 35BSW01 and 35BSW02 and analyzed for VOCs using USEPA Method 8260B. **Figure 2-1** depicts the approximate locations of the surface water samples. **Table 2-3** presents the surface water VOC data. No VOCs were detected at concentrations exceeding the laboratory reporting limits during the November 2018 sampling event.

2.4 Groundwater Monitoring System Maintenance

Inspections of the conditions/integrity of monitoring wells are conducted during each sampling event and the information was recorded on the field sampling forms. **Appendix B** includes a photo log, which shows the condition of the wells each quarter. During the Year 2 RA-O reporting period, no damage to well bollards, pads, or protective well casings was observed. Maintenance, such as painting and replacement of well labels, is required and will be conducted during the Year 3 RA-O. Also, only minimal encroachment of weeds or brush on the well pads was observed. Mowing the area to control brush and weeds is conducted on a routine basis and as needed to allow access to the wells and was conducted at LHAAP-35B (37) on April 29, 2019, and July 31, 2019. **Table 2-5** provides a summary of the maintenance activities that were performed at the site during the second annual RA-O period.

2.5 Groundwater Monitoring Optimization

Monitoring well 35BWW02 was removed from the groundwater monitoring program per the recommendations of the Year 1 RA-O. Sampling of wells 35BWW03 (intermediate zone) and 35BWW06 (lower portion of the shallow zone) has confirmed that COCs are vertically delineated, with no intermediate zone impacts identified. In the future, the sampling schedule from the RACR will be followed, and wells 35BWW03 and 35BWW06 will be sampled once every five years to support the Five-Year Reviews; the next sampling event for these wells will be in 2021. The planned Year 3 monitoring program is presented in **Table 2-6** and **Figure 2-12**.

3.0 NATURAL ATTENUATION EVALUATION

The following sections present the results of the natural attenuation evaluation in accordance with the three lines of evidence discussed in the Final RACR for site COCs.

3.1 First Line of Evidence: Change in COC Concentrations

Natural attenuation is the combination of multiple mechanisms, including biodegradation, volatilization, dilution, advection, and absorption, that reduce contaminant concentrations. The decrease of COC concentrations over time and distance is evidence of natural attenuation, though the observed decrease may be influenced by potentially short-term fluctuations in groundwater elevations. The change in groundwater COC concentrations over time and with distance was evaluated at LHAAP-35B (37). COC concentrations for the second year of RA-O sampling events are provided on **Figures 2-7** through **2-10** as well as in **Tables 2-3** and **2-4**. COCs exceeding their respective MCLs are highlighted. To aid in evaluating COCs over time, concentration trends are provided on **Figures 2-11a** and **2-11b**.

3.1.1 In Well COC Concentrations

In the 2016 RACR, six wells were discussed as the primary focus of analysis due to high COC concentrations: 35BWW04, 35BWW05, 35BWW08, 35BWW10, 35BWW14, and 35BWW15. In August 2019, all the COCs were below the MCL at 35BWW08 and 35BWW10, and the highest levels were observed in 35BWW09 and 35BWW14.

At 35BWW04, PCE was detected at 30.1 µg/L in 2006 and 66.5 µg/L during the 2013 baseline sampling event. TCE was detected at 10.8 µg/L in 2006 and 11.4 µg/L in the 2013 baseline event. Since the baseline sampling, the only COC above the MCL during the Year 1 and Year 2 RA-O sampling events has been PCE. PCE levels at this well decreased to below the MCL for the first time in August 2018 at 2.2 µg/L; however, the concentrations have fluctuated, and PCE was observed at 7.9 µg/L in August 2019.

At 35BWW05, TCE was detected at 12.9 µg/L in 2006 and 14 µg/L in the 2013 baseline sampling. During the Year 1 and Year 2 RA-O sampling events at 35BWW05, TCE was observed above the MCL and has fluctuated between 5.5 to 12 µg/L. All of the other COCs at 35BWW05 remained below their respective MCL levels during these sampling events.

At 35BWW08, TCE was detected at 150 µg/L in 2007, and the concentrations declined to 37 µg/L in 2012 and 43.8 µg/L in the 2013 baseline event. PCE and TCE concentrations have been below their respective detection limits since February 2018 and remained below these levels during the Year 2 RA-O.

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At 35BWW09, TCE increased to the highest level observed in this well at 580 µg/L in November 2018 and then reduced to the lowest level observed at this well in May 2019 at 20 µg/L; a slight increase to 70 J µg/L was observed in August 2019. The fluctuations observed in 35BWW09 may be due to the ground water elevation changes observed during the Year 2 RA-O. Additional data collected in the future will aid in determining if the lower levels of TCE remain.

At 35BWW10, PCE and TCE concentrations have reduced during the Year 2 RA-O and in August 2019, all COCs were below their respective MCLs. These data indicate that there was a decreasing trend in Year 2 RA-O, and future data will aid in determining if the downward trend continues due to MNA.

At 35BWW14, PCE has fluctuated since the baseline sampling in 2013, at 19 µg/L, and has increased to as high as 53 µg/L in November 2017. In August 2019, PCE levels have decreased and were observed at 38 µg/L. TCE concentrations at 35BWW14 have also decreased from 82.8 to 15 µg/L in the same time frame. In May 2019, along with the highest level of groundwater observed at this well, the highest concentration of TCE (110 µg/L) and the lowest concentration of PCE (0.5 µg/L U) were also observed, as seen on **Figure 2-11a**. Also, the degradation products cis-1,2-DCE and 1,1-DCE were observed during the Year 2 RA-O sampling, indicating that limited reductive dechlorination is occurring at the site.

During the Year 2 RA-O sampling at 35BWW15, PCE and TCE have fluctuated slightly and in August 2019, PCE and TCE were observed above the MCL of 5 µg/L at 9.7 µg/L and 7.6 µg/L, respectively. During this time, low levels of cis-1,2-DCE and 1,1-DCE, and vinyl chloride were also detected and indicate that limited reductive dechlorination is occurring.

3.1.2 COC Concentrations Based on Groundwater Flow

Based on the general direction of groundwater flow, monitoring well 35BWW11 is a consistent upgradient background monitoring well, and monitoring wells 35BWW23 and 35BWW24 are downgradient monitoring wells. Site COCs have not been observed in these wells and aid in delineating the plume configuration. Within the site boundary the groundwater flows primarily to the northeast from monitoring well 35BWW11, towards LHSMW58, 35BWW14, and 35BWW24. West of the site boundary, but within the LUC boundary, the groundwater flows north/northwest, as observed in the November 2018 and May 2019 sampling events as shown on **Figures 2-2** and **2-4**. At LHAAP-35B (37), contaminant concentrations decrease significantly as groundwater moves downgradient from the highest contaminant levels. In August 2019, PCE and TCE concentrations decreased from 38 and 15 µg/L, respectively, at 35BWW14 to below the detection limits at 35BWW24. On the west side of the site near the LUC boundary, in August 2019 TCE at 35BWW09 was observed at 70 µg/L J and decreased to below the detection limit at 35BWW08. In November 2018, when groundwater on this West

side was flowing more westerly, the concentrations also decreased from 580 µg/L to below the detection limits between 35WW09 to 35WW19.

3.1.3 Mann-Kendall Analysis

Mann-Kendall analysis for the second year RA-O monitoring period was completed for PCE and TCE. The results are presented in **Appendix E** in graphical format with the statistical results presented on the bottom of the page. The GSI Mann-Kendall Tool Kit was used for this analysis. The concentrations of COCs are presented in µg/L. Half the reporting limit was used for non-detects. For duplicate samples, the normal sample was used. The level of significance is calculated for each analysis and is provided on the trend analysis sheet. It should be noted that the trends identified in the Mann-Kendall analysis may have been influenced by groundwater elevation increases during Year 2. Future RA-O sampling will determine if the trends persist.

A summary table of the Mann-Kendall results is presented in **Table 3-1**. Historical COC results for all wells are presented in **Table 2-4**.

Significant Decreases

Mann-Kendall analysis identified statistically significant evidence of decreasing trends at the following:

- **Monitoring Well 35BWW15 – TCE.** Concentrations of TCE have fluctuated slightly since 2014 and decreased to 9.7 µg/L in August 2019. The decreasing trends may be the result of natural attenuation (e.g., dilution from clean upgradient groundwater). Results from future sampling events will continue to be evaluated for COC concentration trends.

Probably Decreasing

Mann-Kendall analysis identified statistically significant evidence of probable decreasing trends at the following:

- **Monitoring Well LHSMW58 – PCE.** Concentrations of PCE have fluctuated since November 2017 and decreased to 6.8 µg/L in August 2019. An overall decreasing trend has been seen at this location and may be the result of natural attenuation (e.g., dilution from clean upgradient groundwater). Results from future sampling events will continue to be evaluated for COC concentration trends.

- **Monitoring Well LHSMW14 – TCE.** Concentrations of TCE have decreased since October 2013 and has been reduced to 15 µg/L in August 2019. An overall decreasing trend has been seen at this location and may be the result of natural attenuation (e.g., dilution from clean upgradient groundwater). Results from future sampling events will continue to be evaluated for COC concentration trends.

Probably Increasing

Mann-Kendall analysis identified statistically significant evidence of a probably increasing trend at the following:

- **Monitoring Well 35BWW16 – PCE.** Concentrations of PCE have fluctuated since November 2017 and increased to the highest level of 15.0 µg/L in November 2018. Since November 2018, concentrations also have decreased to 9.8 µg/L in August 2019. An overall probably increasing trend has been seen at this location, and results from future sampling events will continue to be evaluated for COC concentration trends.

3.1.4 Predictive Modeling

Calculation of time-based attenuation rates was performed as required by the RAWP (AECOM 2013). However, the trends for monitoring wells at LHAAP-37 were likely skewed significantly by the large changes in groundwater elevation that occurred during the Year 2 RA-O. Therefore, although estimates of the time to achieve the MCL have been provided in the discussion below, the current trends are unlikely to accurately predict the future declines in COC concentrations.

As previously noted in **Section 3.1**, the Mann-Kendall analysis was used to determine that a statistically significant decrease in TCE concentrations over time was observed at monitoring well 35BWW15. To determine the estimated time to achieve the MCL at this well, a time-dependent attenuation rate was determined and is provided in **Appendix F**. The first order rate constant at 0.0008 day^{-1} and the time to achieve the MCL of 5 µg/L is estimated to be as little as 1.4 years.

A probably decreasing trend was determined by Mann-Kendall analysis, at 35BWW14 and LHSMW58. Time-dependent attenuation rates were calculated to determine a time to achieve the MCL in the groundwater associated with these wells and are provided in **Appendix F**. The first order rate constant for TCE at 35BWW14 was determined to be 0.0006 day^{-1} and the time to achieve the MCL of 5 µg/L is estimated to be 1.4 years. The first order rate constant for

PCE at LHSMW58 was determined to be 0.0005 day^{-1}, and the time to achieve the MCL of 5 µg/L is estimated to be as little as 1.7 years.

While these calculations provide an estimated time to achieve the MCL, given lithologic variability and significant groundwater elevation fluctuations at the site during Year 2, the time necessary to achieve the MCL may vary by an order of magnitude or more. Additionally, the rate of reduction could diminish over time as the residual concentrations decrease, and the timeframes to achieve the MCL may be longer than estimated by these calculations.

3.1.5 Plume Stability

COC plume maps have been completed for each of the second year RA-O sampling events and are presented on **Figures 2-6** through **2-10**. The COC data from the RA-O monitoring indicate that the plume has been stable during the second year of RA-O sampling. COC concentrations at perimeter wells 35BWW07, 35BWW08, 35BWW11, 35BWW18, 35BWW19, 35BWW23, 35BWW24, and 35BWW26 have remained below their respective MCLs during the second year RA-O. Monitoring well 35BWW06 is screened in the shallow intermediate and COCs have remained below the detection limits, which indicates that the contaminant plume is not migrating downward. As discussed above, 35BWW06 will be sampled once every five years to support the Five Year Reviews, and the next sampling event for this well will be in 2021.

During the Year 2 RA-O, groundwater elevations increased during the first three quarters and then decreased. The water level fluctuations may have aided in the increases and decreases in COC concentrations; however, the overall plume remained stable.

At the most northern impacted monitoring well, 35BWW25, TCE levels have increased from 5.55 µg/L in August 2016 to 15 µg/L in August 2019; however, during Year 2 RA-O sampling events, the levels have fluctuated with an overall decrease during the year.

At 35BWW24, located to the northeast, TCE was observed for the first time during the Year 2, Quarter 1 sampling event in November 2018, at 2.9 µg/, below the MCL of 5 µg/L. TCE was detected during each of the Year 2 RA-O sampling events, below the MCL, and will be evaluated further during the Year 3 RA-O to determine if the plume is migrating to the northeast.

The PCE and TCE concentrations have also fluctuated in the southwest part of the plume. At 35BWW10, PCE and TCE have decreased during the Year 2 RA-O to below their respective MCLs in August 2019. However, at 35WW09, PCE increased to 41 µg/L in May 2019 and then reduced to below the detection limit in August 2019. These changes will be further evaluated during the Year 3 RA-O to determine if the plume has expanded.

3.2 Second Line of Evidence: Geochemical Indicators

Select monitoring wells were sampled for MNA parameters and are shown in **Table 2-1**. **Table 2-3** includes the geochemical data used to determine if the site groundwater is favorable for MNA biological degradation processes. The list of MNA parameters was reduced after the Year 2 RA-O Quarter 2 sampling event. The field parameters for LHAAP-35B (37) wells include nitrate, sulfate, chloride, methane, ethane, ethene, carbon dioxide, total organic carbon, and dissolved iron taken in the field (APTIM 2019). The field parameters for LHAAP-35B (37) wells include dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity, turbidity, ferrous iron, and temperature. Additional MNA parameters are analyzed at an off-site lab and include gasses (ethene, ethane, and methane) and anions (chloride, nitrate, and sulfate).

Dissolved Oxygen

DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (USEPA 1998). Anaerobic bacteria, which are the primary microbes able to degrade the site COCs, may be inhibited at DO concentrations greater than 0.5 milligrams per liter (mg/L). In monitoring wells where COCs are above the MCL, the DO concentrations ranged from 0.05 mg/L to 4.88 mg/L, with an average of 1.13 mg/L during the 4th Quarter of the Year 2 RA-O. The low DO levels (<0.5 mg/L) observed in some of these impacted wells are favorable for reductive chlorination.

Oxidation Reduction Potential

The ORP levels indicate the oxidative or reductive potential in the aquifer and provide real-time data to determine if conditions are conducive for biodegradation. ORP values less than 50 millivolts (mV) indicate that the aquifer is reaching anaerobic conditions and are favorable for biological reductive dechlorination of chlorinated ethenes and ethanes. During the Year 2 RA-O monitoring, the ORP measurements ranged from 51 mV at 35BWW07 to 383 mV at 35BWW25. These measurements indicate oxidative conditions which are not favorable for reductive dechlorination.

Nitrate

After DO has been depleted by microbes in the treatment zone, nitrate may be used as an electron acceptor and is reduced to nitrite. Nitrate levels above 1.0 mg/L may compete with reductive dechlorination (USEPA 1998). The nitrate and nitrite concentrations were below 1.0 mg/L during the Year 2 RA-O sampling, indicating that nitrate will not inhibit anaerobic degradation of site COCs.

Iron Reduction

After nitrate is utilized, iron (III) (ferric iron) is used as an electron acceptor during anaerobic biodegradation of organic carbon. During this process, iron (III) is reduced to iron (II) (ferrous iron), which is soluble in water, and an increase in ferrous iron can indicate reducing groundwater conditions. During the Year 2 RA-O, ferrous iron was observed at each of the RA-O monitoring wells, indicating that iron-reducing conditions exist in the site groundwater.

Sulfate

After DO, nitrate, and iron have been depleted in the groundwater, sulfate is used as an electron acceptor. Concentrations of sulfate greater than 20 mg/L may compete with reductive dechlorination of the site COCs. However, in many plumes with high concentrations of sulfate, reductive dechlorination still occurs (USEPA 1998). Sulfate was sampled in monitoring wells designated for MNA analysis during the Year 2 RA-O and ranged from 17 mg/L to 99.7 mg/L in August 2019. Sulfate levels are slightly elevated and may compete as an electron acceptor with site COCs.

Methane

Methanogenesis occurs in highly reducing conditions and generally occurs after oxygen, nitrate, iron, and sulfate have been depleted. Methane levels above 500 µg/L are considered indicative of methanogenic conditions (USEPA 1998). Methane concentrations were less than 6.8 µg/L during the Year 2 RA-O and suggest that methanogenic conditions are not present in the groundwater.

Total Organic Carbon

Regardless of the electron acceptor being used, organic carbon is a required source of reduced carbon and energy to sustain microbial activity. Total organic carbon (TOC) is utilized as an energy and hydrogen source to support the reductive dechlorination of the chlorinated COCs. TOC concentrations greater than 20 mg/L are considered adequate to support microbial activity (USEPA 1998). TOC was less than 3.25 µg/L during the Year 2 RA-O sampling. This data indicates that carbon concentrations in the groundwater are not supportive of reductive dechlorination.

pH

The pH of the groundwater has an effect on the activity of microbial populations. Microbes capable of degrading chlorinated aliphatic hydrocarbons generally prefer pH values from 6 to 8

standard units (SU) (USEPA 1998). The shallow zone groundwater pH during the Year 2 RA-O period ranged from 5.06 to 9.92 SU, with an average of value of 6.41 SU. The pH levels in these wells are on average, within the preferred range for dechlorinating bacteria.

Ethane and Ethene

Ethane and ethene are the two end products of the reductive dechlorination pathways for chlorinated ethanes and ethenes. During the Year 2 RA-O, ethane concentrations were below the laboratory reporting limits. Low levels of ethene were observed at each of the RA-O wells during the Y1Q1 sampling event; however, levels were not detected above the reporting limit of 0.55 µg/L during the Y1Q4 sampling. These data indicate that limited complete reductive dechlorination is occurring at LHAAP-35B (37).

Geochemical Indicator MNA Parameter Summary

The qualitative assessment of geochemical indicators during the Year 2 RA-O period in the groundwater at LHAAP-35B (37) indicates current geochemical conditions are not favorable for MNA processes via biological reduction. Nonetheless, certain parameters observed in a few locations may indicate that conditions could favor biological natural attenuation, such as the presence of ethene, the low DO and nitrate/nitrite concentrations, the presence of ferrous iron, and an average pH level within the range for dechlorinating bacteria. The presence of degradation products cis-1,2-DCE and 1,1-DCE suggest that limited biological degradation is occurring; however, the primary MNA processes reducing concentrations are abiotic.

3.3 Third Line of Evidence: Microbial Analysis

Dechlorinating bacteria, *Dehalococcoides sp.*, were analyzed at wells designated for MNA sampling (35BWW04, 35BWW08, 35BWW12, 35BWW14, 35BWW23, and 35BWW26) during the second year RA-O sampling. *Dehalococcoides sp.* concentrations in February 2019 were measured to be 2.3 cells per milliliter and lower, indicating that the species required for complete reductive dechlorination is not present at levels favorable for complete reductive dechlorination.

4.0 SUMMARY AND CONCLUSIONS

The LUC for LHAAP-35B (37) is groundwater restriction, which prohibits water well installation for any purpose other than environmental monitoring and testing or the use of residential groundwater until COCs in the groundwater and soil allow unrestricted use and unlimited exposure. The annual LUC compliance inspection for the Year 2 RA-O was conducted on February 2, 2019. No non-compliance issues or concerns were identified during the annual inspection. No change in land use or groundwater use has occurred at the site during the Year 2 RA-O monitoring period.

Monitoring well 35BWW02 continued to be dry during the first two quarters of the Year 2 RA-O and was removed from the monitoring program, as recommended in the Year 1 RA-O Report.

Inspections of the monitoring wells were conducted during each sampling event. Site monitoring wells were in good condition, and periodic clearing and mowing were conducted as needed. Maintenance, such as painting and replacing labels, is required and will be conducted during the Year 3 RA-O.

VOC data and geochemical indicators were collected over the course of the monitoring period to evaluate effectiveness of MNA as a site remedy. A tiered approach was used to evaluate the occurrence of natural attenuation in site groundwater. The first line of evidence evaluated reductions in COC concentrations. The second line of evidence evaluated geochemical indicators, and the third line of evidence evaluated microbial populations in the aquifer. The results of the tiered evaluation and the conclusions are summarized below.

Prior to the creek bottom being surveyed at the two surface water locations, samples were collected during the Year 2, Quarter 1 sampling event at 35BSW01 and 35BSW02, and no VOCs were detected at concentrations exceeding the laboratory reporting limits. In January 2019 the creek bottom was surveyed at the two locations to evaluate if groundwater could impact the creek. Monitoring well 35BWW01 is the only well that has groundwater elevations above the creek bottom. Comparison to other wells suggests this water may be perched and could potentially influence the creek. The lack of COCs present at this well suggests that if this water does reach the creek, the creek will not be impacted by COCs. This evaluation determined the COC impacted groundwater in the shallow zone was lower than the creek bottom, and surface water samples were not collected.

An assessment of the first line of evidence included an evaluation of the groundwater flow and COC degradation trends. Based on the Year 2 RA-O groundwater level measurements, the groundwater primarily flows to the northeast. On the west side of the site, within the LUC

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boundary, the groundwater flows in a north/northwest direction depending on groundwater fluctuations. At monitoring well 35BWW25, TCE was first observed above the detection limit in 2016, and the highest value was observed during the Year 2 Quarter 1 sampling event, suggesting that the plume has moved side gradient. However, after the Year 2 Q1 sampling event, the TCE levels have fluctuated and have not continued to increase.

TCE and PCE concentrations at 35BWW14 and 35BWW15 generally declined over the Year 1 and 2 RA-O period; however, PCE concentrations show an overall increase in 35BWW14 as compared to the 2013 baseline concentration. Additionally, fluctuations in PCE and TCE concentrations were observed at 35BWW14 during the May 2019 event. Significant changes in groundwater elevation may have influenced the concentrations during the Year 2 RA-O. While the concentrations in 35BWW14 and 35BWW15 near the center of the plume show declining trends of some COCs during the Year 1 and 2 RA-O period, the results do not conclusively indicate that MNA is operating successfully. The results from the ongoing RA-O monitoring will determine if the trends observed in Years 1 and 2 continue.

Reductions in COCs were observed over time during the Year 2 RA-O. The highest COC levels observed during the Year 2 RA-O were in well 35BWW09, with TCE detected at 580 µg/L in November 2018 and 70 J µg/L in August 2019. At 35BWW10, PCE and TCE have reduced to below the MCL between November 2018 and August 2019. At some wells, an inverse relationship between groundwater elevations and COC concentrations has been observed during the Year 2 RA-O and suggests that the MNA mechanism of dilution may be aiding in the decreases in COC levels. Continued monitoring during future sampling events will determine if the downward trends persist.

Decreases in contaminants were also observed along the flow path. Elevated levels of PCE and TCE concentrations decreased between 35BWW14 and 35BWW24. On the west side, near the LUC boundary, a decrease in TCE was also observed from elevated levels at 35BWW09 to below the detection limit at 35BWW08. In November 2018, when groundwater on the west side flowed northwesterly, the concentrations also decreased between 35BWW09 to 35BWW18.

The PCE concentrations at 35BWW16 increased from below the MCL (0.447 J µg/L) during the 2013 baseline sampling to a high of 15 µg/L in November 2018. However, over the course of the Year 2 RA-O sampling events, the concentrations decreased to 9.8 µg/L in August 2019. This well is located northeast of the main plume, and in previous years was located downgradient of the higher concentration areas of the plume. It is possible that the more northerly flow observed in the area of this well during the Year 2 RA-O may have prevented further plume migration towards this well, or the PCE concentrations may have been

influenced by the significant changes in groundwater elevation. Continued RA-O monitoring events will determine if plume migration towards this well continues in the future.

The COC data from the RA-O monitoring indicate that the plume has been stable during the first two years of RA-O sampling. At 35BWW25, TCE concentrations have increased since 2013; however, they fluctuated during the Year 2 RA-O sampling events. TCE was observed below the MCL at 35BWW24 for the first time during the Year 1 RA-O events and persisted below MCL during Year 2 RA-O. This well will be evaluated during the Year 3 RA-O to determine if the plume is moving further northeast. The PCE and TCE concentrations have also fluctuated in the southwest part of the plume. At 35BWW10, concentrations decreased to below their respective MCLs; however, at 35WW09, PCE first increased and then reduced to below the detection limit. These changes will be evaluated during the Year 3 RA-O to determine if the plume has expanded.

The qualitative assessment of geochemical indicators performed as the second line of evidence at LHAAP-35B (37) indicates current geochemical conditions are not optimal for biological degradation MNA processes. Although degradation products cis-1,2-DCE and 1,1-DCE have been detected in certain monitoring wells, groundwater conditions within the impacted area are not highly reducing in most areas, which is not favorable for biological degradation of site COCs.

The third line of evidence to assess MNA is to evaluate microorganisms that demonstrate biological degradation. Prior to the acceptance of the updated MNA analysis, *Dehalococcoides sp.* was sampled during the first two quarters of the Year 2 RA-O sampling. During these sampling events, *Dehalococcoides sp.* was not observed at levels favorable for reductive dechlorination.

The evaluation of MNA at LHAAP-35B (37) indicates that, based on the data collected thus far, MNA associated with biodegradation appears not to be occurring. Decreases observed are primarily due to abiotic processes, including dispersion, dilution, sorption, and volatilization. Significant increases in groundwater elevations during the first three quarters of the Year 2 quarterly sampling may have potentially affected the observed trends in the COC concentration data. Only two years of MNA data for these wells have been collected, and future sampling events will determine if the COC trends continue. Semiannual sampling will be implemented for the third year of RA-O monitoring in compliance with the RACR (AECOM 2016).

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5.0 REFERENCES

AECOM Technical Services, Inc. (AECOM). 2013. *Final Remedial Action Work Plan, LHAAP-35B (37), Chemical Laboratory, Longhorn Army Ammunition Plant, Karnack, Texas*. June.

AECOM. 2016. *Final Remedial Action Completion Report, LHAAP-35B (37), Chemical Laboratory*. Longhorn Army Ammunition Plant, Karnack, Texas. September.

APTIM Federal Services, LLC (APTIM). 2019. *Final Technical Memorandum – Monitored Natural Attenuation Parameters.* Longhorn Army Ammunition Plant, Karnack, Texas. February.

Bhate Environmental, Inc. (Bhate). 2018. *Draft Final Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas*. March.

Shaw Environmental & Infrastructure, Inc. (Shaw). 2007. *Final Modeling Report, Derivation of Soil and Groundwater Concentrations Protective of Surface Water and Sediment, Longhorn Army Ammunition Plant, Karnack, Texas*. February.

U.S. Army Corps of Engineers (USACE). 2010. *Final Record of Decision, LHAAP-35B (37), Chemical Laboratory and LHAAP-67, Above Ground Storage Tank Farm*. Longhorn Army Ammunition Plant, Karnack, Texas. June.

USACE. 2011. *Final Remedial Design, LHAAP-35B (37), Chemical Laboratory and LHAAP-67, Aboveground Storage Tank Farm Longhorn Army Ammunition Plant, Karnack, Texas*. August.

U.S. Environmental Protection Agency (USEPA). 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water. USEPA/600/R-98/128. September.

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Tables

Table 2-1
Groundwater RA-O Sampling – 2018 and 2019

Well ID	Groundwater Unit	Y2Q1 November 2018			Y2Q2 February 2019			Y2Q3 May 2019			Y2Q4 August 2019		
		VOC	Field Parameters	MNA	VOC	Field Parameters	MNA	VOC	Field Parameters	MNA	VOC	Field Parameters	MNA
35BWW01	Shallow	X	X		X	X		X	X		X	X	
35BWW02	Shallow	Dry			Dry			Removed from sampling schedule[a]					
35BWW03	Intermediate	Location is sampled for 5 year review - Next sampling will be Y5Q1 November 2021											
35BWW04	Shallow	X	X	X	X	X	X	X	X	X	X	X	X
35BWW05	Shallow	X	X		X	X		X	X		X	X	
35BWW06	Lower Shallow	X	X		Location is sampled for 5 year review - Next sampling will be Y5Q1 November 2021								
35BWW07	Shallow	X	X		X	X		X	X		X	X	
35BWW08	Shallow	X	X	X	X	X	X	X	X	X	X	X	X
35BWW09	Shallow	X	X		X	X		X	X		X	X	
35BWW10	Shallow	X	X		X	X		X	X		X	X	
35BWW11	Shallow	X	X		X	X		X	X		X	X	
35BWW12	Shallow	X	X	X	X	X	X	X	X	X	X	X	X
35BWW13	Shallow	X	X		X	X		X	X		X	X	
35BWW14	Shallow	X	X	X	X	X	X	X	X	X	X	X	X
35BWW15	Shallow	X	X		X	X		X	X		X	X	
35BWW16	Shallow	X	X		X	X		X	X		X	X	
35BWW17	Shallow	X	X		X	X		X	X		X	X	
35BWW18	Shallow	X	X		X	X		X	X		X	X	
35BWW19	Shallow	X	X		X	X		X	X		X	X	
35BWW20	Shallow	X	X		X	X		X	X		X	X	
35BWW23	Shallow	X	X	X	X	X	X	X	X	X	X	X	X
35BWW24	Shallow	X	X		X	X		X	X		X	X	
35BWW25	Shallow	X	X		X	X		X	X		X	X	
35BWW26	Shallow	X	X	X	X	X	X	X	X	X	X	X	X
LHSMW58	Shallow	X	X		X	X		X	X		X	X	
35BSW01	Goose Prairie Creek	X	X		Next Sampling is Y3Q1 November 2019								
35BSW02	Goose Prairie Creek	X	X		Next Sampling is Y3Q1 November 2019								

Notes:

Field parameters to be monitored for all wells: pH, temperature, conductivity, turbidity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and ferric iron.

MNA parameters include alkalinity, sulfate, sulfide, chloride, TOC, dissolved iron and manganese, total phosphorus, carbon dioxide, dissolved gases (methane, ethane, ethene) and total iron.

[a] Location was removed from sampling list due to being dry during each quarter of Year 1 RA(O) groundwater sampling and the first two quarters of Year 2 RA(O).

ID - identification

MNA - monitored natural attenuation

NS - not sampled

RA(O) - remedial action operation

TOC - total organic carbon

VOC - volatile organic compounds

X - well was analyzed for that parameter

Table 2-2

Groundwater Elevation Data, LHAAP-35B(37)

Well ID	Sampling Date	TOC Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft TOC)	Depth to Water (ft bgs)	Screen Interval (ft bgs)		Screen Interval (ft MSL)		Water Elevation (ft MSL)
						Top	Bottom	Top	Bottom	
35BWW01	1/1/2013	202.42	200.31	Dry	Dry	9	19	191.31	181.31	Dry
	8/18/2016	202.42	200.31	17.00	14.89	9	19	191.31	181.31	185.42
	11/8/2017	202.42	200.31	15.42	13.31	9	19	191.31	181.31	187.00
	2/14/2018	202.42	200.31	14.80	12.69	9	19	191.31	181.31	187.62
	3/29/2018	202.42	200.31	12.94	10.83	9	19	191.31	181.31	189.48
	5/24/2018	202.42	200.31	12.28	10.17	9	19	191.31	181.31	190.14
	8/16/2018	202.42	200.31	14.22	12.11	9	19	191.31	181.31	188.20
	11/15/2018	202.42	200.31	14.15	12.04	9	19	191.31	181.31	188.27
	2/12/2019	202.42	200.31	8.11	6.00	9	19	191.31	181.31	194.31
	5/20/2019	202.42	200.31	7.18	5.07	9	19	191.31	181.31	195.24
	8/5/2019	202.42	200.31	11.93	9.82	9	19	191.31	181.31	190.49
35BWW02	1/1/2013	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	8/19/2016	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	11/7/2017	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	2/13/2018	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	3/28/2018	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	5/24/2018	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	11/16/2018	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	2/14/2019	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
35BWW04	1/1/2013	202.11	199.26	23.50	20.65	20	30	179.26	169.26	178.61
	8/17/2016	202.11	199.26	22.00	19.15	20	30	179.26	169.26	180.11
	11/9/2017	202.11	199.26	23.80	20.95	20	30	179.26	169.26	178.31
	2/14/2018	202.11	199.26	23.53	20.68	20	30	179.26	169.26	178.58
	5/22/2018	202.11	199.26	22.55	19.70	20	30	179.26	169.26	179.56
	8/22/2018	202.11	199.26	24.09	21.24	20	30	179.26	169.26	178.02
	11/20/2018	202.11	199.26	23.02	20.17	20	30	179.26	169.26	179.09
	2/13/2019	202.11	199.26	21.75	18.90	20	30	179.26	169.26	180.36
	5/20/2019	202.11	199.26	19.07	16.22	20	30	179.26	169.26	183.04
	8/5/2019	202.11	199.26	20.78	17.93	20	30	179.26	169.26	181.33
35BWW05	1/1/2013	202.57	199.97	24.08	21.48	26	36	173.97	163.97	178.49
	8/18/2016	202.57	199.97	22.65	20.05	26	36	173.97	163.97	179.92
	11/8/2017	202.57	199.97	24.30	21.70	26	36	173.97	163.97	178.27
	2/16/2018	202.57	199.97	24.00	21.40	26	36	173.97	163.97	178.57
	3/27/2018	202.57	199.97	23.35	20.75	26	36	173.97	163.97	179.22
	5/21/2018	202.57	199.97	23.20	20.60	26	36	173.97	163.97	179.37
	8/21/2018	202.57	199.97	24.63	22.03	26	36	173.97	163.97	177.94
	11/18/2018	202.57	199.97	23.59	20.99	26	36	173.97	163.97	178.98
	2/13/2019	202.57	199.97	22.57	19.97	26	36	173.97	163.97	180.00
	5/21/2019	202.57	199.97	20.47	17.87	26	36	173.97	163.97	182.10
	8/6/2019	202.57	199.97	21.83	19.23	26	36	173.97	163.97	180.74
35BWW06	1/1/2013	203.04	200.01	24.70	21.67	42	52	158.01	148.01	178.34
	8/18/2016	203.04	200.01	23.27	20.24	42	52	158.01	148.01	179.77
	11/8/2017	203.04	200.01	24.50	21.47	42	52	158.01	148.01	178.54
	2/16/2018	203.04	200.01	24.70	21.67	42	52	158.01	148.01	178.34
	3/27/2018	203.04	200.01	24.80	21.77	42	52	158.01	148.01	178.24
	5/21/2018	203.04	200.01	24.02	20.99	42	52	158.01	148.01	179.02
	8/21/2018	203.04	200.01	25.30	22.27	42	52	158.01	148.01	177.74
	11/18/2018	203.04	200.01	24.34	21.31	42	52	158.01	148.01	178.70

Table 2-2
Groundwater Elevation Data, LHAAP-35B(37)

Well ID	Sampling Date	TOC Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft TOC)	Depth to Water (ft bgs)	Screen Interval (ft bgs)		Screen Interval (ft MSL)		Water Elevation (ft MSL)
						Top	Bottom	Top	Bottom	
35BWW07	1/1/2013	203.53	200.86	27.85	25.18	18	28	182.86	172.86	175.68
	8/18/2016	203.53	200.86	25.50	22.83	18	28	182.86	172.86	178.03
	11/8/2017	203.53	200.86	27.94	25.27	18	28	182.86	172.86	175.59
	2/13/2018	203.53	200.86	27.25	24.58	18	28	182.86	172.86	176.28
	3/29/2018	203.53	200.86	26.52	23.85	18	28	182.86	172.86	177.01
	5/23/2018	203.53	200.86	26.11	23.44	18	28	182.86	172.86	177.42
	8/20/2018	203.53	200.86	28.05	25.38	18	28	182.86	172.86	175.48
	11/18/2018	203.53	200.86	27.45	24.78	18	28	182.86	172.86	176.08
	2/14/2019	203.53	200.86	25.76	23.09	18	28	182.86	172.86	177.77
	5/22/2019	203.53	200.86	25.11	22.44	18	28	182.86	172.86	178.42
	8/5/2019	203.53	200.86	23.90	21.23	18	28	182.86	172.86	179.63
35BWW08	1/1/2013	204.12	201.4	25.10	22.38	22	32	179.4	169.4	179.02
	8/17/2016	204.12	201.4	23.74	21.02	22	32	179.4	169.4	180.38
	11/7/2017	204.12	201.4	25.40	22.68	22	32	179.4	169.4	178.72
	2/14/2018	204.12	201.4	25.07	22.35	22	32	179.4	169.4	179.05
	5/23/2018	204.12	201.4	24.43	21.71	22	32	179.4	169.4	179.69
	8/22/2018	204.12	201.4	25.73	23.01	22	32	179.4	169.4	178.39
	11/20/2018	204.12	201.4	24.54	21.82	22	32	179.4	169.4	179.58
	2/12/2019	204.12	201.4	23.67	20.95	22	32	179.4	169.4	180.45
	5/20/2019	204.12	201.4	21.40	18.68	22	32	179.4	169.4	182.72
	8/5/2019	204.12	201.4	20.50	17.78	22	32	179.4	169.4	183.62
35BWW09	1/1/2013	205.16	203.15	26.40	24.39	25	35	178.15	168.15	178.76
	8/16/2016	205.16	203.15	24.85	22.84	25	35	178.15	168.15	180.31
	11/7/2017	205.16	203.15	26.45	24.44	25	35	178.15	168.15	178.71
	2/16/2018	205.16	203.15	26.43	24.42	25	35	178.15	168.15	178.73
	3/27/2018	205.16	203.15	25.57	23.56	25	35	178.15	168.15	179.59
	5/21/2018	205.16	203.15	25.50	23.49	25	35	178.15	168.15	179.66
	8/16/2018	205.16	203.15	26.71	24.70	25	35	178.15	168.15	178.45
	11/19/2018	205.16	203.15	25.73	23.72	25	35	178.15	168.15	179.43
	2/13/2019	205.16	203.15	24.77	22.76	25	35	178.15	168.15	180.39
	5/21/2019	205.16	203.15	22.82	20.81	25	35	178.15	168.15	182.34
	8/5/2019	205.16	203.15	23.95	21.94	25	35	178.15	168.15	181.21
35BWW10	1/1/2013	203.79	200.79	24.97	21.97	18.23	33	182.56	167.79	178.82
	8/18/2016	203.79	200.79	23.47	20.47	18.23	33	182.56	167.79	180.32
	11/7/2017	203.79	200.79	25.50	22.50	18.23	33	182.56	167.79	178.29
	2/16/2018	203.79	200.79	24.87	21.87	18.23	33	182.56	167.79	178.92
	3/27/2018	203.79	200.79	24.21	21.21	18.23	33	182.56	167.79	179.58
	5/24/2018	203.79	200.79	24.17	21.17	18.23	33	182.56	167.79	179.62
	8/17/2018	203.79	200.79	25.43	22.43	18.23	33	182.56	167.79	178.36
	11/18/2018	203.79	200.79	24.34	21.34	18.23	33	182.56	167.79	179.45
	2/12/2019	203.79	200.79	23.31	20.31	18.23	33	182.56	167.79	180.48
	5/20/2019	203.79	200.79	21.02	18.02	18.23	33	182.56	167.79	182.77
	8/6/2019	203.79	200.79	22.68	19.68	18.23	33	182.56	167.79	181.11
35BWW11	1/1/2013	203.31	200.9	24.47	22.06	25	35	175.9	165.9	178.84
	8/18/2016	203.31	200.9	22.42	20.01	25	35	175.9	165.9	180.89
	11/8/2017	203.31	200.9	24.30	21.89	25	35	175.9	165.9	179.01
	2/12/2018	203.31	200.9	24.06	21.65	25	35	175.9	165.9	179.25
	3/27/2018	203.31	200.9	23.16	20.75	25	35	175.9	165.9	180.15
	5/21/2018	203.31	200.9	22.64	20.23	25	35	175.9	165.9	180.67
	8/17/2018	203.31	200.9	24.46	22.05	25	35	175.9	165.9	178.85
	11/18/2018	203.31	200.9	22.77	20.36	25	35	175.9	165.9	180.54
	2/13/2019	203.31	200.9	21.49	19.08	25	35	175.9	165.9	181.82
	5/21/2019	203.31	200.9	18.53	16.12	25	35	175.9	165.9	184.78
	8/7/2019	203.31	200.9	19.66	17.25	25	35	175.9	165.9	183.65

Table 2-2
Groundwater Elevation Data, LHAAP-35B(37)

Well ID	Sampling Date	TOC Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft TOC)	Depth to Water (ft bgs)	Screen Interval (ft bgs)		Screen Interval (ft MSL)		Water Elevation (ft MSL)
						Top	Bottom	Top	Bottom	
35BWW12	1/1/2013	201.17	198.52	22.55	19.90	20.3	35	178.22	163.52	178.62
	8/17/2016	201.17	198.52	20.86	18.21	20.3	35	178.22	163.52	180.31
	11/9/2017	201.17	198.52	22.75	20.10	20.3	35	178.22	163.52	178.42
	2/14/2018	201.17	198.52	22.40	19.75	20.3	35	178.22	163.52	178.77
	5/23/2018	201.17	198.52	21.34	18.69	20.3	35	178.22	163.52	179.83
	8/22/2018	201.17	198.52	22.96	20.31	20.3	35	178.22	163.52	178.21
	11/20/2018	201.17	198.52	21.86	19.21	20.3	35	178.22	163.52	179.31
	2/13/2019	201.17	198.52	20.52	17.87	20.3	35	178.22	163.52	180.65
	5/21/2019	201.17	198.52	17.78	15.13	20.3	35	178.22	163.52	183.39
	8/5/2019	201.17	198.52	19.54	16.89	20.3	35	178.22	163.52	181.63
35BWW13	1/1/2013	203.52	201.07	25.55	23.10	19.8	34.5	181.27	166.57	177.97
	8/19/2016	203.52	201.07	23.51	21.06	19.8	34.5	181.27	166.57	180.01
	11/7/2017	203.52	201.07	25.50	23.05	19.8	34.5	181.27	166.57	178.02
	2/13/2018	203.52	201.07	25.36	22.91	19.8	34.5	181.27	166.57	178.16
	3/28/2018	203.52	201.07	24.25	21.80	19.8	34.5	181.27	166.57	179.27
	5/24/2018	203.52	201.07	24.00	21.55	19.8	34.5	181.27	166.57	179.52
	8/21/2018	203.52	201.07	25.71	23.26	19.8	34.5	181.27	166.57	177.81
	11/16/2018	203.52	201.07	25.08	22.63	19.8	34.5	181.27	166.57	178.44
	2/14/2019	203.52	201.07	22.75	20.30	19.8	34.5	181.27	166.57	180.77
	5/22/2019	203.52	201.07	20.17	17.72	19.8	34.5	181.27	166.57	183.35
	8/6/2019	203.52	201.07	22.02	19.57	19.8	34.5	181.27	166.57	181.50
35BWW14	1/1/2013	201.26	199.55	23.15	21.44	25	35	174.55	164.55	178.11
	8/17/2016	201.26	199.55	21.65	19.94	25	35	174.55	164.55	179.61
	11/7/2017	201.26	199.55	23.40	21.69	25	35	174.55	164.55	177.86
	2/15/2018	201.26	199.55	23.11	21.40	25	35	174.55	164.55	178.15
	5/22/2018	201.26	199.55	22.20	20.49	25	35	174.55	164.55	179.06
	8/22/2018	201.26	199.55	23.67	21.96	25	35	174.55	164.55	177.59
	11/20/2018	201.26	199.55	22.83	21.12	25	35	174.55	164.55	178.43
	2/12/2019	201.26	199.55	21.54	19.83	25	35	174.55	164.55	179.72
	5/21/2019	201.26	199.55	19.30	17.59	25	35	174.55	164.55	181.96
	8/6/2019	201.26	199.55	20.57	18.86	25	35	174.55	164.55	180.69
35BWW15	1/1/2013	201.75	200.01	23.60	21.86	17.8	47.5	182.21	152.51	178.15
	8/19/2016	201.75	200.01	22.04	20.30	17.8	47.5	182.21	152.51	179.71
	11/7/2017	201.75	200.01	23.77	22.03	17.8	47.5	182.21	152.51	177.98
	2/13/2018	201.75	200.01	23.64	21.90	17.8	47.5	182.21	152.51	178.11
	3/29/2018	201.75	200.01	22.43	20.69	17.8	47.5	182.21	152.51	179.32
	5/21/2018	201.75	200.01	23.65	21.91	17.8	47.5	182.21	152.51	178.10
	8/20/2018	201.75	200.01	24.07	22.33	17.8	47.5	182.21	152.51	177.68
	11/16/2018	201.75	200.01	23.23	21.49	17.8	47.5	182.21	152.51	178.52
	2/14/2019	201.75	200.01	21.81	20.07	17.8	47.5	182.21	152.51	179.94
	5/22/2019	201.75	200.01	20.35	18.61	17.8	47.5	182.21	152.51	181.40
	8/7/2019	201.75	200.01	21.20	19.46	17.8	47.5	182.21	152.51	180.55
35BWW16	1/1/2013	201.2	198.34	23.36	20.50	18.8	33.5	179.54	164.84	177.84
	8/19/2016	201.2	198.34	21.71	18.85	18.8	33.5	179.54	164.84	179.49
	11/7/2017	201.2	198.34	23.51	20.65	18.8	33.5	179.54	164.84	177.69
	2/13/2018	201.2	198.34	23.33	20.47	18.8	33.5	179.54	164.84	177.87
	3/29/2018	201.2	198.34	22.25	19.39	18.8	33.5	179.54	164.84	178.95
	5/24/2018	201.2	198.34	22.28	19.42	18.8	33.5	179.54	164.84	178.92
	8/17/2018	201.2	198.34	23.70	20.84	18.8	33.5	179.54	164.84	177.50
	11/16/2018	201.2	198.34	23.09	20.23	18.8	33.5	179.54	164.84	178.11
	2/15/2019	201.2	198.34	21.57	18.71	18.8	33.5	179.54	164.84	179.63
	5/23/2019	201.2	198.34	20.15	17.29	18.8	33.5	179.54	164.84	181.05
	8/7/2019	201.2	198.34	20.86	18.00	18.8	33.5	179.54	164.84	180.34

Table 2-2
Groundwater Elevation Data, LHAAP-35B(37)

Well ID	Sampling Date	TOC Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft TOC)	Depth to Water (ft bgs)	Screen Interval (ft bgs)		Screen Interval (ft MSL)		Water Elevation (ft MSL)
						Top	Bottom	Top	Bottom	
35BWW17	1/1/2013	201.00	198.16	22.85	20.01	18.3	33	179.86	165.16	178.15
	8/19/2016	201.00	198.16	20.95	18.11	18.3	33	179.86	165.16	180.05
	11/7/2017	201.00	198.16	22.89	20.05	18.3	33	179.86	165.16	178.11
	2/13/2018	201.00	198.16	22.73	19.89	18.3	33	179.86	165.16	178.27
	3/29/2018	201.00	198.16	21.38	18.54	18.3	33	179.86	165.16	179.62
	5/24/2018	201.00	198.16	21.42	18.58	18.3	33	179.86	165.16	179.58
	8/17/2018	201.00	198.16	23.11	20.27	18.3	33	179.86	165.16	177.89
	11/16/2018	201.00	198.16	22.33	19.49	18.3	33	179.86	165.16	178.67
	2/21/2019	201.00	198.16	20.12	17.28	18.3	33	179.86	165.16	180.88
	5/22/2019	201.00	198.16	17.95	15.11	18.3	33	179.86	165.16	183.05
	8/7/2019	201.00	198.16	14.63	11.79	18.3	33	179.86	165.16	186.37
35BWW18	1/1/2013	206.72	203.8	27.94	25.02	17.77	32.5	186.03	171.3	178.78
	8/16/2016	206.72	203.8	26.24	23.32	17.77	32.5	186.03	171.3	180.48
	11/7/2017	206.72	203.8	27.50	24.58	17.77	32.5	186.03	171.3	179.22
	2/13/2018	206.72	203.8	27.90	24.98	17.77	32.5	186.03	171.3	178.82
	3/27/2018	206.72	203.8	27.18	24.26	17.77	32.5	186.03	171.3	179.54
	5/21/2018	206.72	203.8	27.00	24.08	17.77	32.5	186.03	171.3	179.72
	8/16/2018	206.72	203.8	27.95	25.03	17.77	32.5	186.03	171.3	178.77
	11/19/2018	206.72	203.8	27.39	24.47	17.77	32.5	186.03	171.3	179.33
	2/14/2019	206.72	203.8	26.37	23.45	17.77	32.5	186.03	171.3	180.35
	5/20/2019	206.72	203.8	25.60	22.68	17.77	32.5	186.03	171.3	181.12
	8/5/2019	206.72	203.8	25.61	22.69	17.77	32.5	186.03	171.3	181.11
35BWW19	1/1/2013	206.66	204.1	27.75	25.19	18.75	33.48	185.35	170.62	178.91
	8/16/2016	206.66	204.1	25.82	23.26	18.75	33.48	185.35	170.62	180.84
	11/7/2017	206.66	204.1	27.20	24.64	18.75	33.48	185.35	170.62	179.46
	2/13/2018	206.66	204.1	27.48	24.92	18.75	33.48	185.35	170.62	179.18
	3/27/2018	206.66	204.1	26.99	24.43	18.75	33.48	185.35	170.62	179.67
	5/21/2018	206.66	204.1	26.70	24.14	18.75	33.48	185.35	170.62	179.96
	8/16/2018	206.66	204.1	27.55	24.99	18.75	33.48	185.35	170.62	179.11
	11/19/2018	206.66	204.1	27.21	24.65	18.75	33.48	185.35	170.62	179.45
	2/14/2019	206.66	204.1	26.19	23.63	18.75	33.48	185.35	170.62	180.47
	5/20/2019	206.66	204.1	25.66	23.10	18.75	33.48	185.35	170.62	181.00
	8/5/2019	206.66	204.1	25.42	22.86	18.75	33.48	185.35	170.62	181.24
35BWW20	1/1/2013	205.23	202.67	26.30	23.74	15.14	29.9	187.53	172.77	178.93
	8/18/2016	205.23	202.67	24.78	22.22	15.14	29.9	187.53	172.77	180.45
	11/8/2017	205.23	202.67	26.50	23.94	15.14	29.9	187.53	172.77	178.73
	2/12/2018	205.23	202.67	26.35	23.79	15.14	29.9	187.53	172.77	178.88
	3/27/2018	205.23	202.67	25.45	22.89	15.14	29.9	187.53	172.77	179.78
	5/24/2018	205.23	202.67	25.40	22.84	15.14	29.9	187.53	172.77	179.83
	8/20/2018	205.23	202.67	26.80	24.24	15.14	29.9	187.53	172.77	178.43
	11/18/2018	205.23	202.67	25.58	23.02	15.14	29.9	187.53	172.77	179.65
	2/13/2019	205.23	202.67	24.47	21.91	15.14	29.9	187.53	172.77	180.76
	5/22/2019	205.23	202.67	21.95	19.39	15.14	29.9	187.53	172.77	183.28
	8/6/2019	205.23	202.67	23.67	21.11	15.14	29.9	187.53	172.77	181.56
35BWW23	1/1/2013	205.37	202.74	27.03	24.40	20	30	182.74	172.74	178.34
	8/17/2016	205.37	202.74	27.03	24.40	20	30	182.74	172.74	178.34
	11/9/2017	205.37	202.74	28.56	25.93	20	30	182.74	172.74	176.81
	2/15/2018	205.37	202.74	28.35	25.72	20	30	182.74	172.74	177.02
	5/22/2018	205.37	202.74	27.63	25.00	20	30	182.74	172.74	177.74
	8/22/2018	205.37	202.74	28.86	26.23	20	30	182.74	172.74	176.51
	11/20/2018	205.37	202.74	28.48	25.85	20	30	182.74	172.74	176.89
	2/12/2019	205.37	202.74	27.55	24.92	20	30	182.74	172.74	177.82
	5/21/2019	205.37	202.74	26.55	23.92	20	30	182.74	172.74	178.82
	8/6/2019	205.37	202.74	26.49	23.86	20	30	182.74	172.74	178.88

Table 2-2

Groundwater Elevation Data, LHAAP-35B(37)

Well ID	Sampling Date	TOC Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft TOC)	Depth to Water (ft bgs)	Screen Interval (ft bgs)		Screen Interval (ft MSL)		Water Elevation (ft MSL)
						Top	Bottom	Top	Bottom	
35BWW24	8/19/2016	206.64	203.82	27.89	25.07	19.9	29.6	183.92	174.22	178.75
	2/16/2018	206.64	203.82	29.37	26.55	19.9	29.6	183.92	174.22	177.27
	3/28/2018	206.64	203.82	28.83	26.01	19.9	29.6	183.92	174.22	177.81
	5/24/2018	206.64	203.82	28.65	25.83	19.9	29.6	183.92	174.22	177.99
	8/21/2018	206.64	203.82	29.80	26.98	19.9	29.6	183.92	174.22	176.84
	11/16/2018	206.64	203.82	29.41	26.59	19.9	29.6	183.92	174.22	177.23
	2/15/2019	206.64	203.82	28.27	25.45	19.9	29.6	183.92	174.22	178.37
	5/22/2019	206.64	203.82	27.53	24.71	19.9	29.6	183.92	174.22	179.11
	8/7/2019	206.64	203.82	27.45	24.63	19.9	29.6	183.92	174.22	179.19
35BWW25	8/19/2016	204.31	201.74	25.45	22.88	19.9	29.6	181.84	172.14	178.86
	11/8/2017	204.31	201.74	27.27	24.70	19.9	29.6	181.84	172.14	177.04
	2/16/2018	204.31	201.74	26.92	24.35	19.9	29.6	181.84	172.14	177.39
	3/28/2018	204.31	201.74	26.38	23.81	19.9	29.6	181.84	172.14	177.93
	5/23/2018	204.31	201.74	26.32	23.75	19.9	29.6	181.84	172.14	177.99
	8/20/2018	204.31	201.74	27.31	24.74	19.9	29.6	181.84	172.14	177.00
	11/16/2018	204.31	201.74	26.92	24.35	19.9	29.6	181.84	172.14	177.39
	2/15/2019	204.31	201.74	25.80	23.23	19.9	29.6	181.84	172.14	178.51
	5/22/2019	204.31	201.74	25.23	22.66	19.9	29.6	181.84	172.14	179.08
	8/7/2019	204.31	201.74	25.28	22.71	19.9	29.6	181.84	172.14	179.03
35BWW26	8/17/2016	205.86	230.41	26.13	50.68	25.2	34.9	205.21	195.51	179.73
	11/9/2017	205.86	230.41	27.71	52.26	25.2	34.9	205.21	195.51	178.15
	2/14/2018	205.86	230.41	27.60	52.15	25.2	34.9	205.21	195.51	178.26
	5/22/2018	205.86	230.41	26.97	51.52	25.2	34.9	205.21	195.51	178.89
	8/22/2018	205.86	230.41	28.07	52.62	25.2	34.9	205.21	195.51	177.79
	11/20/2018	205.86	230.41	27.48	52.03	25.2	34.9	205.21	195.51	178.38
	2/12/2019	205.86	230.41	26.50	51.05	25.2	34.9	205.21	195.51	179.36
	5/20/2019	205.86	230.41	25.31	49.86	25.2	34.9	205.21	195.51	180.55
	8/6/2019	205.86	230.41	25.60	50.15	25.2	34.9	205.21	195.51	180.26
LHSMW58	1/1/2013	203.56	200.78	24.77	21.99	21.4	31.4	179.38	169.38	178.79
	8/18/2016	203.56	200.78	23.26	20.48	21.4	31.4	179.38	169.38	180.30
	11/8/2017	203.56	200.78	25.05	22.27	21.4	31.4	179.38	169.38	178.51
	2/12/2018	203.56	200.78	24.87	22.09	21.4	31.4	179.38	169.38	178.69
	3/27/2018	203.56	200.78	23.95	21.17	21.4	31.4	179.38	169.38	179.61
	5/24/2018	203.56	200.78	23.87	21.09	21.4	31.4	179.38	169.38	179.69
	8/20/2018	203.56	200.78	25.21	22.43	21.4	31.4	179.38	169.38	178.35
	11/18/2018	203.56	200.78	24.13	21.35	21.4	31.4	179.38	169.38	179.43
	2/13/2019	203.56	200.78	22.98	20.20	21.4	31.4	179.38	169.38	180.58
	5/22/2019	203.56	200.78	20.22	17.44	21.4	31.4	179.38	169.38	183.34
	8/7/2019	203.56	200.78	22.12	19.34	21.4	31.4	179.38	169.38	181.44

Notes:

bgs - below ground surface

Dry - insufficient or no water in well

ft - feet

MSL - mean sea level

TOC - top of casing

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BSW01										35BSW02									
	Sample ID		35BSW01-101713			35BSW01-021218		35BSW01-180327				35BSW01-181116	35BSW02-101713			35BSW02-021218		35BSW02-180327				35BSW02-181116
	Sample Date		10/17/2013		11/17/2017	2/12/2018		3/27/2018		5/25/2018	8/21/2018	11/16/2018	10/17/2013		11/17/2017	2/12/2018		3/27/2018		5/25/2018	8/21/2018	11/16/2018
	Sample Event		Baseline		Year1 Quarter 1	Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3	Year1 Quarter 4	Year2 Quarter 1	Baseline		Year1 Quarter 1	Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3	Year1 Quarter 4	Year2 Quarter 1
	Sample Purpose		REG		REG	REG		REG		REG	REG	REG	REG		REG	REG		REG		REG	REG	REG
	Units	MCL/GW-IND	Result	Val Qual	Result Val Qual	Result	Val Qual	Result	Val Qual	Result Val Qual	Result Val Qual	Result	Val Qual	Result	Val Qual	Result Val Qual	Result	Val Qual	Result	Val Qual	Result Val Qual	Result Val Qual	Result	Val Qual
ANIONS					Dry					Dry	Dry				Dry					Dry	Dry		
Bromide	mg/L																						
Chloride	mg/L																						
Fluoride	mg/L																						
Nitrate	mg/L	10																					
Nitrite	mg/L	1																					
Sulfate	mg/L																						
SULFIDE																							
Sulfide	mg/L																						
DHC																							
Dehalococcoides	cells/mL																						
FIELD TESTS																							
Conductivity	mS/cm					0.110		0.167				0.055				0.105		0.161				0.083	
Dissolved oxygen	mg/L					12.35		7.43				11.5				11.29		7.09				11.14	
Oxidation-Reduction Potential	mV					92.3		153.6				190.4				108.5		168.9				211.3	
pH	SU					7.20		6.34				5.95				6.78		6.09				5.16	
Temperature	C					5.48		23.95				9.63				5.47		21.17				9.75	
Turbidity	NTU					45.5		11.8				30.6				43.6		16.7				29.5	
Water Level at Reading Time	Ft BTOC																						
GASES																							
Carbon dioxide	µg/L																						
Ethane	µg/L																						
Ethylene	µg/L																						
Methane	µg/L																						
GEN CHEMISTRY																							
Ferrous Iron (Iron II)	mg/L																						
TOTAL ORGANIC CARBON																							
Total Inorganic Carbon	mg/L																						
Total organic carbon	mg/L																						
METALS																							
Antimony	µg/L	6						1	U									1	U				
Manganese	µg/L	14000																					
VOLATILES																							
1,1-Dichloroethene	µg/L	7	1	U		1	U					0.5	U	1	U		1	U					0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U		1	U					0.5	U	0.5	U		1	U					0.5	U
Tetrachloroethene	µg/L	5	0.5	U		1	U					0.5	U	0.5	U		1	U					0.5	U
Trichloroethene	µg/L	5	0.5	U		1	U					0.5	U	0.5	U		1	U					0.5	U
Vinyl chloride	µg/L	2	0.5	U		1	U					0.5	U	0.5	U		1	U					0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW01																									
	Sample ID		35BWW01-131007		35BWW01-110817		35BWW01-021418		35BWW01-180329		35BWW01-180524		35BWW01-180524FD		35BWW01-180816		35BWW01-180816-FD		35BWW01-181115		35BWW01-190212		35BWW01-190212-FD		35BWW01-190520		35BWW01-190520-FD		35BWW01-190805	
	Sample Date		10/7/2013		11/8/2017		2/14/2018		3/29/2018		5/24/2018		5/24/2018		8/16/2018		8/16/2018		11/15/2018		2/12/2019		2/12/2019		5/20/2019		5/20/2019		8/5/2019	
	Sample Event		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 3		Year1 Quarter 4		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 3		Year2 Quarter 4	
	Sample Purpose		REG		REG		REG		REG		REG		FD		REG		FD		REG		REG		FD		REG		FD		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																													
Chloride	mg/L																													
Fluoride	mg/L																													
Nitrate	mg/L	10																												
Nitrite	mg/L	1																												
Sulfate	mg/L																													
SULFIDE																														
Sulfide	mg/L																													
DHC																														
Dehalococcoides	cells/mL																													
FIELD TESTS																														
Conductivity	mS/cm				0.201		0.106		0.105		0.082				0.195				0.089		0.104				0.117				0.113	
Dissolved oxygen	mg/L				2.32		6		5.26		0				1.06				2.87		3.91				1.04				0.15	
Oxidation-Reduction Potential	mV				204.3		185.6		257.3		491				261				240.2		354				357				292	
pH	SU		-	-	6.60		5.46		4.49		4.03				4.93				4.84		5.57				4.06				5.40	
Temperature	C				18.13		15.5		18.21		19.08				24.59				18.12		15.91				21.60				23.14	
Turbidity	NTU		-	-	140.6		124.7		130.9		59.7				76.4				121.9		33.5				53.1				26.3	
Water Level at Reading Time	Ft BTOC				15.6		15.4		13.1		12.53				14.46				15.1		8.34				7.4				12.12	
GASES																														
Carbon dioxide	µg/L																													
Ethane	µg/L																													
Ethylene	µg/L																													
Methane	µg/L																													
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L																													
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																													
Total organic carbon	mg/L																													
METALS																														
Antimony	µg/L	6							1	U																				
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7			1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70			1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5			1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5			1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2			1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW02																		35BWW04			
	Sample ID	35BWW01-190805-FD	35BWW02-131004										35BWW04-100313		35BWW04-110917		35BWW04-110917-FD		35BWW04-021418		35BWW04-021418-FD		35BWW04-180522		35BWW04-180822	
	Sample Date	8/5/2019	10/4/2013		11/7/2017		2/21/2018		5/25/2018		8/21/2018		11/16/2018		2/14/2019		10/3/2013		11/9/2017		11/9/2017		2/14/2018		2/14/2018		5/22/2018		8/22/2018	
	Sample Event	Year2 Quarter 4	Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Baseline		Year1 Quarter 1		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4	
	Sample Purpose	FD	REG		REG		REG		REG		REG		REG		REG		REG		REG		FD		REG		FD		REG		REG	
Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS							Dry		Dry		Dry		Dry		Dry		Dry														
Bromide	mg/L																		0.1	U	0.209										
Chloride	mg/L																	11		5.67		5.82		6.96		7.06		4.87		3.78	
Fluoride	mg/L																			0.244		0.249									
Nitrate	mg/L	10																1.06		0.187		0.173		0.124		0.105		0.099	J	0.049	J
Nitrite	mg/L	1																0.2	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Sulfate	mg/L																	41.6		33.1		33.8		31.8		32.2		36.5		26.5	
SULFIDE																															
Sulfide	mg/L																	1	U	1	U	1	U								
DHC																															
Dehalococcoides	cells/mL																			1.7	U							1.2			
FIELD TESTS																															
Conductivity	mS/cm																			0.277				0.312				0.216		0.398	
Dissolved oxygen	mg/L																			2.2				3.03				0		0.33	
Oxidation-Reduction Potential	mV																			183.5				126.1				411		281	
pH	SU			-	-															6.50				6.34				5.12		5.17	
Temperature	C																			18.40				17.84				18.87		21.26	
Turbidity	NTU			-	-															0				1.7				58.3		229	
Water Level at Reading Time	Ft BTOC																			24.25								22.73		24.3	
GASES																															
Carbon dioxide	µg/L																			38000		35000		40000		43000		770000		500000	J
Ethane	µg/L																	2	U	0.076	U	0.076	U	0.6	U	0.6	U	0.47	UJ	0.47	U
Ethylene	µg/L																	2	U	0.071	U	0.071	U	1	U	1	U	0.55	U	0.55	U
Methane	µg/L																	2	U	0.49	J	0.3	U	1.3	U	1.3	U	1	UJ	1	U
GEN CHEMISTRY																															
Ferrous Iron (Iron II)	mg/L																	0.04	U	0.18				0.06				0.52		0.52	
TOTAL ORGANIC CARBON																															
Total Inorganic Carbon	mg/L																			40		33									
Total organic carbon	mg/L																	2.01		1.12		1.21		1.52		1.52		1.7		1.73	
METALS																															
Antimony	µg/L	6																						1.87	J	0.913	J				
Manganese	µg/L	14000																													
VOLATILES																															
1,1-Dichloroethene	µg/L	7	0.5	U														2.3	J	1	U	1	U	1	U	1	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U														0.673	J	1	U	1	U	1	U	1	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	0.5	U														66.5	J	7.3		8.2		10		10		5.3		2.2	
Trichloroethene	µg/L	5	0.5	U														11.4	J	1		1.1		1.3		1.2		0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U														0.5	U	1	U	1	U	1	U	1	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW04										35BWW05															
	Sample ID		35BWW04-181120		35BWW04-181120-FD		35BWW04-190213		35BWW04-190520		35BWW04-190805		35BWW05-100413		35BWW05-110817		35BWW05-021618		35BWW05-180327		35BWW05-180521		35BWW05-180821		35BWW05-181118		35BWW05-190213		35BWW05-190521	
	Sample Date		11/20/2018		11/20/2018		2/13/2019		5/20/2019		8/5/2019		10/4/2013		11/8/2017		2/16/2018		3/27/2018		5/21/2018		8/21/2018		11/18/2018		2/13/2019		5/21/2019	
	Sample Event		Year2 Quarter 1		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3	
	Sample Purpose		REG		FD		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																												
Bromide	mg/L																											
Chloride	mg/L		3.65		3.66		3.24		2.96		3.17																	
Fluoride	mg/L																											
Nitrate	mg/L	10	0.1		0.101		0.174		0.174		0.187																	
Nitrite	mg/L	1	0.1	U	0.1	U	0.1	U																				
Sulfate	mg/L		25.1		25.5		34.6		22		24																	
SULFIDE																												
Sulfide	mg/L																											
DHC																												
Dehalococcoides	cells/mL		0.5	U			0.4	J																				
FIELD TESTS																												
Conductivity	mS/cm		0.330				0.333		0.327		0.327		0.237		0.338		0.306		0.317		0.213		0.310		0.270		0.324		0.321	
Dissolved oxygen	mg/L		4.73				1.16		1.98		0.37		0.59		0.78		0.65		1.72		0		0.7		1.51		0.56		0.88	
Oxidation-Reduction Potential	mV		152.7				364		273		262		-146		-0.3		84.6		125.1		269		111		75.1		168		207	
pH	SU		6.02				5.43		6.39		5.93		7.06		6.80		6.73		6.35		5.14		5.29		6.55		6.50		5.12	
Temperature	C		19.43				15.39		21.46		21.45		25		18.57		19.51		25.64		23.26		21.27		18.87		18.89		21.94	
Turbidity	NTU		0				4.9		3.3		0		43.3		19		0		0		779		657		0		221		139	
Water Level at Reading Time	Ft BTOC		23.8				21.97		19.15		20.98				24.55		24.15		23.45		23.41		24.85		23.73		22.82		20.72	
GASES																												
Carbon dioxide	µg/L						800000	J	670000		280000																	
Ethane	µg/L		0.238	J	0.574	J	0.47	UJ	0.47	U	0.47	U																
Ethylene	µg/L		0.524	J	0.959	J	0.55	UJ	0.55	U	0.55	U																
Methane	µg/L		2.23		1.82		1	UJ	1	U	1	U																
GEN CHEMISTRY																												
Ferrous Iron (Iron II)	mg/L		0.05				0		0.33		0																	
TOTAL ORGANIC CARBON																												
Total Inorganic Carbon	mg/L						123																					
Total organic carbon	mg/L		2.31		2.23		3.81		3.21		2.66	J																
METALS																												
Antimony	µg/L	6																	1	U								
Manganese	µg/L	14000																										
VOLATILES																												
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.295	J	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	6.3		5.3		5.3		4.7		7.9		1.57		1.5		2.8				2		1.7		2.7		1.9		1.1	
Trichloroethene	µg/L	5	0.95	J	0.73	J	0.59	J	0.58	J	0.93	J	14		7		10				8.5		7.3		12		9.6		5.5	
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW06																35BWW07									
	Sample ID	35BWW05-190806	35BWW06-100413		35BWW06-110817		35BWW06-021618		35BWW06-180327		35BWW06-180521		35BWW06-180821		35BWW06-181118		35BWW07-100513		35BWW07-110917		35BWW07-021318		35BWW07-180329		35BWW07-180523		35BWW07-180820	
	Sample Date	8/6/2019	10/4/2013		11/8/2017		2/16/2018		3/27/2018		5/21/2018		8/21/2018		11/18/2018		10/5/2013		11/9/2017		2/13/2018		3/29/2018		5/23/2018		8/20/2018	
	Sample Event	Year2 Quarter 4	Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4	
	Sample Purpose	REG	REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																												
Bromide	mg/L																											
Chloride	mg/L																											
Fluoride	mg/L																											
Nitrate	mg/L	10																										
Nitrite	mg/L	1																										
Sulfate	mg/L																											
SULFIDE																												
Sulfide	mg/L																											
DHC																												
Dehalococcoides	cells/mL																											
FIELD TESTS																												
Conductivity	mS/cm		0.317				0.706		0.763		0.751		0.629		0.911		0.928		0.837		1.112		1.031		0.931		0.613		0.951	
Dissolved oxygen	mg/L		0.05		0.073		0.8		0.57		0.37		0		0.44		1.15		10.86		1.86		0.84		0.97		0		0.63	
Oxidation-Reduction Potential	mV		116		-143		-11.2		-46.5		-95.6		180		92		-20		187		135.7		94.7		119.1		364		112	
pH	SU		5.99		6.98		6.39		7.22		8.34		5.57		5.57		5.82		6.77		6.87		6.82		6.16		5.61		6.02	
Temperature	C		23.09		23.9		18.00		19.96		23.01		22.85		22.25		18.58		22.17		17.49		14.43		19.00		19.78		27.94	
Turbidity	NTU		225		5.1		0		0		0		0		162		0		27.6		5.9		0		0		35.3		59.1	
Water Level at Reading Time	Ft BTOC		22.05				26.3		26.37		24.9		24.22		25.5		25.51				27.9		29.5		28.3		26.33		28.28	
GASES																												
Carbon dioxide	µg/L																											
Ethane	µg/L																											
Ethylene	µg/L																											
Methane	µg/L																											
GEN CHEMISTRY																												
Ferrous Iron (Iron II)	mg/L																											
TOTAL ORGANIC CARBON																												
Total Inorganic Carbon	mg/L																											
Total organic carbon	mg/L																											
METALS																												
Antimony	µg/L	6									1.28	J													1	U				
Manganese	µg/L	14000																										
VOLATILES																												
1,1-Dichloroethene	µg/L	7	0.5	U	1	U	1	U	1	U			0.5	U	0.5	U	0.5	U	1	U	1	U	1	U			0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U
Tetrachloroethene	µg/L	5	1.9		0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U
Trichloroethene	µg/L	5	8.6		0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW08																									
	Sample ID		35BWW07-181118		35BWW07-190214		35BWW07-190522		35BWW07-190805		35BWW08-100913		35BWW08-110717		35BWW08-021418		35BWW08-180523		35BWW08-180822		35BWW08-181120		35BWW08-190212		35BWW08-190520		35BWW08-190805		35BWW09-100813	
	Sample Date		11/18/2018		2/14/2019		5/22/2019		8/5/2019		10/9/2013		11/7/2017		2/14/2018		5/23/2018		8/22/2018		11/20/2018		2/12/2019		5/20/2019		8/5/2019		10/8/2013	
	Sample Event		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L												2.11																	
Chloride	mg/L										71.5		11.3		11.2		12.2		10.3		9.14		7.22		4.57		2.43			
Fluoride	mg/L												0.53																	
Nitrate	mg/L	10									2.3		0.1	U	0.465		0.265		0.311		0.169		0.206		0.185		0.18			
Nitrite	mg/L	1									0.2	U	0.1	U	0.1	U	0.04	J	0.1	U	0.1	U	0.1	U						
Sulfate	mg/L										115		62.3		55.8		51		64.4		36.2		27.4		19.3		17			
SULFIDE																														
Sulfide	mg/L										1	U	6.88																	
DHC																														
Dehalococcoides	cells/mL										7.1	U	0.5	U			0.5				0.2	J	0.5	U						
FIELD TESTS																														
Conductivity	mS/cm		0.938		0.881		0.632		0.659		0.647		0.408		0.418		0.318		0.481		0.343		0.318		0.497		0.391		1.02	
Dissolved oxygen	mg/L		1.18		0.14		0.08		0.11		1.06		3.2		3.2		0.58		1.6		4.57		3.76		1.18		1.65		0.74	
Oxidation-Reduction Potential	mV		77.4		325		268		51		99		176.5		25.5		380		236		66.5		245		289		212		-13	
pH	SU		7.01		5.80		5.83		6.89		6.86		8.00		9.06		5.53		5.49		9.92		9.54		5.83		7.57		7.06	
Temperature	C		16.82		16.41		21.21		22.05		19.48		20.51		18.93		19.68		22.64		19.0		18.19		21.98		24.59		20.45	
Turbidity	NTU		0		0		0		0		1.1		0		0		0.8		42.8		0		10.5		0		19.1		0.6	
Water Level at Reading Time	Ft BTOC		29.28		26		25.38		24.12				26		25.31		24.63		25.95		24.7		23.89		21.64		20.72			
GASES																														
Carbon dioxide	µg/L												2200		1000	U	580000		350000	J			390	J	610000		15000			
Ethane	µg/L										2	U	0.076	U	0.6	U	0.47	U	0.47	U	1	U	0.47	U	0.47	U	0.47	U		
Ethylene	µg/L										2	U	0.071	U	1	U	0.55	U	0.55	U	2.31		0.55	U	0.55	U	0.55	U		
Methane	µg/L										2	U	0.3	U	1.3	U	1	U	1	U	1.82		1	U	1	U	1	U		
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L										0.04	U	0.12		0.05		0	U	0	U	0		0.02		0.29		0			
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L												34										33							
Total organic carbon	mg/L										4.19		0.875	J	0.87	J	0.812	J	0.854	J	0.87		0.86		1.83		2.5			
METALS																														
Antimony	µg/L	6													2	U														
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.529	J
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	43.8		0.89	J	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	49	
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW09																									
	Sample ID		35BWW09-110717		35BWW09-021318		35BWW09-180327		35BWW09-180521		35BWW09-180816		35BWW09-181119		35BWW09-190213		35BWW09-190521		35BWW09-190805		35BWW10-100413		35BWW10FD-100413		35BWW10-110717		35BWW10-021618		35BWW10-180327	
	Sample Date		11/7/2017		2/13/2018		3/20/2018		5/21/2018		8/16/2018		11/19/2018		2/13/2019		5/21/2019		8/5/2019		10/4/2013		10/4/2013		11/7/2017		2/16/2018		3/27/2018	
	Sample Event		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		FD		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																													
Chloride	mg/L																													
Fluoride	mg/L																													
Nitrate	mg/L	10																												
Nitrite	mg/L	1																												
Sulfate	mg/L																													
SULFIDE																														
Sulfide	mg/L																													
DHC																														
Dehalococcoides	cells/mL																													
FIELD TESTS																														
Conductivity	mS/cm		0.776		0.926		0.850		0.591		0.534		0.754		0.693		0.638		0.533		0.309				0.318		0.357		0.354	
Dissolved oxygen	mg/L		0.59		0.48		2.09		0		0.61		1.14		1.01		0.05		0.82		1.38				0.69		0.45		0.5	
Oxidation-Reduction Potential	mV		-38.6		41.9		139.1		355		214		118		273		296		229		96				86.2		57.3		118.1	
pH	SU		6.68		7.15		6.33		5.47		6.02		7.07		6.63		5.60		7.39		7.24				7.02		7.18		6.53	
Temperature	C		19.63		15.12		22.68		19.50		31.29		16.94		18.35		20.88		22.02		26.2				19.85		20.92		23.12	
Turbidity	NTU		18.5		0		0		0		72.6		0		0		0		3.3		20.2				0		0		0	
Water Level at Reading Time	Ft BTOC		26.56		26.53		22.68		25.75		26.91		25.8		25		23.05		24.14						25.5		24.95		24.28	
GASES																														
Carbon dioxide	µg/L																													
Ethane	µg/L																													
Ethylene	µg/L																													
Methane	µg/L																													
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L																													
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																													
Total organic carbon	mg/L																													
METALS																														
Antimony	µg/L	6					1	U																					1	U
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	0.84	J	1	U			0.5	U	0.5	U	0.78	J	0.5	U	5.5		0.5	U	1	U	1	U	1	U	1	U		
cis-1,2-Dichloroethene	µg/L	70	1.7		1	U			0.96	J	0.84	J	1.9		1.1		1.8		0.5	U	0.5	U	0.5	U	1	U	1	U		
Tetrachloroethene	µg/L	5	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	41		0.5	U	4.45		4.52		31		29			
Trichloroethene	µg/L	5	180		180				240		180		580		410		20		70	J	56.3		56.9		33		39			
Vinyl chloride	µg/L	2	1	U	1	U			0.5	U	0.5	U	0.6	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U		

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

			Location Code	35BWW10												35BWW11													
			Sample ID	35BWW10-180524		35BWW10-180817		35BWW10-181118		35BWW10-190212		35BWW10-190520		35BWW10-190806		35BWW11-100813		35BWW11-110817		35BWW11-021218		35BWW11-180327		35BWW11-180521		35BWW11-180817		35BWW11-181118		35BWW11-190213	
			Sample Date	5/24/2018		8/17/2018		11/18/2018		2/12/2019		5/20/2019		8/6/2019		10/8/2013		11/8/2017		2/12/2018		3/27/2018		5/21/2018		8/17/2018		11/18/2018		2/13/2019	
			Sample Event	Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2	
			Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND		Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																															
Bromide	mg/L																														
Chloride	mg/L																														
Fluoride	mg/L																														
Nitrate	mg/L	10																													
Nitrite	mg/L	1																													
Sulfate	mg/L																														
SULFIDE																															
Sulfide	mg/L																														
DHC																															
Dehalococcoides	cells/mL																														
FIELD TESTS																															
Conductivity	mS/cm			0.245		0.366		0.365		0.370		0.344		0.293		0.518		0.586		0.595		0.471		0.306		0.333		0.446		0.348	
Dissolved oxygen	mg/L			0		1.11		0.58		0.08		0.56		1.57		1.3		0.77		0.82		1.31		0		0.48		0.68		0.27	
Oxidation-Reduction Potential	mV			379		208		62.1		312		283		227		-59		93		20.9		195.8		342		170		103.5		358	
pH	SU			5.43		7.16		7.24		7.27		5.48		7.26		6.44		6.17		6.95		5.68		5.71		6.33		6.44		5.80	
Temperature	C			20.15		26.58		19.33		19.68		23.47		22.07		19.55		17.78		14.99		24.14		23.02		27.66		18.71		17.81	
Turbidity	NTU			88.3		277		0		40.7		182		216		2.1		66.8		0		0		0		66.7		0		0	
Water Level at Reading Time	Ft BTOC			24.38		25.63		24.34		23.55		21.26		22.92				24.85		24.55		23.16		22.85		24.69		23.38		21.72	
GASES																															
Carbon dioxide	µg/L																														
Ethane	µg/L																														
Ethylene	µg/L																														
Methane	µg/L																														
GEN CHEMISTRY																															
Ferrous Iron (Iron II)	mg/L																														
TOTAL ORGANIC CARBON																															
Total Inorganic Carbon	mg/L																														
Total organic carbon	mg/L																														
METALS																															
Antimony	µg/L	6																				1	U								
Manganese	µg/L	14000																													
VOLATILES																															
1,1-Dichloroethene	µg/L	7		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5		30		24		45		37		5.5		1.6		0.252	J	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5		36		28		53		50		9.4		2.6		0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW12																									
	Sample ID		35BWW11-190521		35BWW11-190807		35BWW12-100313		35BWW12-110917		35BWW12-021418		35BWW12-180523		35BWW12-180523FD		35BWW12-180822		35BWW12-180822FD		35BWW12-181120		35BWW12-190213		35BWW12-190213-FD		35BWW12-190521		35BWW12-190521-FD	
	Sample Date		5/21/2019		8/7/2019		10/3/2013		11/9/2017		2/14/2018		5/23/2018		5/23/2018		8/22/2018		8/22/2018		11/20/2018		2/13/2019		2/13/2019		5/21/2019		5/21/2019	
	Sample Event		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 3		Year1 Quarter 4		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 3	
	Sample Purpose		REG		REG		REG		REG		REG		REG		FD		REG		FD		REG		REG		FD		REG		FD	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L								0.086	J																				
Chloride	mg/L						10.5		10.8		9.3		9.08		9.68		8.4		8.14		8.19		9.37		9.61		6.61		6.37	
Fluoride	mg/L								0.159																					
Nitrate	mg/L	10					0.2	U	0.161		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.076	J	0.1	U	0.1	U	0.104		0.1	U
Nitrite	mg/L	1					0.2	U	0.032	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U				
Sulfate	mg/L						38.5		48.5		46.5		48.7		58.6		47.2		44.8		43.6		49.1		47.8		39.9		38.4	
SULFIDE																														
Sulfide	mg/L						1	U	7.56																					
DHC																														
Dehalococcoides	cells/mL								0.5	U			3.3								1.3		0.5	U						
FIELD TESTS																														
Conductivity	mS/cm		0.385		0.339		0.322		0.402		0.431		0.277				0.460				0.414		0.415				0.353			
Dissolved oxygen	mg/L		0.05		0.04		0.68		0.79		0.51		0				0.25				1.57		0.1				0.06			
Oxidation-Reduction Potential	mV		220		216		119		151		122.8		374				201				140.6		353				256			
pH	SU		5.86		6.46		5.98		6.00		6.39		5.29				5.53				6.37		5.60				5.35			
Temperature	C		24.08		22.21		21.72		18.19		17.98		20.41				21.30				18.95		15.27				27.98			
Turbidity	NTU		0		0		42		0		5.4		729				356				0		134				134			
Water Level at Reading Time	Ft BTOC		18.76		19.88				23.3		22.44		21.55				23.19				21.93		20.76				18.02			
GASES																														
Carbon dioxide	µg/L								53000		61000	J	700000		570000		320000	J	340000	J			570000		640000		590000		580000	
Ethane	µg/L						2	U	0.076	U	0.6	U	0.47	U	0.47	U	0.47	U	0.47	U	1	U	0.47	U	0.47	U	0.47	U	0.47	U
Ethylene	µg/L						2	U	0.071	U	1	U	0.55	U	0.55	U	0.55	U	0.55	U	2		0.55	U	0.55	U	0.55	U	0.55	U
Methane	µg/L						2	U	0.91	J	0.52	J	0.83	J	0.8	J	0.73	UB	0.73	UB	1.7		1.2	U	1.3	U	1	U	1	U
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L						0.04	U	0.24		0.26		3.3				0.91				0		0.78				3.3			
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L								47	J													103		132					
Total organic carbon	mg/L						3.2		0.669	J	0.812	J	0.985	J	0.969	J	0.754	J	0.851	J	0.89		1.63		2.48		1.27		1.45	
METALS																														
Antimony	µg/L	6									2	U																		
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	15.3		4.8		7.1		6.2		7		7.3		7.6		8.7		8		8.2		6.2		5.7	
Trichloroethene	µg/L	5	0.5	U	0.5	U	2.04		0.62	J	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.92	J	0.91	J	0.88	J	0.55	J	0.53	J
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW13																									
	Sample ID		35BWW12-190805		35BWW12-190805-FD		35BWW13-100713		35BWW13-110717		35BWW13-110717-FD		35BWW13-021318		35BWW13-021318 FD		35BWW13-021318FD		35BWW13-180328		35BWW13-180328-FD		35BWW13-180524		35BWW13-180821		35BWW13-181116		35BWW13-190214	
	Sample Date		8/5/2019		8/5/2019		10/7/2013		11/7/2017		11/7/2017		2/13/2018		2/13/2018		2/13/2018		3/28/2018		3/28/2018		5/24/2018		8/21/2018		11/16/2018		2/14/2019	
	Sample Event		Year2 Quarter 4		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2	
	Sample Purpose		REG		FD		REG		REG		FD		REG		FD		FD		REG		FD		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																													
Chloride	mg/L		5.65		6.1																									
Fluoride	mg/L																													
Nitrate	mg/L	10	0.1	U	0.1	U																								
Nitrite	mg/L	1																												
Sulfate	mg/L		33.8		37.6																									
SULFIDE																														
Sulfide	mg/L																													
DHC																														
Dehalococcoides	cells/mL																													
FIELD TESTS																														
Conductivity	mS/cm		0.296				0.113		0.154				0.133						0.141				0.139		0.152		0.136		0.204	
Dissolved oxygen	mg/L		0.22				1.18		4.59				5.59						4.84				0		0.95		4.08		0.8	
Oxidation-Reduction Potential	mV		205				230		289.1				213.1						267				538		376		235.5		433	
pH	SU		6.35				5.11		5.27				4.94						4.04				3.77		4.58		5.12		4.26	
Temperature	C		24.24				18.45		18.43				15.65						17.73				18.40		22.74		18.72		17.29	
Turbidity	NTU		80.8				101		4.9				1.5						0				877		191		0		283	
Water Level at Reading Time	Ft BTOC		19.74						25.65				25.43						24.37				24.25		25.92		25.18		22.99	
GASES																														
Carbon dioxide	µg/L		140000		140000																									
Ethane	µg/L		0.47	U	0.47	U																								
Ethylene	µg/L		0.55	U	0.55	U																								
Methane	µg/L		1	U	1	U																								
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L		0.78																											
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																													
Total organic carbon	mg/L		0.85		0.92																									
METALS																														
Antimony	µg/L	6																	1	U	1	U								
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	1	U	1	U	1	U	1	U	1	U	1	U					0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	1	U					0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	5.8		6.3		4.14		0.99	J	0.84	J	1.9		1.9		1.9						0.5	U	0.5	U	1.1		0.5	U
Trichloroethene	µg/L	5	0.5	U	0.53	J	1.84		1	U	1	U	1	U	1	U	1	U					0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	1	U					0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW14																				35BWW15					
	Sample ID		35BWW13-190522		35BWW13-190806		35BWW14-100913		35BWW14-110717		35BWW14-021518		35BWW14-180522		35BWW14-180822		35BWW14-181120		35BWW14-190212		35BWW14-190521		35BWW14-190806		35BWW15-131008		35BWW15-110717		35BWW15-021318	
	Sample Date		5/22/2019		8/6/2019		10/9/2013		11/7/2017		2/15/2018		5/22/2018		8/22/2018		11/20/2018		2/12/2019		5/21/2019		8/6/2019		10/8/2013		11/7/2017		2/13/2018	
	Sample Event		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L								1.09																					
Chloride	mg/L						16.3		11.1		11.9		15.6		10		8.74		12.2		18.4		20.8							
Fluoride	mg/L								0.476																					
Nitrate	mg/L	10					0.2	U	0.1	U	0.533		0.349		0.423		0.451		0.483		0.368		0.357							
Nitrite	mg/L	1					0.2	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U										
Sulfate	mg/L						59.5		55.6		54.5		66.7		52.1		46.2		57.1		72.4		81.4							
SULFIDE																														
Sulfide	mg/L						1	U	1	U																				
DHC																														
Dehalococcoides	cells/mL						0.3	U	0.5	U			0.5				0.1		0.5											
FIELD TESTS																														
Conductivity	mS/cm		0.185		0.200		0.368		0.484		0.440		0.303		0.451		0.409		0.435		0.440		0.430		0.868		0.480		0.519	
Dissolved oxygen	mg/L		0.08		0.71		0.68		0.56		2.7		0		0.25		0.73		0.4		0.16		0.05		0.82		0.8		0.61	
Oxidation-Reduction Potential	mV		387		324		-52		0.56		105.9		388		245		113.1		327		219		158		-45		226.3		99.3	
pH	SU		3.93		4.81		6.83		7.05		6.76		5.11		5.28		7.0		5.42		6.35		6.85		6.84		6.74		6.65	
Temperature	C		21.89		25.21		20.93		20.00		20.38		22.73		25.74		19.27		16.48		22.15		23.39		21.01		19.09		15.68	
Turbidity	NTU		683		146		1		0		0		17.9		66.9		0		0		50.7		37.1		1,000		0		0	
Water Level at Reading Time	Ft BTOC		20.4		22.23				23.46		23.2		22.38		23.89		22.96		21.74		19.54		20.83				24.2		24	
GASES																														
Carbon dioxide	µg/L								9400		20000		480000		520000	J			770000		160000		42000							
Ethane	µg/L						2	U	0.076	U	0.6	U	0.47	U	0.47	U	1	U	0.47	U	0.47	U	0.47	U						
Ethylene	µg/L						2	U	0.071	U	1	U	0.55	U	0.55	U	1.31		0.55	U	0.55	U	0.55	U						
Methane	µg/L						83.6		1.3		1.3	U	1	U	2.2	UB	1.48		6.8		1	U	4.6							
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L						0.04	U	0.35		0	U	0	U	0	U	0.02		0.67		0.4		0.45							
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L								43										137											
Total organic carbon	mg/L						3.84		0.812	J	0.766	J	1.03		0.961	J	0.89		3.25		0.7		0.93							
METALS																														
Antimony	µg/L	6									2	U																		
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	57.2		8.4		1	U	5.1		2.2		2.2		5.6		0.5	U	4.2				4.2		2.2	
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	14.3		2.4		1.1		2.6		1.4		0.91	J	2.1		0.66	J	1.3				1.1		1	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	19		53		44		30		31		37		37		0.5	U	38				12		12	
Trichloroethene	µg/L	5	0.5	U	0.5	U	82.8		24		20		23		12		9.1		22		110		15				15		14	
Vinyl chloride	µg/L	2	0.5	U	0.5	U	5.09		1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U			1	U	1	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW15																35BWW16									
	Sample ID		35BWW15-180329		35BWW15-180521		35BWW15-180820		35BWW15-181116		35BWW15-181116-FD		35BWW15-190214		35BWW15-190522		35BWW15-190807		35BWW16-100713		35BWW16FD-100713		35BWW16-110717		35BWW16-021318		35BWW16-180329		35BWW16-180524	
	Sample Date		3/29/2018		5/21/2018		8/20/2018		11/16/2018		11/16/2018		2/14/2019		5/22/2019		8/7/2019		10/7/2013		10/7/2013		11/7/2017		2/13/2018		3/29/2018		5/24/2018	
	Sample Event		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3	
	Sample Purpose		REG		REG		REG		REG		FD		REG		REG		REG		REG		FD		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																													
Chloride	mg/L																													
Fluoride	mg/L																													
Nitrate	mg/L	10																												
Nitrite	mg/L	1																												
Sulfate	mg/L																													
SULFIDE																														
Sulfide	mg/L																													
DHC																														
Dehalococcoides	cells/mL																													
FIELD TESTS																														
Conductivity	mS/cm		0.500		0.311		0.431		0.521				0.389		0.457		0.388		0.259				0.314		0.320		0.295		0.183	
Dissolved oxygen	mg/L		0.46		0		0.47		0.69				0.05		0.09		0.32		1.35				1.74		0.65		0.99		0	
Oxidation-Reduction Potential	mV		144.4		328		208		84.3				374		323		218		213				178.3		155.4		201.3		491	
pH	SU		6.28		5.42		5.73		6.98				5.87		5.73		6.69		6				6.24		5.71		5.11		5.02	
Temperature	C		20.20		20.37		23.52		19.16				19.20		21.65		24.68		22.42				18.78		15.24		19.75		23.55	
Turbidity	NTU		0		5.4		22.5		0				7.4		12.5		152		98.9				5.7		0		30.9		786	
Water Level at Reading Time	Ft BTOC		22.6		23.81		24.26		23.65				22.06		20.56		21.41						23.7		23.48		22.5		22.48	
GASES																														
Carbon dioxide	µg/L																													
Ethane	µg/L																													
Ethylene	µg/L																													
Methane	µg/L																													
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L																													
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																													
Total organic carbon	mg/L																													
METALS																														
Antimony	µg/L	6	1	U																							1	U		
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7			3.4		1.7		2.6		2.2		1.9		0.5	U	1.1		0.865	J	0.846	J	1.1		1	U			0.5	U
cis-1,2-Dichloroethene	µg/L	70			0.5	U	0.5	U	0.68	J	0.5	U	0.65	J	0.5	U	0.39	J	0.5	U	0.5	U	1	U	1	U			0.5	U
Tetrachloroethene	µg/L	5			13		11		11		10		12		7.8		9.7		0.447	J	0.447	J	9.2		12				7.8	
Trichloroethene	µg/L	5			13		9.2		12		12		11		7.1		7.6		2.57		2.45		4.2		5.8				4	
Vinyl chloride	µg/L	2			0.5	U	0.5	U	0.63	J	0.63	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW16										35BWW17															
	Sample ID		35BWW16-180817		35BWW16-181116		35BWW16-190215		35BWW16-190523		35BWW16-190807		35BWW17-131008		35BWW17-110717		35BWW17-021318		35BWW17-180329		35BWW17-180524		35BWW17-180821		35BWW17-181116		35BWW17-190214		35BWW17-190221	
	Sample Date		8/17/2018		11/16/2018		2/15/2019		5/23/2019		8/7/2019		10/8/2013		11/7/2017		2/13/2018		3/29/2018		5/24/2018		8/21/2018		11/16/2018		2/14/2019		2/21/2019	
	Sample Event		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 2	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																												
Bromide	mg/L																											
Chloride	mg/L																											
Fluoride	mg/L																											
Nitrate	mg/L	10																										
Nitrite	mg/L	1																										
Sulfate	mg/L																											
SULFIDE																												
Sulfide	mg/L																											
DHC																												
Dehalococcoides	cells/mL																											
FIELD TESTS																												
Conductivity	mS/cm		0.198		0.298		0.296		0.296		0.244		0.259		0.199		0.234		0.119		0.058		0.085		0.183				0.072	
Dissolved oxygen	mg/L		0.27		0.97		0.08		0.06		0.06		0.6		0.64		0.45		1.55		0		1.1		0.44				1.12	
Oxidation-Reduction Potential	mV		267		152.3		447		343		189		142		125.4		201.3		244.9		540		370		214				410	
pH	SU		5.43		6.13		4.61		5.26		5.91		5.67		6.27		5.15		4.45		3.81		4.74		5.19				4.67	
Temperature	C		27.97		17.48		16.82		21.27		25.67		20.59		19.50		13.93		19.19		19.35		22.37		19.08				18.22	
Turbidity	NTU		600		0		226		164		106		975		0		0.1		10.1		812		639		0				359	
Water Level at Reading Time	Ft BTOC		23.91		23.3		21.81		20.4		21.08				23		22.93		21.45		21.66		23.35		22.63				20.34	
GASES																												
Carbon dioxide	µg/L																											
Ethane	µg/L																											
Ethylene	µg/L																											
Methane	µg/L																											
GEN CHEMISTRY																												
Ferrous Iron (Iron II)	mg/L																											
TOTAL ORGANIC CARBON																												
Total Inorganic Carbon	mg/L																											
Total organic carbon	mg/L																											
METALS																												
Antimony	µg/L	6																	1	U								
Manganese	µg/L	14000																										
VOLATILES																												
1,1-Dichloroethene	µg/L	7	0.5	U	1.5		1		0.5	U	0.79	J			1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U		
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U			1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U		
Tetrachloroethene	µg/L	5	6.6		15		11		9.5		9.8				2.6		7.5				0.5	U	0.5	U	5.4		0.5	U		
Trichloroethene	µg/L	5	3.3		6.5		4.7		3.6		3.5				1.1		2.9				0.5	U	0.5	U	1.8		0.5	U		
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U			1	UJ	1	U			0.5	U	0.5	U	0.5	U	0.5	U		

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW18																									
	Sample ID		35BWW17-190523		35BWW17-190807		35BWW18-100213		35BWWU18-100213		35BWW18-110717		35BWW18-021318		35BWW18-180327		35BWW18-180521		35BWW18-180816		35BWW18-181119		35BWW18-190214		35BWW18-190520		35BWW18-190805		35BWW19-100713	
	Sample Date		5/22/2019		8/7/2019		10/2/2013		10/2/2013		11/7/2017		2/13/2018		3/27/2018		5/21/2018		8/16/2018		11/19/2018		2/14/2019		5/20/2019		8/5/2019		10/7/2013	
	Sample Event		Year2 Quarter 3		Year2 Quarter 4		Baseline		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																													
Chloride	mg/L																													
Fluoride	mg/L																													
Nitrate	mg/L	10																												
Nitrite	mg/L	1																												
Sulfate	mg/L																													
SULFIDE																														
Sulfide	mg/L																													
DHC																														
Dehalococcoides	cells/mL																													
FIELD TESTS																														
Conductivity	mS/cm		0.080		0.060		2.42				0.842		0.979		0.842		0.621		0.865		0.787		0.850		0.988		0.735		2.53	
Dissolved oxygen	mg/L		0.22		1.25		1.05				1.37		0.93		1.73		0		0.82		1.47		0.09		0.05		1.44		1.62	
Oxidation-Reduction Potential	mV		386		350		-166				205.6		125.3		184.1		363		227		151.1		369		263		269		138	
pH	SU		4.08		4.90		12.3				6.04		6.10		5.59		5.40		5.59		6.14		5.61		5.77		6.23		6.23	
Temperature	C		21.02		23.82		28.79				19.36		15.29		22.11		19.08		24.11		17.93		16.89		20.95		20.85		17.7	
Turbidity	NTU		687		235		1				7.3		0		0		312		162		0		1.2		44.9		0		9.8	
Water Level at Reading Time	Ft BTOC		18.2		19.84						27.88		28.3		27.4		27.24		28.18		27.79		26.63		25.82		25.84			
GASES																														
Carbon dioxide	µg/L																													
Ethane	µg/L																													
Ethylene	µg/L																													
Methane	µg/L																													
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L																													
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																													
Total organic carbon	mg/L																													
METALS																														
Antimony	µg/L	6													1	U														
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	UJ	1	U	1	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	UJ	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	UJ	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW19																									
	Sample ID		35BWW19-110717		35BWW19-021318		35BWW19-180327		35BWW19-180521		35BWW19-180816		35BWW19-181119		35BWW19-190214		35BWW19-190520		35BWW19-190805		35BWW20-100413		35BWW20-110817		35BWW20-021218		35BWW20-180327		35BWW20-180524	
	Sample Date		11/7/2017		2/13/2018		3/27/2018		5/21/2018		8/16/2018		11/19/2018		2/14/2019		5/20/2019		8/5/2019		10/4/2013		11/8/2017		2/12/2018		3/27/2018		5/24/2018	
	Sample Event		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																													
Chloride	mg/L																													
Fluoride	mg/L																													
Nitrate	mg/L	10																												
Nitrite	mg/L	1																												
Sulfate	mg/L																													
SULFIDE																														
Sulfide	mg/L																													
DHC																														
Dehalococcoides	cells/mL																													
FIELD TESTS																														
Conductivity	mS/cm		2.465		3.035		2.675		2.62		1.36		2.723		2.68		2.58		2.60		0.378		0.328		0.413		0.366		0.240	
Dissolved oxygen	mg/L		0.84		1.34		1.21		0		0.48		1.68		1.08		0.37		1.85		1.65		2.15		3.49		3.97		0.93	
Oxidation-Reduction Potential	mV		182		114.9		161.2		345		229		144.6		376		263		258		170		136.7		94.3		190.7		366	
pH	SU		6.30		6.30		5.73		5.67		6.18		6.48		6.40		5.83		6.65		5.23		6.70		7.09		5.82		5.66	
Temperature	C		19.45		14.24		21.49		19.22		28.08		17.45		16.27		21.68		20.59		23.28		19.30		16.04		23.72		21.60	
Turbidity	NTU		12		0.4		0		111		356		0		5.7		66.9		12.4		35.9		25		20.3		24.1		272	
Water Level at Reading Time	Ft BTOC		27.3		27.76		27.3		26.95		27.77		27.52		26.4		25.89		25.63				27.05		26.6		25.78		25.65	
GASES																														
Carbon dioxide	µg/L																													
Ethane	µg/L																													
Ethylene	µg/L																													
Methane	µg/L																													
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L																													
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																													
Total organic carbon	mg/L																													
METALS																														
Antimony	µg/L	6					1	U																			1	U		
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U			0.5	U
cis-1,2-Dichloroethene	µg/L	70	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U
Tetrachloroethene	µg/L	5	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	31.1		25		34				29	
Trichloroethene	µg/L	5	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	7.04		4.7		5.7				6.3	
Vinyl chloride	µg/L	2	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW20														35BWW23											
	Sample ID		35BWW20-180820		35BWW20-181118		35BWW20-190213		35BWW20-190522		35BWW20-190522-FD		35BWW20-190806		35BWW20-190806-FD		35BWW23-070114		35BWW23-110917		35BWW23-021518		35BWW23-180522		35BWW23-180822		35BWW23-181120		35BWW23-190212	
	Sample Date		8/20/2018		11/18/2018		2/13/2019		5/22/2019		5/22/2019		8/6/2019		8/6/2019		7/1/2014		11/9/2017		2/15/2018		5/22/2018		8/22/2018		11/20/2018		2/12/2019	
	Sample Event		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 3		Year2 Quarter 4		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2	
	Sample Purpose		REG		REG		REG		REG		FD		REG		FD		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																		0.469											
Chloride	mg/L																		89.8		71.1		68.2		58.1		54.5		55.6	
Fluoride	mg/L																		0.184											
Nitrate	mg/L	10																	0.1	U	0.1	U	0.1	U	0.104		0.081	J	0.1	U
Nitrite	mg/L	1																	0.1	U	0.155		0.1	U	0.1	U	0.1	U	0.1	U
Sulfate	mg/L																		123		112		116		102		99.7		96	
SULFIDE																														
Sulfide	mg/L																		1	U										
DHC																														
Dehalococcoides	cells/mL																		2.2				0.5				0.4	J	0.3	J
FIELD TESTS																														
Conductivity	mS/cm		0.372		0.376		0.331		0.308				0.175						0.891		0.782		0.466		0.653		0.670		0.667	
Dissolved oxygen	mg/L		1.03		3.52		2.08		1.24				3.72						4.24		2.83		0		0.59		1.47		0.71	
Oxidation-Reduction Potential	mV		238		130.1		231		285				264						153.1		110.5		393		261		150.6		325	
pH	SU		7.13		6.85		6.91		5.65				6.20				6.37		6.45		6.42		5.19		5.35		6.41		5.38	
Temperature	C		28.86		20.71		20.79		22.88				22.40						17.40		21.00		23.14		28.91		15.92		15.56	
Turbidity	NTU		648		0		166		92.8				321				1.7		0		0		0		3.7		0		0	
Water Level at Reading Time	Ft BTOC		27.04		25.93		24.72		22.21				23.92						28.88		28.75		27.86		29.09		29.18		27.8	
GASES																														
Carbon dioxide	µg/L																		50000		63000		480000		500000	J			740000	
Ethane	µg/L																		0.076	U	0.6	U	0.47	U	0.47	U	0.859	J	0.47	U
Ethylene	µg/L																		0.071	U	1	U	0.55	U	0.55	U	1.7		0.55	U
Methane	µg/L																		0.9	J	1.3	U	1	U	1	U	2.65		1	U
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L																		0.16		0.01		0	U	0	U	0.01		0.07	
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																		41										141	
Total organic carbon	mg/L																		1.05		0.946	J	1.19		1.16		1		1.47	
METALS																														
Antimony	µg/L	6																			2	U								
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	19		34		34		12		12		7.5		7.6		0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	3.6		6.4		6		2.8		2.9		2.1		2		0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW24																									
	Sample ID		35BWW23-190521		35BWW23-190806		35BWW24-081916		35BWW24-110817		35BWW24-021618		35BWW24-180328		35BWW24-180524		35BWW24-180821		35BWW24-181116		35BWW24-190215		35BWW24-190522		35BWW24-190807		35BWW25-081916		35BWW25FD-081916	
	Sample Date		5/21/2019		8/6/2019		8/19/2016		11/8/2017		2/16/2018		3/28/2018		5/24/2018		8/21/2018		11/16/2018		2/15/2019		5/22/2019		8/7/2019		8/19/2016		8/19/2016	
	Sample Event		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Baseline	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		FD	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																													
Chloride	mg/L		39.8		31.7																									
Fluoride	mg/L																													
Nitrate	mg/L	10	0.1	U	0.1	U																								
Nitrite	mg/L	1																												
Sulfate	mg/L		88.1		86.3																									
SULFIDE																														
Sulfide	mg/L																													
DHC																														
Dehalococcoides	cells/mL																													
FIELD TESTS																														
Conductivity	mS/cm		0.516		0.476				1.717		1.572		1.490		1.01		1.50		1.483		1.47		1.46		1.43					
Dissolved oxygen	mg/L		0.06		1.13				2.18		1.51		2.95		0		0.37		1.69		0.55		1.24		2.23					
Oxidation-Reduction Potential	mV		293		228				246.9		109.4		164.7		424		250		88.9		309		2.86		238					
pH	SU		5.24		6.63		5.3		6.49		6.35		5.53		5.31		5.69		6.09		5.45		6.0		6.47		4.81			
Temperature	C		23.98		24.69				16.40		19.99		18.36		20.52		23.33		15.00		17.00		23.40		21.61					
Turbidity	NTU		22.1		18.1		9.1		9.8		6.7		0		114		48		0		3.8		0		16.3		20.7			
Water Level at Reading Time	Ft BTOC		26.82		26.73				30.14		30.15		29.61		28.85		30.02		30.18		28.54		27.77		27.69					
GASES																														
Carbon dioxide	µg/L		730000		73000																									
Ethane	µg/L		0.47	U	0.47	U																								
Ethylene	µg/L		0.55		0.55	U																								
Methane	µg/L		1	U	1	U																								
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L		0.19		1.04																									
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																													
Total organic carbon	mg/L		1.59		0.94																									
METALS																														
Antimony	µg/L	6											1	U																
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	1	U	1	U	1	U			0.5	U	0.5	U	0.67	J	0.5	U	0.5	U	0.5	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.415	J	1	U	1	U			0.5	U	0.5	U	2.9		2.6		1.1		1.7		5.55		5.94	
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	1	U	1	U			0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW25																									
	Sample ID		35BWW25-110817		35BWW25-110817-FD		35BWW25-021618		35BWW25-021618-FD		35BWW25-180328		35BWW25-180328-FD		35BWW25-180523		35BWW25-180523FD		35BWW25-180820		35BWW25-180820-FD		35BWW25-181116		35BWW25-190215		35BWW25-190215-FD		35BWW25-190522	
	Sample Date		11/8/2017		11/8/2017		2/16/2018		2/16/2018		3/28/2018		3/28/2018		5/23/2018		5/23/2018		8/20/2018		8/20/2018		11/16/2018		2/15/2019		2/15/2019		5/22/2019	
	Sample Event		Year1 Quarter 1		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 3		Year1 Quarter 4		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 2		Year2 Quarter 3	
	Sample Purpose		REG		FD		REG		FD		REG		FD		REG		FD		REG		FD		REG		REG		FD		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																													
Chloride	mg/L																													
Fluoride	mg/L																													
Nitrate	mg/L	10																												
Nitrite	mg/L	1																												
Sulfate	mg/L																													
SULFIDE																														
Sulfide	mg/L																													
DHC																														
Dehalococcoides	cells/mL																													
FIELD TESTS																														
Conductivity	mS/cm		0.974				0.865				0.829				0.563				0.697				0.816		0.705				0.746	
Dissolved oxygen	mg/L		2.32				0.92				2.38				0				0.36				0.97		0.16				0.82	
Oxidation-Reduction Potential	mV		239.2				116.9				167.9				383				222				168.5		332				297	
pH	SU		6.42				6.28				5.51				5.34				5.93				6.23		5.30				5.56	
Temperature	C		18.41				19.21				17.44				20.81				29.33				15.71		16.92				22.70	
Turbidity	NTU		0				0				0				2.5				43.9				0		2				0	
Water Level at Reading Time	Ft BTOC		27.27				27.73				26.6				26.5				27.53				27.6		26.04				25.46	
GASES																														
Carbon dioxide	µg/L																													
Ethane	µg/L																													
Ethylene	µg/L																													
Methane	µg/L																													
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L																													
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																													
Total organic carbon	mg/L																													
METALS																														
Antimony	µg/L	6									1	U	1	U																
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	1	U	1	U	1	U	1	U					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	1	U	1	U	1	U	1	U					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	1	U	1	U	1	U	1	U					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	7.6		7.5		11		11						5.5		5.1		5.3		5.3		19		14		14		6.3	
Vinyl chloride	µg/L	2	1	U	1	U	1	U	1	U					0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		35BWW26																									
	Sample ID		35BWW25-190807		35BWW26-081716		35BWW26-110917		35BWW26-021418		35BWW26-180522		35BWW26-180822		35BWW26-181120		35BWW26-190212		35BWW26-190520		35BWW26-190806		LHSMW58-100313		LHSMW58-110817		LHSMW58-021218		LHSMW58-180327	
	Sample Date		8/7/2019		8/17/2016		11/9/2017		2/14/2018		5/22/2018		8/22/2018		11/20/2018		2/12/2019		5/20/2019		8/6/2019		10/3/2013		11/8/2017		2/12/2018		3/27/2018	
	Sample Event		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L						0.169																							
Chloride	mg/L				30.2		29.6		30.2		32.2		30.3		30.2		33		30.2		29.3		9.83							
Fluoride	mg/L						0.295																							
Nitrate	mg/L	10			0.2	U	0.12		0.1	U	0.093	J	0.036	J	0.086	J	0.146		0.126		0.1	U	2.32							
Nitrite	mg/L	1			0.2	U	0.033	J	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U					0.2	U						
Sulfate	mg/L				28.7		30.2		30.3		31.6		27.6		27.1		30.3		25.7		24.5		34.9							
SULFIDE																														
Sulfide	mg/L				1	U	1	U															1	U						
DHC																														
Dehalococcoides	cells/mL						2.2				0.5				0.4	J	2.3													
FIELD TESTS																														
Conductivity	mS/cm		0.749				0.327		0.312		0.222		0.330		0.318		0.330		0.290		0.264				0.24		0.241		0.203	
Dissolved oxygen	mg/L		0.85				1.02		1.78		0		0.42		1.95		0.27		0.69		0.31				2.6		5.8		6.5	
Oxidation-Reduction Potential	mV		253				169.6		139.8		418		277		159.6		339		306		202				138.8		96.5		213	
pH	SU		6.34		4.47		6.21		6.1		4.83		4.89		5.87		5.44		5.06		5.95				5.98		6.75		5.64	
Temperature	C		21.94				19.80		17.65		20.62		21.56		18.56		17.83		22.25		22.63				17.7		15.86		22.76	
Turbidity	NTU		0		0		0		0		0		0		0		0		0		0				0		0		0	
Water Level at Reading Time	Ft BTOC		25.5				28.85		28.15		27.19		28.32		28.31		26.77		25.57		25.82				25.2		24.95		24	
GASES																														
Carbon dioxide	µg/L				417000		57000		57000		490000		450000	J			630000		580000		140000									
Ethane	µg/L				2	U	0.076	U	0.6	U	0.47	U	0.47	U	1	U	0.47	U	0.47	U	0.47	U	2	U						
Ethylene	µg/L				2	U	0.071	U	1	U	0.55	U	0.55	U	2.35		0.55	U	0.55	U	0.55	U	2	U						
Methane	µg/L				2	U	0.3	U	1.3	U	1	U	1	U	2.16		1	U	1	U	1	U	3.1	J						
GEN CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L				0.04	U	0.03		0	U	0	U	0	U	0.03		0		0.4		0.19		0.04	U						
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L						28										112						53.9							
Total organic carbon	mg/L				18.2		0.861	J	0.762	J	1.08		0.865	J	0.94		2.81		1.82		0.56		4.43							
METALS																														
Antimony	µg/L	6							2	U																			1	U
Manganese	µg/L	14000																												
VOLATILES																														
1,1-Dichloroethene	µg/L	7	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U		
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U		
Tetrachloroethene	µg/L	5	0.33	J	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	20.3		20		14			
Trichloroethene	µg/L	5	15		0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	4.26		1.6		0.5	U		
Vinyl chloride	µg/L	2	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U		

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

	Location Code		LHSMW58													
	Sample ID		LHSMW58-180524		LHSMW58-180820		LHSMW58-181118		LHSMW58-181118-FD		LHSMW58-190213		LHSMW58-190522		LHSMW58-190807	
	Sample Date		5/24/2018		8/20/2018		11/18/2018		11/18/2018		2/13/2019		5/22/2019		8/7/2019	
	Sample Event		Year1 Quarter 3		Year1 Quarter 4		Year2 Quarter 1		Year2 Quarter 1		Year2 Quarter 2		Year2 Quarter 3		Year2 Quarter 4	
	Sample Purpose		REG		REG		REG		FD		REG		REG		REG	
	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																
Bromide	mg/L															
Chloride	mg/L															
Fluoride	mg/L															
Nitrate	mg/L	10														
Nitrite	mg/L	1														
Sulfate	mg/L															
SULFIDE																
Sulfide	mg/L															
DHC																
Dehalococcoides	cells/mL															
FIELD TESTS																
Conductivity	mS/cm		0.148		0.257		0.233				0.200		0.235		0.240	
Dissolved oxygen	mg/L		2.45		1.37		5.01				6.26		3.25		4.88	
Oxidation-Reduction Potential	mV		386		228		143.9				355		302		223	
pH	SU		5.14		5.43		6.63				7.02		5.39		6.76	
Temperature	C		20.74		25.78		19.56				16.40		21.96		22.29	
Turbidity	NTU		0		42.3		0				1		0		0	
Water Level at Reading Time	Ft BTOC		24.05		25.43		24.24				23.22		20.45		22.36	
GASES																
Carbon dioxide	µg/L															
Ethane	µg/L															
Ethylene	µg/L															
Methane	µg/L															
GEN CHEMISTRY																
Ferrous Iron (Iron II)	mg/L															
TOTAL ORGANIC CARBON																
Total Inorganic Carbon	mg/L															
Total organic carbon	mg/L															
METALS																
Antimony	µg/L	6														
Manganese	µg/L	14000														
VOLATILES																
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ
Tetrachloroethene	µg/L	5	12		26		26		25		6.1		3.6		6.8	
Trichloroethene	µg/L	5	1.4		2.2		1.8		1.8		0.5	U	0.5	U	0.59	J
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Surface Water and Groundwater Results RA-O 2013–2019

Notes:
Bold and highlighted values indicate result exceeds the MCL.
µg/L - micrograms per liter
C - degrees Celsius
cells/mL - cells per milliliter
DHC - Dehalococcoides
Ft BTOC - feet below top of casing
GW-Ind - groundwater medium-specific concentration for industrial use
ID - identification
J - The analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.
MCL - maximum contaminant level
mg/L - milligrams per Liter
mS/cm - millisiemens per centimeter
mV - millivolts
NTU - nephelometric turbidity unit
REG - regular sample
SIM - selected ion monitoring
SU - standard unit
SVOC - semivolatile organic compound
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
UJ - The analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data have indicated that the "non-detect" may be inaccurate or imprecise. The non-detect result should be estimated.
ValQual - validation qualifier
VOC - volatile organic compound

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BSW01						35BSW02						35BWW01									
	Sample ID		35BSW01-101713		35BSW01-021218		35BSW01-181116		35BSW02-101713		35BSW02-021218		35BSW02-181116		35BWW01-981108		35BWW01-040910		35BWW01-060810		35BWW01-061217		35BWW01-081916		35BWW01-110817	
	Sample Date		10/17/2013		2/12/2018		11/16/2018		10/17/2013		2/12/2018		11/16/2018		11/8/1998		9/10/2004		8/10/2006		12/17/2006		8/19/2016		11/8/2017	
	Location Description:		Surface Water Location		Surface Water Location		Surface Water Location		Surface Water Location, Downgradient		Surface Water Location		Surface Water Location		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	5	U	5	U	5	U	0.5	U	1	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	5	U	5	U	5	U	0.5	U	1	U
1,1-Dichloroethene	µg/L	7	1	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	1	U	5	U	5	U	5	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	5	U	10	U	10	U	0.5	U	1	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	5	U	10	U	10	U	0.5	U	1	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW01																					
	Sample ID		35BWW01-021418		35BWW01-180524		35BWW01-180524FD		35BWW01-180816		35BWW01-180816-FD		35BWW01-181115		35BWW01-190212		35BWW01-190212-FD		35BWW01-190520		35BWW01-190520-FD		35BWW01-190805		35BWW01-190805-FD	
	Sample Date		2/14/2018		5/24/2018		5/24/2018		8/16/2018		8/16/2018		11/15/2018		2/12/2019		2/12/2019		5/20/2019		5/20/2019		8/5/2019		8/5/2019	
	Location Description:		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW02				35BWW03														35BWW04					
	Sample ID		35BWW02-981105FD		35BWW02-981108		35BWW03-040910		35BWW03-060809		35BWW03-060809FD		35BWW03-061216		35BWW03-100513		35BWW03-081816		35BWW03FD-081816		35BWW04-061216		35BWW04-100313		35BWW04-081716	
	Sample Date		11/5/1998		11/8/1998		9/10/2004		8/9/2006		8/9/2006		12/16/2006		10/5/2013		8/18/2016		8/18/2016		12/16/2006		10/3/2013		8/17/2016	
	Location Description:		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	1	U	1	U	5	U	5	U	5	U	5	U	0.5	U	0.5	U	0.5	U	30.1		66.5	J	6.1	
Trichloroethene	µg/L	5	1	U	1	U	5	U	5	U	5	U	5	U	0.5	U	0.5	U	0.5	U	10.8		11.4	J	0.786	J
1,1-Dichloroethene	µg/L	7	1	U	1	U	5	U	5	U	5	U	5	U	1	U	1	U	1	U	3.34	J	2.3	J	1	U
cis-1,2-Dichloroethene	µg/L	70	1	U	1	U	5	U	10	U	10	U	10	U	0.5	U	0.5	U	0.5	U	0.846	J	0.673	J	0.5	U
Vinyl chloride	µg/L	2	1	U	1	U	5	U	10	U	10	U	10	U	0.5	U	0.5	U	0.5	U	10	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW04																					
	Sample ID		35BWW04-110917		35BWW04-110917-FD		35BWW04-021418		35BWW04-021418-FD		35BWW04-180522		35BWW04-180822		35BWW04-181120		35BWW04-181120-FD		35BWW04-190213		35BWW04-190520		35BWW04-190805	
	Sample Date		11/9/2017		11/9/2017		2/14/2018		2/14/2018		5/22/2018		8/22/2018		11/20/2018		11/20/2018		2/13/2019		5/20/2019		8/5/2019	
	Location Description:		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	7.3		8.2		10		10		5.3		2.2		6.3		5.3		5.3		4.7		7.9	
Trichloroethene	µg/L	5	1		1.1		1.3		1.2		0.5	U	0.5	U	0.95	J	0.73	J	0.59	J	0.58	J	0.93	J
1,1-Dichloroethene	µg/L	7	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW05																			
	Sample ID		35BWW05-061214		35BWW05-100413		35BWW05-081816		35BWW05-110817		35BWW05-021618		35BWW05-180521		35BWW05-180821		35BWW05-181118		35BWW05-190213		35BWW05-190521		35BWW05-190806	
	Sample Date		12/14/2006		10/4/2013		8/18/2016		11/8/2017		2/16/2018		5/21/2018		8/21/2018		11/18/2018		2/13/2019		5/21/2019		8/6/2019	
	Location Description:		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	1	J	1.57		1.25		1.5		2.8		2		1.7		2.7		1.9		1.1		1.9	
Trichloroethene	µg/L	5	12.9		14		8.87		7		10		8.5		7.3		12		9.6		5.5		8.6	
1,1-Dichloroethene	µg/L	7	5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	10	U	0.295	J	0.497	J	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	10	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW06																35BWW07					
	Sample ID		35BWW06-061214		35BWW06-100413		35BWW06-081816		35BWW06FD-081816		35BWW06-110817		35BWW06-021618		35BWW06-180521		35BWW06-180821		35BWW06-181118		35BWW07-091407		35BWW07-100513		35BWW07-081916	
	Sample Date		12/14/2006		10/4/2013		8/18/2016		8/18/2016		11/8/2017		2/16/2018		5/21/2018		8/21/2018		11/18/2018		9/14/2007		10/5/2013		8/19/2016	
	Location Description:		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	5	U	1	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	10	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	10	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW07																35BWW08							
	Sample ID		35BWW07-110917		35BWW07-021318		35BWW07-180523		35BWW07-180820		35BWW07-181118		35BWW07-190214		35BWW07-190522		35BWW07-190805		35BWW08-091407		35BWW08-091407FD		35BWW08-100913		35BWW08-081716	
	Sample Date		11/9/2017		2/13/2018		5/23/2018		8/20/2018		11/18/2018		2/14/2019		5/22/2019		8/5/2019		9/14/2007		9/14/2007		10/9/2013		8/17/2016	
	Location Description:		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.981	J	0.955	J	0.5	U	0.5	U
Trichloroethene	µg/L	5	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	150		151		43.8		1.01	
1,1-Dichloroethene	µg/L	7	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1		1		1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.407		0.388	J	0.5	U	0.5	U
Vinyl chloride	µg/L	2	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1		1		0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW08																35BWW09							
	Sample ID		35BWW08-110717		35BWW08-021418		35BWW08-180523		35BWW08-180822		35BWW08-181120		35BWW08-190212		35BWW08-190520		35BWW08-190805		35BWW09-100813		35BWW09-081616		35BWW09-110717		35BWW09-021318	
	Sample Date		11/7/2017		2/14/2018		5/23/2018		8/22/2018		11/20/2018		2/12/2019		5/20/2019		8/5/2019		10/8/2013		8/16/2016		11/7/2017		2/13/2018	
	Location Description:		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U
Trichloroethene	µg/L	5	0.89	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	49		149		180		180	
1,1-Dichloroethene	µg/L	7	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.84	J	0.5	U
cis-1,2-Dichloroethene	µg/L	70	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.529	J	0.759	J	1.7		0.5	U
Vinyl chloride	µg/L	2	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW09												35BWW10									
	Sample ID		35BWW09-180521		35BWW09-180816		35BWW09-181119		35BWW09-190213		35BWW09-190521		35BWW09-190805		35BWW10-100413		35BWW10FD-100413		35BWW10-081816		35BWW10-110717		35BWW10-021618		35BWW10-180524	
	Sample Date		5/21/2018		8/16/2018		11/19/2018		2/13/2019		5/21/2019		8/5/2019		10/4/2013		10/4/2013		8/18/2016		11/7/2017		2/16/2018		5/24/2018	
	Location Description:		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	41		0.5	U	4.45		4.52		21		31		29		30	
Trichloroethene	µg/L	5	240		180		580		410		20		70	J	56.3		56.9		23.9		33		39		36	
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.78	J	0.5	U	5.5		0.5	U	1	U	1	U	1	U	1	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.96	J	0.84	J	1.9		1.1		1.8		0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.6	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW10										35BWW11											
	Sample ID		35BWW10-180817		35BWW10-181118		35BWW10-190212		35BWW10-190520		35BWW10-190806		35BWW11-100813		35BWW11-081816		35BWW11-110817		35BWW11-021218		35BWW11-180521		35BWW11-180817		35BWW11-181118	
	Sample Date		8/17/2018		11/18/2018		2/12/2019		5/20/2019		8/6/2019		10/8/2013		8/18/2016		11/8/2017		2/12/2018		5/21/2018		8/17/2018		11/18/2018	
	Location Description:		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	24		45		37		5.5		1.6		0.252	J	0.798	J	1	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	28		53		50		9.4		2.6		0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW11						35BWW12															
	Sample ID		35BWW11-190213		35BWW11-190521		35BWW11-190807		35BWW12-100313		35BWW12-081716		35BWW12-110917		35BWW12-021418		35BWW12-180523		35BWW12-180523FD		35BWW12-180822		35BWW12-180822FD		35BWW12-181120	
	Sample Date		2/13/2019		5/21/2019		8/7/2019		10/3/2013		8/17/2016		11/9/2017		2/14/2018		5/23/2018		5/23/2018		8/22/2018		8/22/2018		11/20/2018	
	Location Description:		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	15.3		4.06		4.8		7.1		6.2		7		7.3		7.6		8.7	
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	2.04		0.473	J	0.62	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.92	J
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW12												35BWW13									
	Sample ID		35BWW12-190213		35BWW12-190213-FD		35BWW12-190521		35BWW12-190521-FD		35BWW12-190805		35BWW12-190805-FD		35BWW13-100713		35BWW13-081916		35BWW13-110717		35BWW13-110717-FD		35BWW13-021318		35BWW13-021318 FD	
	Sample Date		2/13/2019		2/13/2019		5/21/2019		5/21/2019		8/5/2019		8/5/2019		10/7/2013		8/19/2016		11/7/2017		11/7/2017		2/13/2018		2/13/2018	
	Location Description:		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	8		8.2		6.2		5.7		5.8		6.3		4.14		0.5	U	0.99	J	0.84	J	1.9		1.9	
Trichloroethene	µg/L	5	0.91	J	0.88	J	0.55	J	0.53	J	0.5	U	0.53	J	1.84		0.5	U	1	U	1	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW13														35BWW14									
	Sample ID		35BWW13-021318FD		35BWW13-180524		35BWW13-180821		35BWW13-181116		35BWW13-190214		35BWW13-190522		35BWW13-190806		35BWW14-100913		35BWW14-081716		35BWW14-110717		35BWW14-021518		35BWW14-180522	
	Sample Date		2/13/2018		5/24/2018		8/21/2018		11/16/2018		2/14/2019		5/22/2019		8/6/2019		10/9/2013		8/17/2016		11/7/2017		2/15/2018		5/22/2018	
	Location Description:		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, unimpacted, crossgradient		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	1.9		0.5	U	0.5	U	1.1		0.5	U	0.5	U	0.5	U	19		20.1		53		44		30	
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	82.8		39.7		24		20		23	
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	57.2		10		8.4		0.5	U	5.1	
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	14.3		3.44		2.4		1.1		2.6	
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	5.09		0.301	J	1	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW14										35BWW15											
	Sample ID		35BWW14-180822		35BWW14-181120		35BWW14-190212		35BWW14-190521		35BWW14-190806		35BWW15-011414		35BWW15-081916		35BWW15-110717		35BWW15-021318		35BWW15-180521		35BWW15-180820		35BWW15-181116	
	Sample Date		8/22/2018		11/20/2018		2/12/2019		5/21/2019		8/6/2019		1/14/2014		8/19/2016		11/7/2017		2/13/2018		5/21/2018		8/20/2018		11/16/2018	
	Location Description:		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	31		37		37		0.5	U	38		8.69		14.5		12		12		13		11		11	
Trichloroethene	µg/L	5	12		9.1		22		110		15		43.5		20.5		15		14		13		9.2		12	
1,1-Dichloroethene	µg/L	7	2.2		2.2		5.6		0.5	U	4.2		35.5		6.63		4.2		2.2		3.4		1.7		2.6	
cis-1,2-Dichloroethene	µg/L	70	1.4		0.91	J	2.1		0.66	J	1.3		6.25		1.73		1.1		0.5	U	0.5	U	0.5	U	0.68	J
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	3.42		0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.63	J

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW15								35BWW16													
	Sample ID		35BWW15-181116-FD		35BWW15-190214		35BWW15-190522		35BWW15-190807		35BWW16-100713		35BWW16FD-100713		35BWW16-081916		35BWW16-110717		35BWW16-021318		35BWW16-180524		35BWW16-180817		35BWW16-181116	
	Sample Date		11/16/2018		2/14/2019		5/22/2019		8/7/2019		10/7/2013		10/7/2013		8/19/2016		11/7/2017		2/13/2018		5/24/2018		8/17/2018		11/16/2018	
	Location Description:		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	10		12		7.8		9.7		0.447	J	0.447	J	5.13		9.2		12		7.8		6.6		15	
Trichloroethene	µg/L	5	12		11		7.1		7.6		2.57		2.45		3.43		4.2		5.8		4		3.3		6.5	
1,1-Dichloroethene	µg/L	7	2.2		1.9		0.5	U	1.1		0.865	J	0.846	J	0.787	J	1.1		0.5	U	0.5	U	0.5	U	1.5	
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.65	J	0.5	U	0.39	J	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.63	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW16						35BWW17															
	Sample ID		35BWW16-190215		35BWW16-190523		35BWW16-190807		35BWW17-020414		35BWW17-081916		35BWW17-110717		35BWW17-021318		35BWW17-180524		35BWW17-180821		35BWW17-181116		35BWW17-190214	
	Sample Date		2/15/2019		5/23/2019		8/7/2019		2/4/2014		8/19/2016		11/7/2017		2/13/2018		5/24/2018		8/21/2018		11/16/2018		2/14/2019	
	Location Description:		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	11		9.5		9.8		0.512	J	0.5	U	2.6		7.5		0.5	U	0.5	U	5.4		0.5	U
Trichloroethene	µg/L	5	4.7		3.6		3.5		0.5	U	0.5	U	1.1		2.9		0.5	U	0.5	U	1.8		0.5	U
1,1-Dichloroethene	µg/L	7	1		0.5	U	0.79	J	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW17				35BWW18																	
	Sample ID		35BWW17-190523		35BWW17-190807		35BWW18-100213		35BWWU18-100213		35BWW18-081616		35BWW18-110717		35BWW18-021318		35BWW18-180521		35BWW18-180816		35BWW18-181119		35BWW18-190214	
	Sample Date		5/22/2019		8/7/2019		10/2/2013		10/2/2013		8/16/2016		11/7/2017		2/13/2018		5/21/2018		8/16/2018		11/19/2018		2/14/2019	
	Location Description:		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	UJ	1	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW18				35BWW19																	
	Sample ID		35BWW18-190520		35BWW18-190805		35BWW19-100713		35BWW19-081616		35BWW19-110717		35BWW19-021318		35BWW19-180521		35BWW19-180816		35BWW19-181119		35BWW19-190214		35BWW19-190520		35BWW19-190805	
	Sample Date		5/20/2019		8/5/2019		10/7/2013		8/16/2016		11/7/2017		2/13/2018		5/21/2018		8/16/2018		11/19/2018		2/14/2019		5/20/2019		8/5/2019	
	Location Description:		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW20																					
	Sample ID		35BWW20-100413		35BWW20-081816		35BWW20-110817		35BWW20-021218		35BWW20-180524		35BWW20-180820		35BWW20-181118		35BWW20-190213		35BWW20-190522		35BWW20-190522-FD		35BWW20-190806		35BWW20-190806-FD	
	Sample Date		10/4/2013		8/18/2016		11/8/2017		2/12/2018		5/24/2018		8/20/2018		11/18/2018		2/13/2019		5/22/2019		5/22/2019		8/6/2019		8/6/2019	
	Location Description:		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	31.1		26.7		25		34		29		19		34		34		12		12		7.5		7.6	
Trichloroethene	µg/L	5	7.04		6.75		4.7		5.7		6.3		3.6		6.4		6		2.8		2.9		2.1		2	
1,1-Dichloroethene	µg/L	7	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW23																			
	Sample ID		35BWW23-070114		35BWW23-081716		35BWW23-110917		35BWW23-021518		35BWW23-180522		35BWW23-180822		35BWW23-181120		35BWW23-190212		35BWW23-190521		35BWW23-190806	
	Sample Date		7/1/2014		8/17/2016		11/9/2017		2/15/2018		5/22/2018		8/22/2018		11/20/2018		2/12/2019		5/21/2019		8/6/2019	
	Location Description:		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW24																		35BWW25			
	Sample ID		35BWW24-081916		35BWW24-110817		35BWW24-021618		35BWW24-180524		35BWW24-180821		35BWW24-181116		35BWW24-190215		35BWW24-190522		35BWW24-190807		35BWW25-081916		35BWW25FD-081916	
	Sample Date		8/19/2016		11/8/2017		2/16/2018		5/24/2018		8/21/2018		11/16/2018		2/15/2019		5/22/2019		8/7/2019		8/19/2016		8/19/2016	
	Location Description:		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.415	J	1	U	0.5	U	0.5	U	0.5	U	2.9		2.6		1.1		1.7		5.55		5.94	
1,1-Dichloroethene	µg/L	7	1	U	1	U	0.5	U	0.5	U	0.5	U	0.67	J	0.5	U	0.5	U	0.5	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW25																					
	Sample ID		35BWW25-110817		35BWW25-110817-FD		35BWW25-021618		35BWW25-021618-FD		35BWW25-180523		35BWW25-180523FD		35BWW25-180820		35BWW25-180820-FD		35BWW25-181116		35BWW25-190215		35BWW25-190215-FD	
	Sample Date		11/8/2017		11/8/2017		2/16/2018		2/16/2018		5/23/2018		5/23/2018		8/20/2018		8/20/2018		11/16/2018		2/15/2019		2/15/2019	
	Location Description:		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	7.6		7.5		11		11		5.5		5.1		5.3		5.3		19		14		14	
1,1-Dichloroethene	µg/L	7	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		35BWW25		35BWW25		35BWW26															
	Sample ID		35BWW25-190522		35BWW25-190807		35BWW26-081716		35BWW26-110917		35BWW26-021418		35BWW26-180522		35BWW26-180822		35BWW26-181120		35BWW26-190212		35BWW26-190520		35BWW26-190806	
	Sample Date		5/22/2019		8/7/2019		8/17/2016		11/9/2017		2/14/2018		5/22/2018		8/22/2018		11/20/2018		2/12/2019		5/20/2019		8/6/2019	
	Location Description:		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.33	J	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	6.3		15		0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		LHSMW58																			
	Sample ID		LHSMW58-941211		LHSMW58-941211FD		LHSMW58-960210		LHSMW58-960821		LHSMW58-980520		LHSMW58-040910		LHSMW58-060809		LHSMW58-061216		LHSMW58-100313		LHSMW58-081816		LHSMW58-110817	
	Sample Date		12/11/1994		12/11/1994		2/10/1996		8/21/1996		5/20/1998		9/10/2004		8/9/2006		12/16/2006		10/3/2013		8/18/2016		11/8/2017	
	Location Description:		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	21		34		8		7.9		9.5		20		21.8	J	9.01		20.3		19.9		20	
Trichloroethene	µg/L	5	26				9		11.5		9.4		33		21.8	J	13.7		4.26		1.93		1.6	
1,1-Dichloroethene	µg/L	7	58		53		18		25.4		4.2		4	J	2.11	JH	3.17	J	1	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	NR		NR		1.8		2.1		0.53	J	5	U	0.716	JH	0.629	J	0.5	U	0.5	U	1	U
Vinyl chloride	µg/L	2	NR		NR		NR		0.24	U	1	U	5	U	10	U	10	U	0.5	U	0.5	U	1	U

Table 2-4
COC Concentrations 1994–2019

	Location Code		LHSMW58																LHSMW59					
	Sample ID		LHSMW58-021218		LHSMW58-180524		LHSMW58-180820		LHSMW58-181118		LHSMW58-181118-FD		LHSMW58-190213		LHSMW58-190522		LHSMW58-190807		LHSMW59-941211		LHSMW59-941211FD		LHSMW59-960210	
	Sample Date		2/12/2018		5/24/2018		8/20/2018		11/18/2018		11/18/2018		2/13/2019		5/22/2019		8/7/2019		12/11/1994		12/11/1994		2/10/1996	
	Location Description:		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual		
Tetrachloroethene	µg/L	5	14		12		26		26		25		6.1		3.6		6.8		11		11		16	
Trichloroethene	µg/L	5	0.5	U	1.4		2.2		1.8		1.8		0.5	U	0.5	U	0.59	J-	120		NR		249	
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	5	U	5	U	NR	
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	NR		NR		NR	
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NR		NR		NR	

Table 2-4
COC Concentrations 1994–2019

	Location Code		LHSMW59									
	Sample ID		LHSMW59-960821		LHSMW59-980520		LHSMW59-040910		LHSMW59-060810		LHSMW59-061213	
	Sample Date		8/21/1996		5/20/1998		9/10/2004		8/10/2006		12/13/2006	
	Location Description:		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL			Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	16.9		7		3	J	1.19	J	1.15	J
Trichloroethene	µg/L	5	327		330		180		135		166	
1,1-Dichloroethene	µg/L	7	2.2		1	U	5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.2	U	1	U	5	U	0.521	J	0.463	J
Vinyl chloride	µg/L	2	0.24	U	1	U	5	U	0.25	U	0.25	U

Table 2-4
COC Concentrations 1994–2019

Notes:

Blue Highlighting Indicates concentrations above the MCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

COC - contaminant of concern

FD - field duplicate

ID - identification

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

MCL - Maximum Contaminant Limit

NR - not reported by laboratory

U - Undetected: The analyte was analyzed for, but not detected.

Val Qual - validation qualifier

Table 2-5
Well Maintenance Activities Year 2 RA-O

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Date Mowed	Photos	Comments
35BWW01	11/15/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/12/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/5/2019	Good	Good	Good	In Place		Yes	
35BWW02	11/16/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/14/2019	Good	Good	Good	In Place		Yes	
35BWW04	11/20/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/13/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/5/2019	Good	Good	Good	In Place		Yes	
35BWW05	11/18/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/13/2019	Good	Good	Good	In Place		Yes	
	5/21/2019	Good	Good	Good	In Place		Yes	
	8/6/2019	Good	Good	Good	In Place		Yes	
35BWW06	11/18/2018	Good	Good	Good	In Place	4/29/2019	Yes	
35BWW07	11/18/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/14/2019	Good	Good	Good	In Place		Yes	
	5/22/2019	Good	Good	Good	In Place		Yes	
	8/5/2019	Good	Good	Good	In Place		Yes	
35BWW08	11/20/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/12/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/5/2019	Good	Good	Good	In Place		Yes	
35BWW09	11/19/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/13/2019	Good	Good	Good	In Place		Yes	
	5/21/2019	Good	Good	Good	In Place		Yes	
	8/5/2019	Good	Good	Good	In Place		Yes	
35BWW10	11/18/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/12/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/6/2019	Good	Good	Good	In Place		Yes	
35BWW11	11/18/2018	Good	Good	Good	In Place	4/29/2019	No	
	2/13/2019	Good	Good	Good	In Place		Yes	
	5/21/2019	Good	Good	Good	In Place		Yes	
	8/7/2019	Good	Good	Good	In Place		Yes	
35BWW12	11/20/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/13/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/5/2019	Good	Good	Good	In Place		Yes	
35BWW13	11/16/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/14/2019	Good	Good	Good	In Place		Yes	
	5/22/2019	Good	Good	Good	In Place		Yes	
	8/6/2019	Good	Good	Good	In Place		Yes	
35BWW14	11/20/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/12/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/6/2019	Good	Good	Good	In Place		Yes	
35BWW15	11/16/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/14/2019	Good	Good	Good	In Place		Yes	
	5/22/2019	Good	Good	Good	In Place		Yes	
	8/7/2019	Good	Good	Good	In Place		Yes	

Table 2-5
Well Maintenance Activities Year 2 RA-O

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Date Mowed	Photos	Comments
35BWW16	11/16/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/15/2019	Good	Good	Good	In Place		Yes	
	5/23/2019	Good	Good	Good	In Place		Yes	
	8/7/2019	Good	Good	Good	In Place		Yes	
35BWW17	11/16/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/14/2019	Good	Good	Good	In Place		Yes	
	5/23/2019	Good	Good	Good	In Place		Yes	
	8/7/2019	Good	Good	Good	In Place		Yes	
35BWW18	11/19/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/14/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/5/2019	Good	Good	Good	In Place		Yes	
35BWW19	11/19/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/14/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/5/2019	Good	Good	Good	In Place		Yes	
35BWW20	11/18/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/13/2019	Good	Good	Good	In Place		Yes	
	5/22/2019	Good	Good	Good	In Place		Yes	
	8/6/2019	Good	Good	Good	In Place		Yes	
35BWW23	11/20/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/12/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/6/2019	Good	Good	Good	In Place		Yes	
35BWW24	11/16/2018	Good	Good	Good	In Place	4/29/2019	No	
	2/15/2019	Good	Good	Good	In Place		Yes	
	5/22/2019	Good	Good	Good	In Place		Yes	
	8/7/2019	Good	Good	Good	In Place		Yes	
35BWW25	11/16/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/15/2019	Good	Good	Good	In Place		Yes	
	5/22/2019	Good	Good	Good	In Place		Yes	
	8/7/2019	Good	Good	Good	In Place		Yes	
35BWW26	11/20/2018	Good	Good	Good	In Place	4/29/2019	Yes	
	2/12/2019	Good	Good	Good	In Place		Yes	
	5/20/2019	Good	Good	Good	In Place		Yes	
	8/6/2019	Good	Good	Good	In Place		Yes	
LHSMW58	11/18/2018	Good	Good	Good	In Place	4/29/2019	No	
	2/13/2019	Good	Good	Good	In Place		Yes	
	5/22/2019	Good	Good	Good	In Place		Yes	
	8/7/2019	Good	Good	Good	In Place		Yes	

Notes:

ID - identification

RA-O - remedial action operation

Table 2-6
Year 3 RA-O Semiannual Sampling

Well ID	VOC	Field Parameters	MNA Parameters	Water Levels
35BWW01	X	X		X
35BWW02 [a]				
35BWW03 [b]				
35BWW04	X	X	X	X
35BWW05	X	X		X
35BWW06 [b]				
35BWW07	X	X		X
35BWW08	X	X	X	X
35BWW09	X	X		X
35BWW10	X	X		X
35BWW11	X	X		X
35BWW12	X	X	X	X
35BWW13	X	X		X
35BWW14	X	X	X	X
35BWW15	X	X		X
35BWW16	X	X		X
35BWW17	X	X		X
35BWW18	X	X		X
35BWW19	X	X		X
35BWW20	X	X		X
35BWW23	X	X	X	X
35BWW24	X	X		X
35BWW25	X	X		X
35BWW26	X	X	X	X
LHSMW58	X	X		X
35BSW01 [c]	X	X		X
35BSW02 [c]	X	X		X

Notes:

MNA parameters include nitrate, sulfate, chloride, TOC, carbon dioxide, and dissolved gases (methane, ethane, ethene).

Field parameters to be monitored for all wells: pH, temperature, conductivity, turbidity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and ferrous iron.

[a] Well was removed from the sampling list.

[b] Monitoring wells 35BWW03 and 35BWW06 will continue to be sampled once every five years to support the Five Year Reviews, and the next sampling event for these wells will be in 2021.

[c] Surface water locations to be sampled annually per the RACR - Next Sampling is Y3Q1, November 2019.

ID - identification

MNA - monitored natural attenuation

RA(O) - remedial action operation

TOC - total organic carbon

VOC - volatile organic compounds

X - well will be analyzed for that parameter

Table 3-1
RA-O Mann-Kendall Trend Summary, LHAAP-35B(37)

Monitoring Well	PCE	TCE
35BWW04	No Trend	NA
35BWW05	NA	Stable
35BWW09	NA	No Trend
35BWW12	Stable	NA
35BWW14	Stable	Probable Decrease
35BWW15	Stable	Significant Decrease
35BWW16	Probable Increasing	NA
35BWW20	Stable	No Trend
35BWW25	NA	No Trend
LHSMW58	Probable Decrease	NA

Notes:

PCE - tetrachloroethene

TCE - trichloroethene

MCL - maximum contaminant level

NA - not analyzed due to concentrations are below the MCL.

Figures

Note:
1. RA-O = Remedial Action Operations

Marion County
Upshur County
Harrison County
Gregg County
Panola County
Caddo County
Longhorn Army Ammunition Plant
Karnack
WOODLAWN OIL FIELD
LONGWOOD OIL AND GAS FIELD
TEXAS OIL FIELD
Lake O the Pines
Clinton Lake
Caddo Lake
Ore City
Diana
Marshall
Scottsville
Nesbitt
Hallsville
Longview
Lear Park
White Oak
Eastman Chemical
Lakeport
Easton
Tatum
Waskom
Bethany
De Berry
Beckville
Uncertain
HARRISON
PANOLA
TEXAS
LOUISIANA
49
530
1
538
154
259
43
169
390
80
59
281
300
63
20
31
79
149

Harrison County

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

N

0 2 4 Miles

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Figure 1-1

LHAAP Location Map
Second Annual RA-O Report
LHAAP-35B(37)

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_LocationMap.mxd

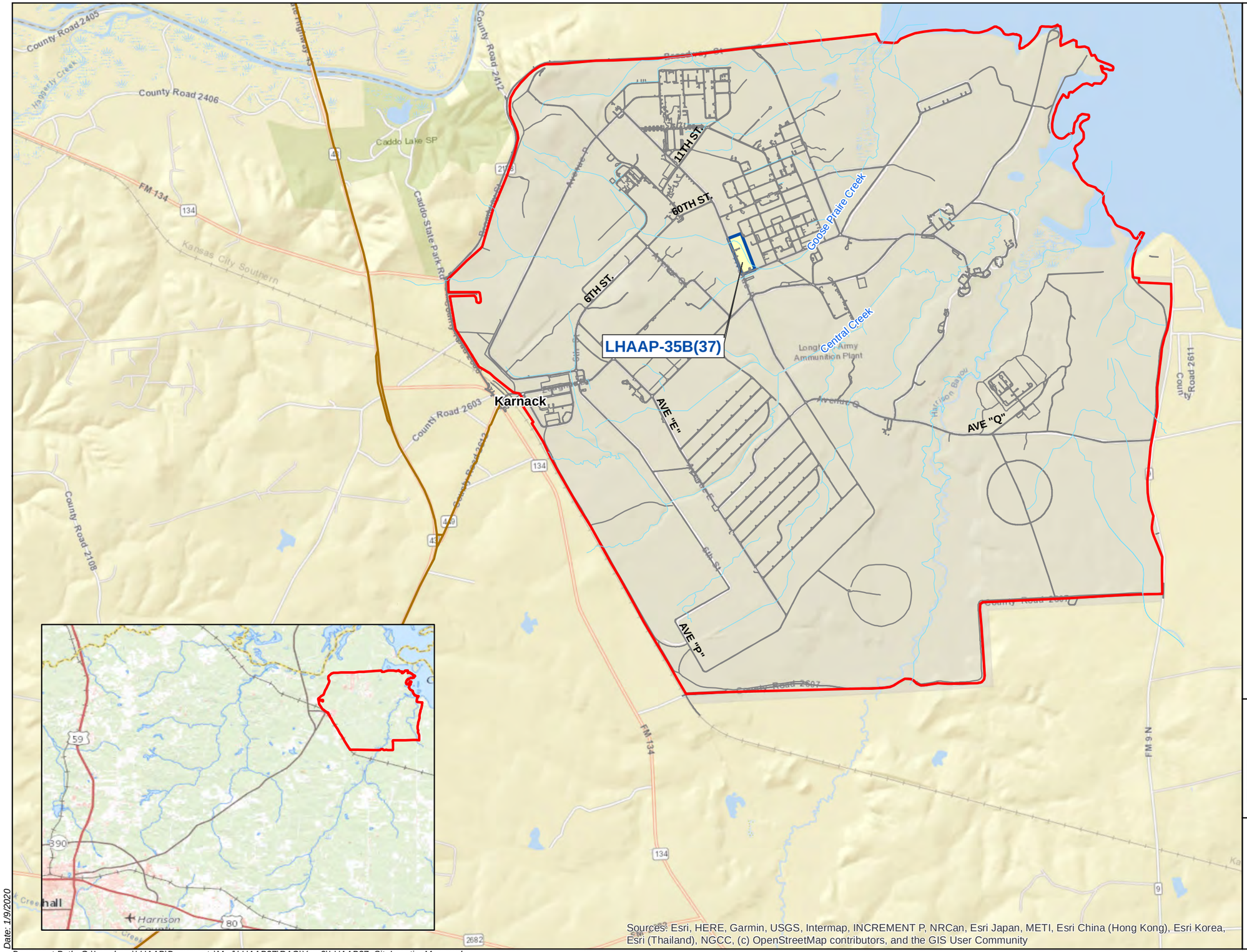
LHAAP-35B(37)
Karnack
Caddo Lake SP
Longhorn Army Ammunition Plant
Goose Prairie Creek
Central Creek
Harrison Bayou
11TH ST.
60TH ST.
6TH ST.
AVE "E"
AVE "P"
AVE "Q"
FM 134
County Road 2406
County Road 2405
County Road 2412
County Road 2603
County Road 2108
County Road 2611
Caddo State Park Rd
Kansas City Southern
Haggerty Creek
Stream
Road
LHAAP Boundary
LHAAP-35B(37) Site Boundary
Note:
1. RA-O = Remedial Action Operations
0 1,500 3,000
Feet
N
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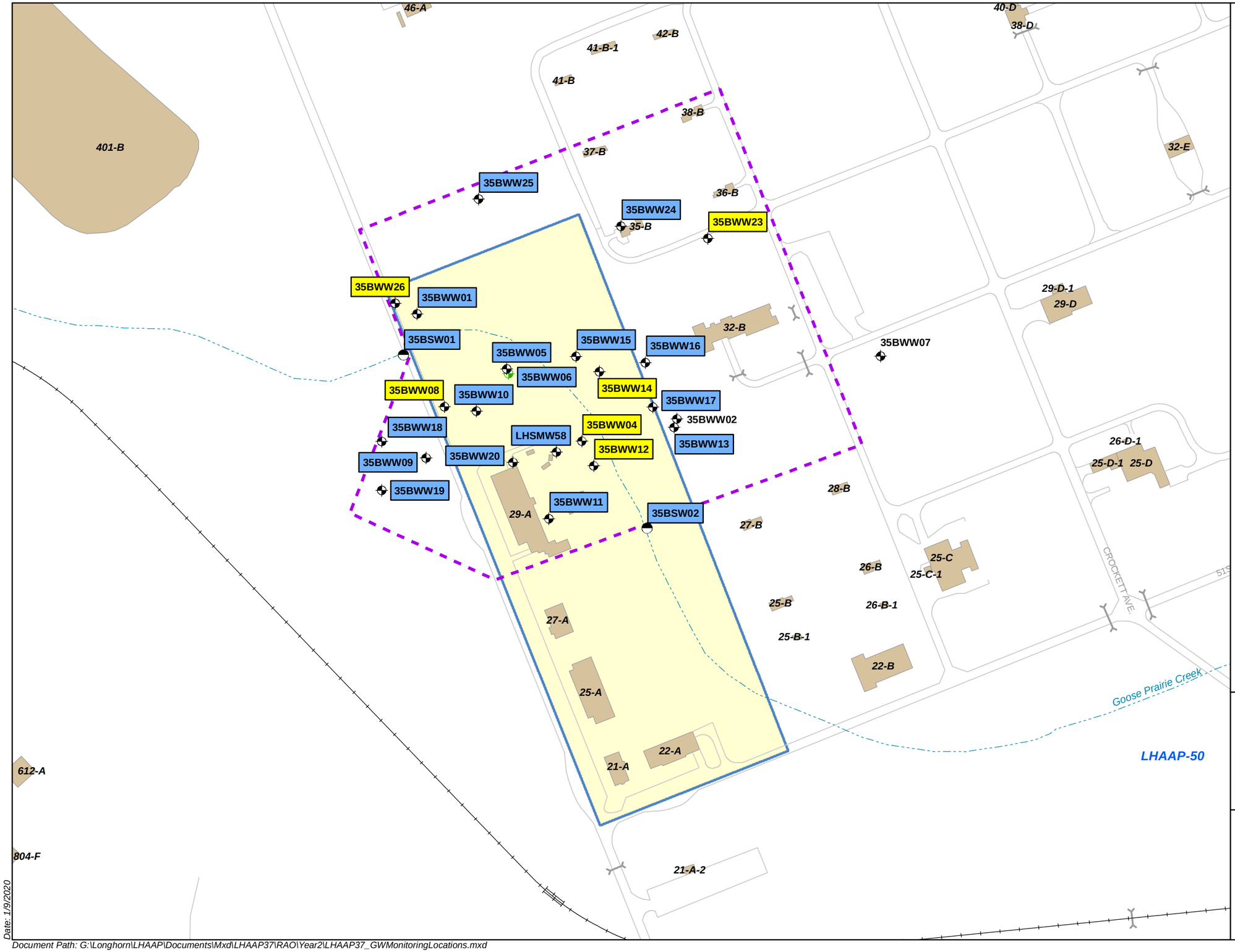
Figure 1-2
LHAAP Site Vicinity Map
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Date: 1/9/2020
Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_SiteLocationMap.mxd



Shallow Monitoring Well
Lower Shallow Monitoring Well
Surface Water Location
Former Railroad Location
Land Use Control Boundary
Goose Prairie Creek
Roads
Buildings
LHAAP-35B(37) Site Boundary

Note:
1. RA-O = Remedial Action Operations

35BWW15 Sampling Location

35BWW14 Sampling Location including MNA Parameters

N

0 100 200 Feet

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Figure 2-1

Groundwater Monitoring Well Locations
Second Annual RA-O Report
LHAAP-35B(37)

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_GWMonitoringLocations.mxd

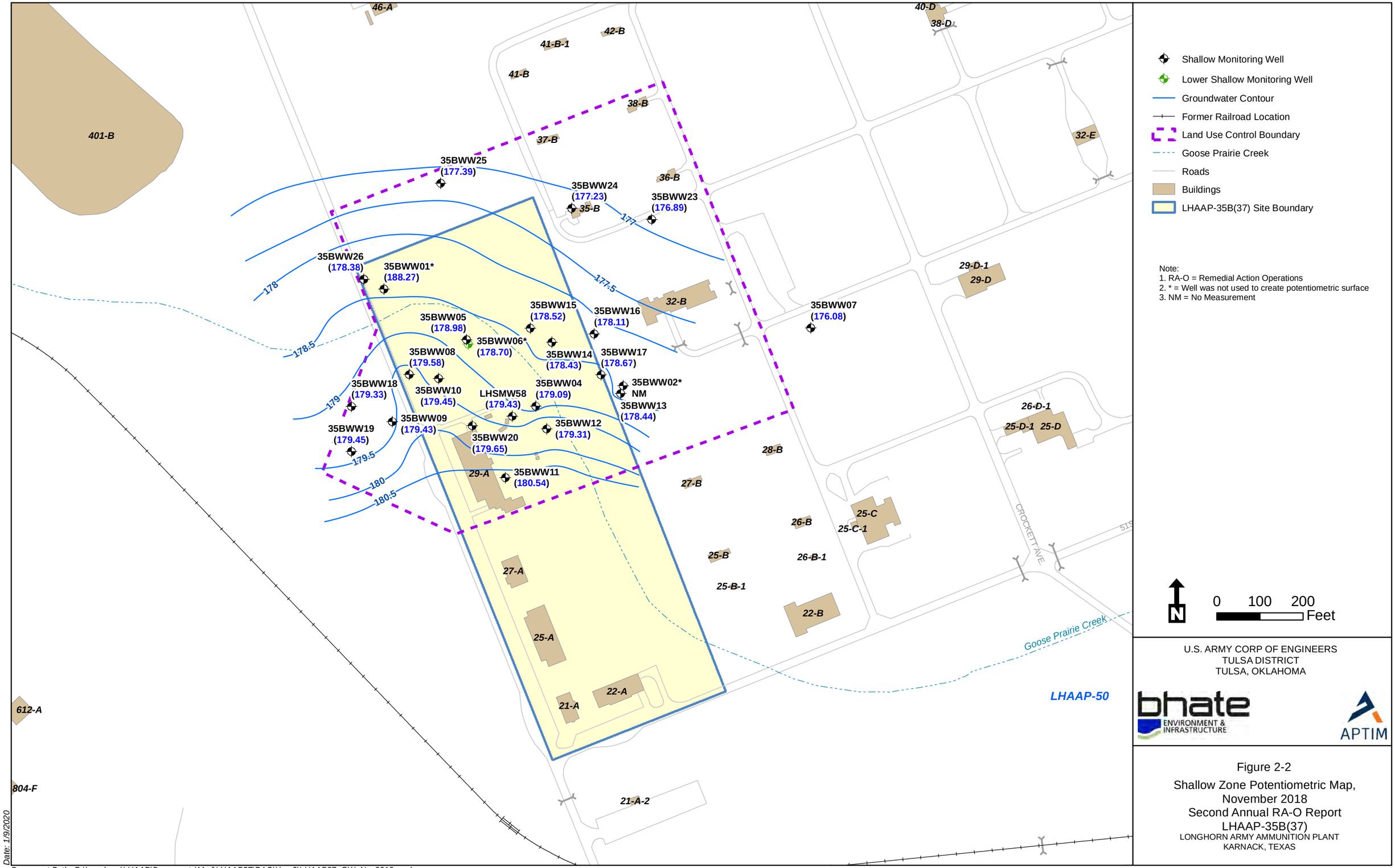

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Figure 2-2

Shallow Zone Potentiometric Map,
November 2018
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_GW_Nov2018.mxd

35BWW25 (178.51)
35BWW24 (178.37)
35BWW23 (177.82)
35BWW26 (179.36)
35BWW01* (194.31)
35BWW15 (179.94)
35BWW16 (179.63)
35BWW07 (177.77)
35BWW05 (180.00)
35BWW06* NM
35BWW08 (180.45)
35BWW14 (179.72)
35BWW17 (180.88)
35BWW18 (180.35)
35BWW10 (180.48)
LHSMW58 (180.58)
35BWW04 (180.36)
35BWW02* NM
35BWW13 (180.77)
35BWW09 (180.39)
35BWW12 (180.65)
35BWW19 (180.47)
35BWW20 (180.76)
35BWW11 (181.82)
177.5
178
178.5
179
179.5
180
180.5
401-B
46-A
42-B
41-B-1
41-B
40-D
38-D
38-B
37-B
36-B
35-B
32-E
32-B
29-D-1
29-D
29-A
28-B
27-B
27-A
26-D-1
25-D-1
25-D
25-C
25-C-1
26-B
25-B
26-B-1
25-B-1
25-A
22-B
22-A
21-A
21-A-2
612-A
804-F
CROCKETT AVE.
Goose Prairie Creek
LHAAP-50

Shallow Monitoring Well
Lower Shallow Monitoring Well
Groundwater Contour
Former Railroad Location
Land Use Control Boundary
Goose Prairie Creek
Roads
Buildings
LHAAP-35B(37) Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. * = Well was not used to create potentiometric surface
3. NM = No Measurement

N
0 100 200
Feet

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Figure 2-3
Shallow Zone Potentiometric Map,
February 2019
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020
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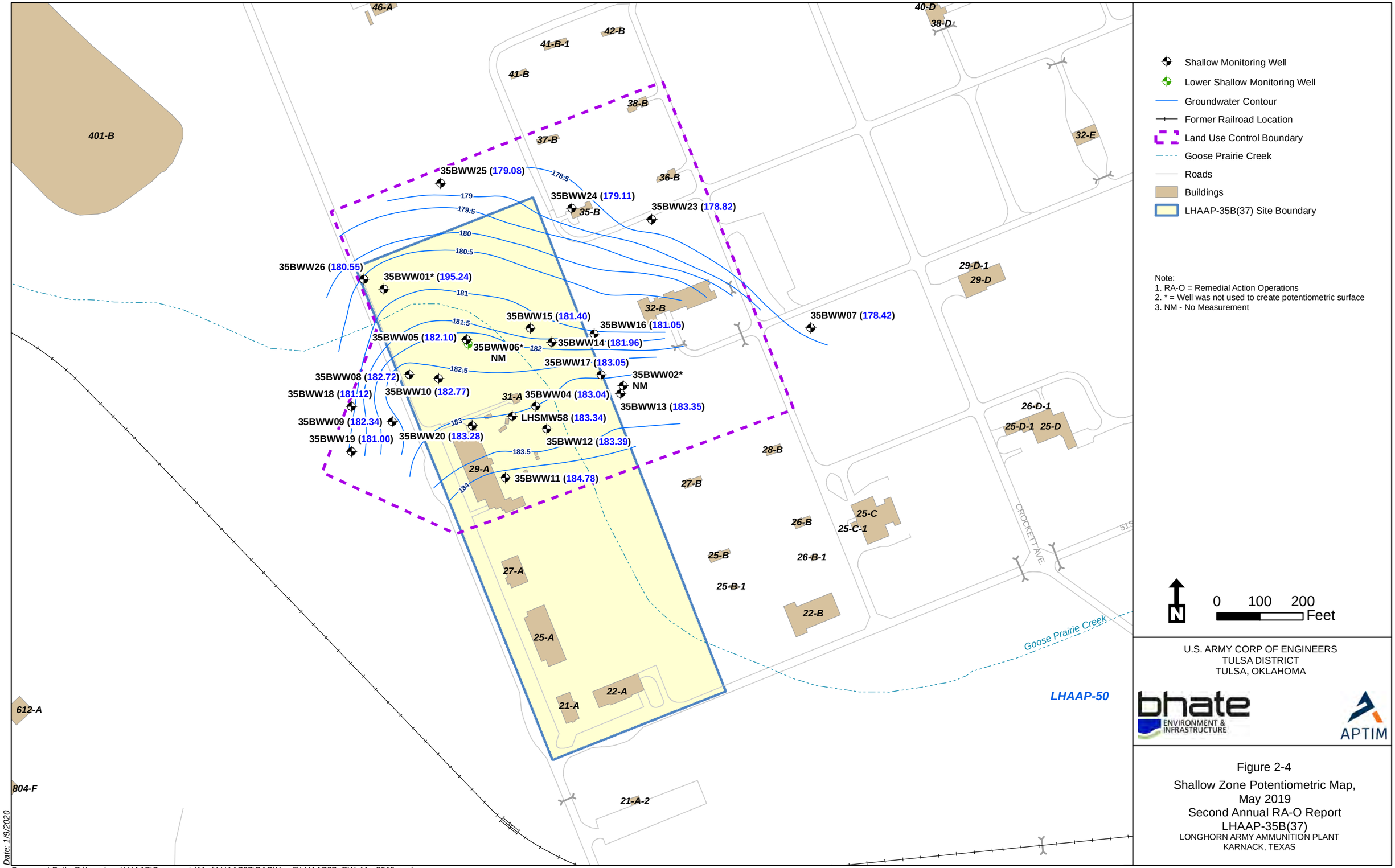

Note:
1. RA-O = Remedial Action Operations
2. * = Well was not used to create potentiometric surface
3. NM - No Measurement

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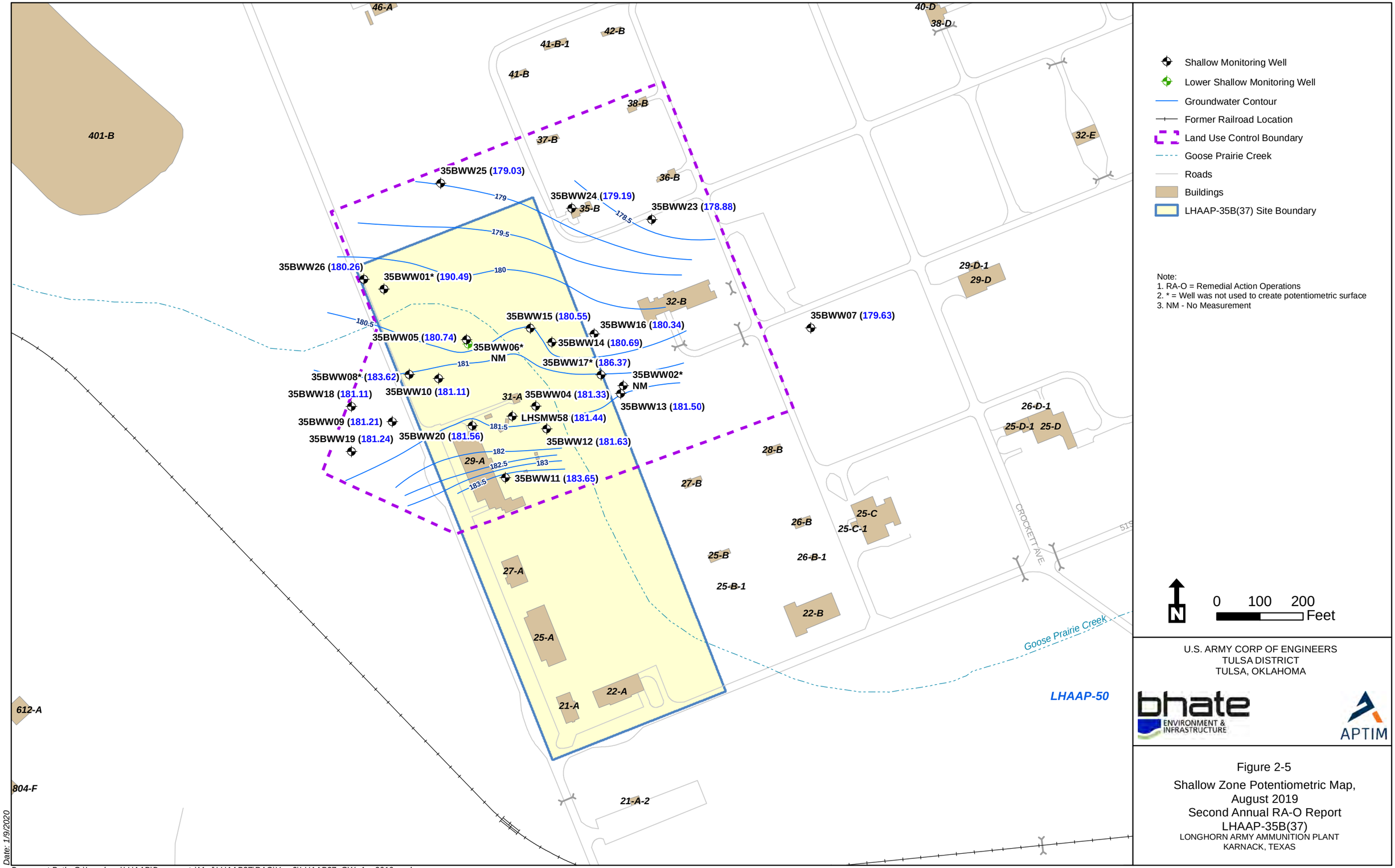
Figure 2-4

Shallow Zone Potentiometric Map,
May 2019
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_GW_May2019.mxd



Shallow Monitoring Well
Lower Shallow Monitoring Well
Groundwater Contour
Former Railroad Location
Land Use Control Boundary
Goose Prairie Creek
Roads
Buildings
LHAAP-35B(37) Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. * = Well was not used to create potentiometric surface
3. NM - No Measurement

N

0 100 200 Feet

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Figure 2-5
Shallow Zone Potentiometric Map, August 2019
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_GW_Aug2019.mxd

35BWW01		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl Chloride	2	1 U

35BWW23		
Analyte	MCL	Jul-14
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW05		
Analyte	MCL	Oct-13
Tetrachloroethene	5	1.57
Trichloroethene	5	14
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.295 J
Vinyl Chloride	2	0.5 U

35BWW06		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW08		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	43.8
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW18		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW10		
Analyte	MCL	Oct-13
Tetrachloroethene	5	4.45
Trichloroethene	5	56.3
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW19		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW09		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	49
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.529 J
Vinyl Chloride	2	0.5 U

LHSMW58		
Analyte	MCL	Oct-13
Tetrachloroethene	5	20.3
Trichloroethene	5	4.26
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW20		
Analyte	MCL	Oct-13
Tetrachloroethene	5	31.1
Trichloroethene	5	7.04
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW11		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.252 J
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW12		
Analyte	MCL	Oct-13
Tetrachloroethene	5	15.3
Trichloroethene	5	2.04
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW15		
Analyte	MCL	Jan-14
Tetrachloroethene	5	8.69
Trichloroethene	5	43.5
1,1-Dichloroethene	7	35.5
cis-1,2-Dichloroethene	70	6.25
Vinyl Chloride	2	3.42

35BWW07		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

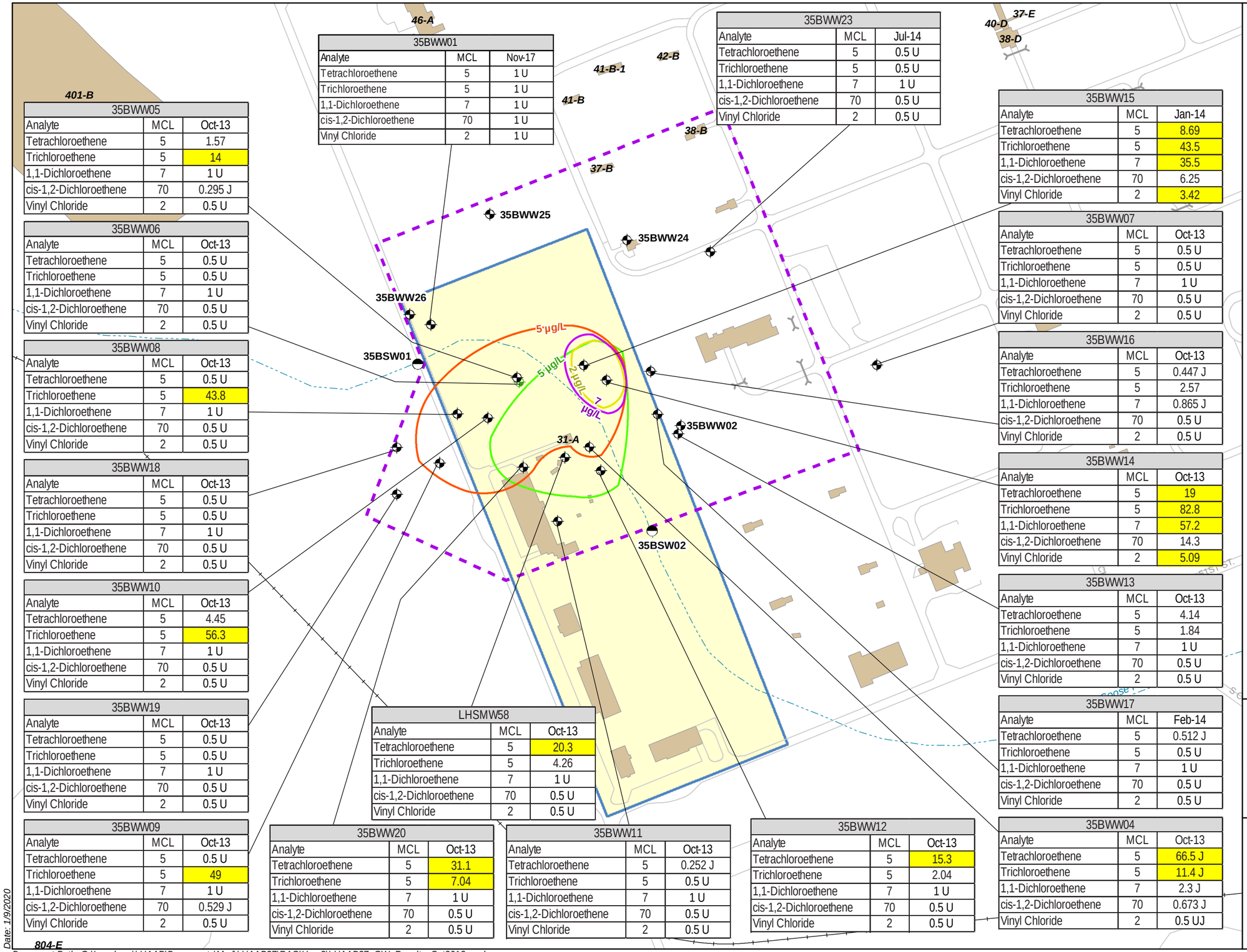
35BWW16		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.447 J
Trichloroethene	5	2.57
1,1-Dichloroethene	7	0.865 J
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW14		
Analyte	MCL	Oct-13
Tetrachloroethene	5	19
Trichloroethene	5	82.8
1,1-Dichloroethene	7	57.2
cis-1,2-Dichloroethene	70	14.3
Vinyl Chloride	2	5.09

35BWW13		
Analyte	MCL	Oct-13
Tetrachloroethene	5	4.14
Trichloroethene	5	1.84
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW17		
Analyte	MCL	Feb-14
Tetrachloroethene	5	0.512 J
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW04		
Analyte	MCL	Oct-13
Tetrachloroethene	5	66.5 J
Trichloroethene	5	11.4 J
1,1-Dichloroethene	7	2.3 J
cis-1,2-Dichloroethene	70	0.673 J
Vinyl Chloride	2	0.5 UJ



Shallow Monitoring Well
Lower Shallow Monitoring Well
Surface Water Location
Tetrachloroethene Contour
Trichloroethene Contour
1,1-Dichloroethene Contour
Vinyl Chloride Contour
Former Railroad Location
Land Use Control Boundary
Goose Prairie Creek
Roads
Buildings
LHAAP-35B(37) Site Boundary

Note:
1. RA-O = Remedial Action Operations

N
0 100 200
Feet

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

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Figure 2-6
Groundwater Results
October 2013 Baseline
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020
Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_GW_Results_Oct2013.mxd

35BWW26		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW01		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW25		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	**19**
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW24		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	2.9
1,1-Dichloroethene	7	0.67 J
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW23		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW05		
Analyte	MCL	Nov-18
Tetrachloroethene	5	2.7
Trichloroethene	5	**12**
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW15		
Analyte	MCL	Nov-18
Tetrachloroethene	5	**11**
Trichloroethene	5	**12**
1,1-Dichloroethene	7	2.6
cis-1,2-Dichloroethene	70	0.68 J
Vinyl chloride	2	0.63 J

35BWW06		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW07		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW08		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW16		
Analyte	MCL	Nov-18
Tetrachloroethene	5	**15**
Trichloroethene	5	**6.5**
1,1-Dichloroethene	7	1.5
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW18		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW14		
Analyte	MCL	Nov-18
Tetrachloroethene	5	**37**
Trichloroethene	5	**9.1**
1,1-Dichloroethene	7	2.2
cis-1,2-Dichloroethene	70	0.91 J
Vinyl chloride	2	0.5 U

35BWW10		
Analyte	MCL	Nov-18
Tetrachloroethene	5	**45**
Trichloroethene	5	**53**
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW13		
Analyte	MCL	Nov-18
Tetrachloroethene	5	1.1
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW19		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

LHSMW58		
Analyte	MCL	Nov-18
Tetrachloroethene	5	**25**
Trichloroethene	5	1.8
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW17		
Analyte	MCL	Nov-18
Tetrachloroethene	5	**5.4**
Trichloroethene	5	1.8
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

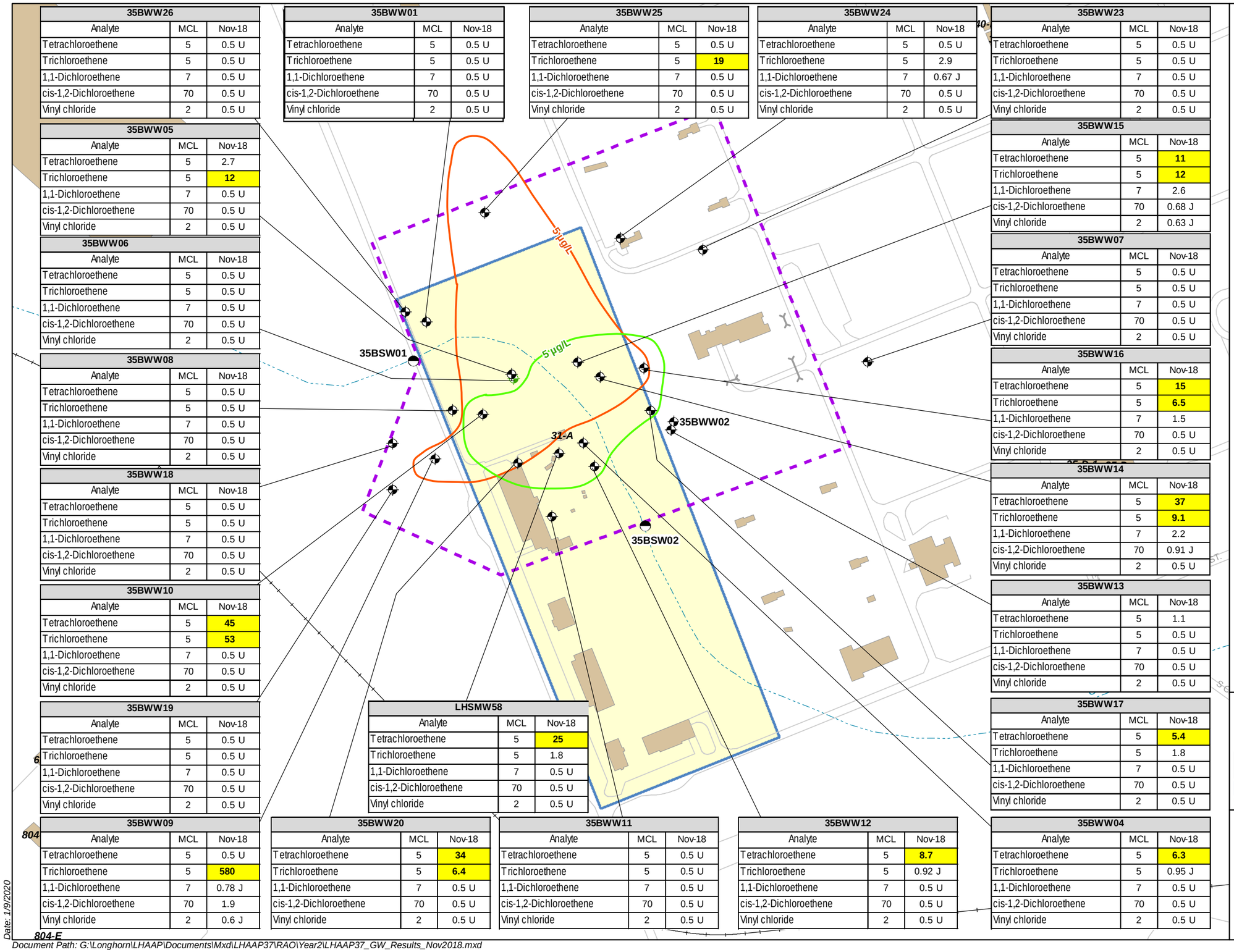
35BWW09		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	**580**
1,1-Dichloroethene	7	0.78 J
cis-1,2-Dichloroethene	70	1.9
Vinyl chloride	2	0.6 J

35BWW20		
Analyte	MCL	Nov-18
Tetrachloroethene	5	**34**
Trichloroethene	5	**6.4**
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW11		
Analyte	MCL	Nov-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW12		
Analyte	MCL	Nov-18
Tetrachloroethene	5	**8.7**
Trichloroethene	5	0.92 J
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW04		
Analyte	MCL	Nov-18
Tetrachloroethene	5	**6.3**
Trichloroethene	5	0.95 J
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U



- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Surface Water Location
- Tetrachloroethene Contour
- Trichloroethene Contour
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. MCL = Maximum Contaminant Level
3. J = Value is estimated.
4. U = Result is below method detection limit.

N

0 100 200 Feet

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

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Figure 2-7
Groundwater Results
November 2018 Y2Q1
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_GW_Results_Nov2018.mxd

35BWW26		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW01		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW25		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	14
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW24		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	2.6
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW23		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW05		
Analyte	MCL	Feb-19
Tetrachloroethene	5	1.9
Trichloroethene	5	9.6
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW15		
Analyte	MCL	Feb-19
Tetrachloroethene	5	12
Trichloroethene	5	11
1,1-Dichloroethene	7	1.9
cis-1,2-Dichloroethene	70	0.65 J
Vinyl chloride	2	0.5 U

35BWW07		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW08		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW16		
Analyte	MCL	Feb-19
Tetrachloroethene	5	11
Trichloroethene	5	4.7
1,1-Dichloroethene	7	1
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW18		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW14		
Analyte	MCL	Feb-19
Tetrachloroethene	5	37
Trichloroethene	5	22
1,1-Dichloroethene	7	5.6
cis-1,2-Dichloroethene	70	2.1
Vinyl chloride	2	0.5 U

35BWW10		
Analyte	MCL	Feb-19
Tetrachloroethene	5	37
Trichloroethene	5	50
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW13		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW19		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

LHSMW58		
Analyte	MCL	Feb-19
Tetrachloroethene	5	6.1
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW17		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

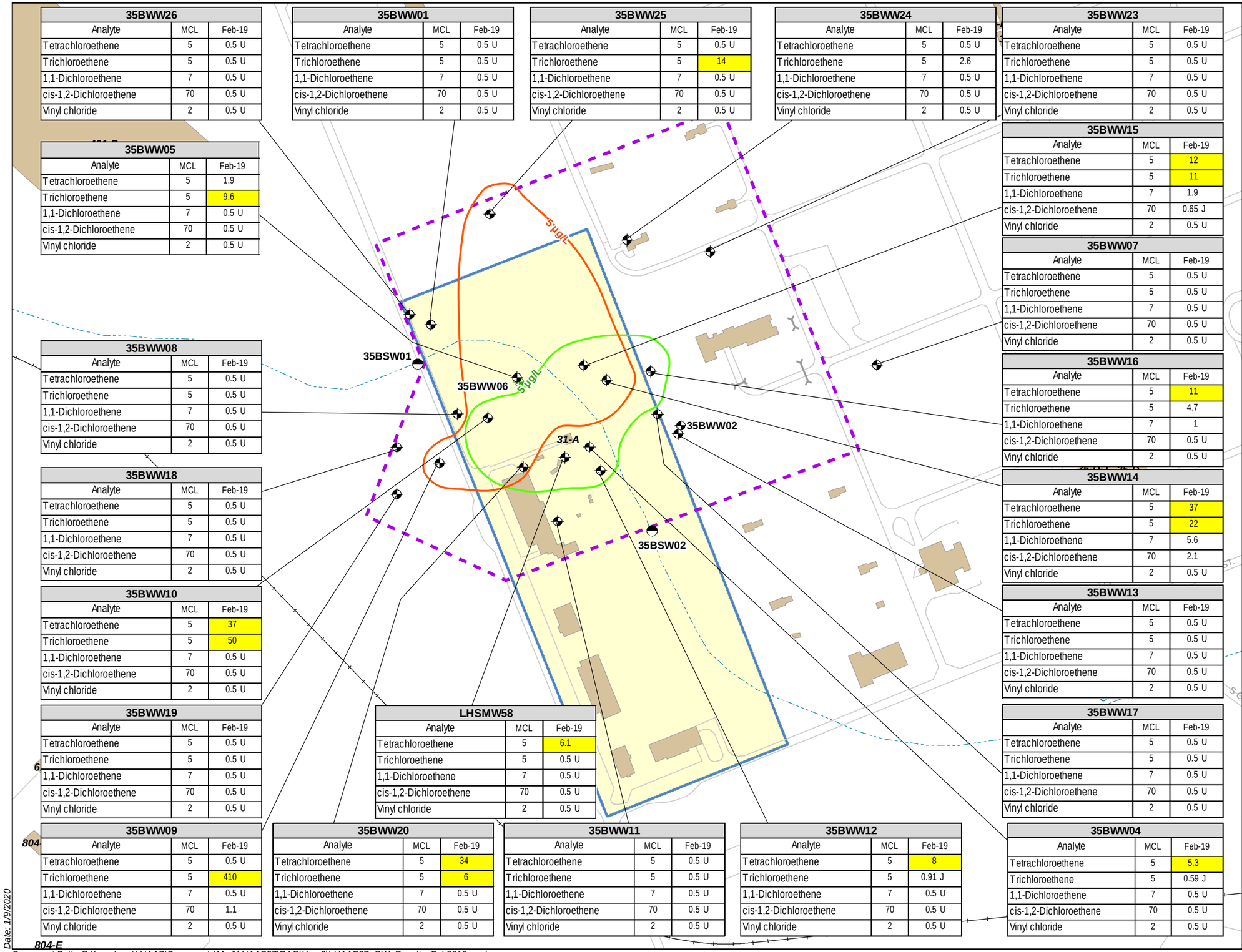
35BWW09		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	410
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	1.1
Vinyl chloride	2	0.5 U

35BWW20		
Analyte	MCL	Feb-19
Tetrachloroethene	5	34
Trichloroethene	5	6
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW11		
Analyte	MCL	Feb-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW12		
Analyte	MCL	Feb-19
Tetrachloroethene	5	8
Trichloroethene	5	0.91 J
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW04		
Analyte	MCL	Feb-19
Tetrachloroethene	5	5.3
Trichloroethene	5	0.59 J
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U



- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Surface Water Location
- Tetrachloroethene Contour
- Trichloroethene Contour
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. MCL = Maximum Contaminant Level
3. J = Value is estimated.
4. U = Result is below method detection limit.

N

0 100 200 Feet

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

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Figure 2-8
Groundwater Results
February 2019 Y2Q2
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_GW_Results_Feb2019.mxd

35BWW26		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW01		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW25		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	6.3
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW24		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	1.1
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW23		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW05		
Analyte	MCL	May-19
Tetrachloroethene	5	1.1
Trichloroethene	5	5.5
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW15		
Analyte	MCL	May-19
Tetrachloroethene	5	7.8
Trichloroethene	5	7.1
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW07		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW08		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW16		
Analyte	MCL	May-19
Tetrachloroethene	5	9.5
Trichloroethene	5	3.6
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW18		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW14		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	110
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.66 J
Vinyl chloride	2	0.5 U

35BWW10		
Analyte	MCL	May-19
Tetrachloroethene	5	5.5
Trichloroethene	5	9.4
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW13		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW19		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW17		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

LHSMW58		
Analyte	MCL	May-19
Tetrachloroethene	5	3.6
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

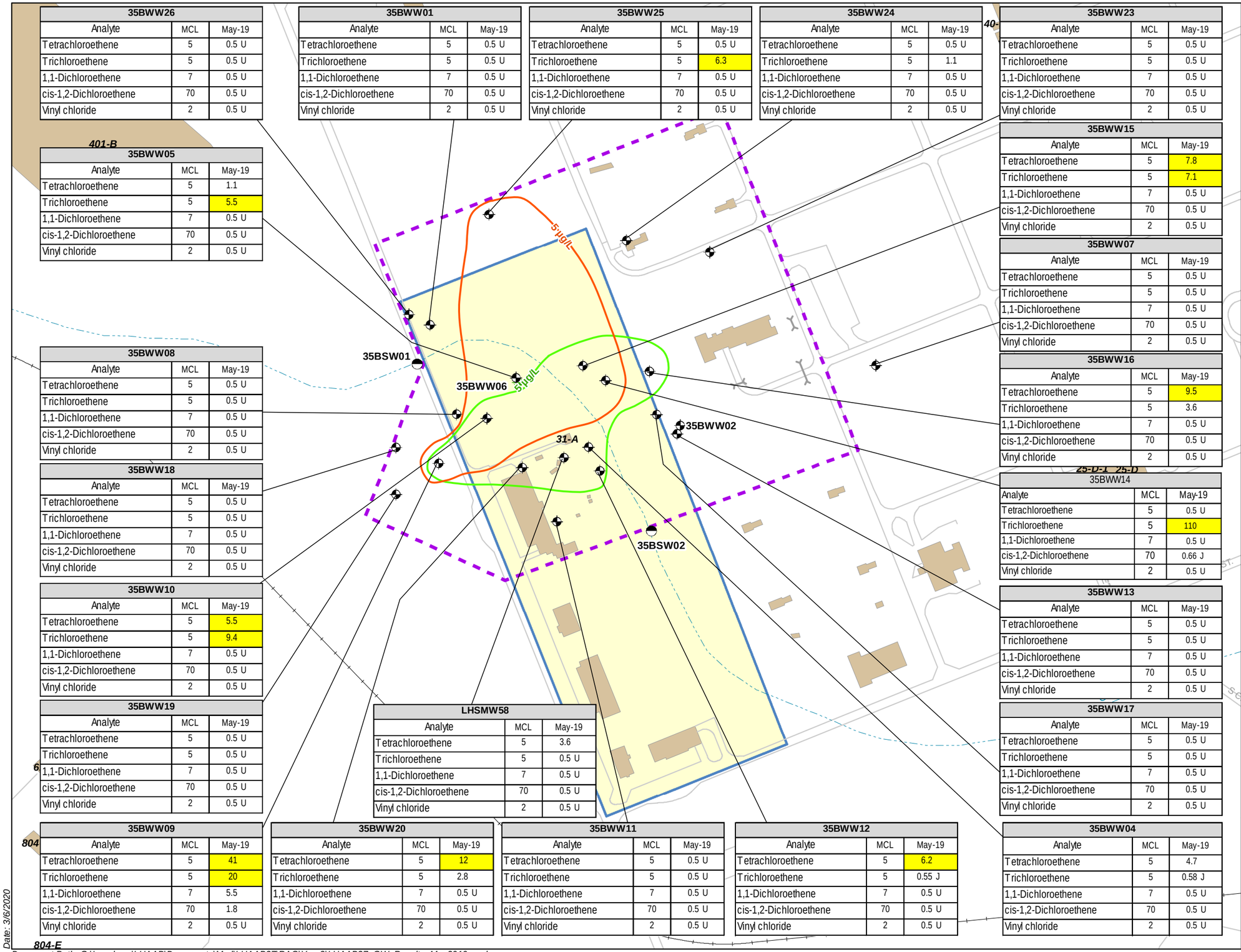
35BWW09		
Analyte	MCL	May-19
Tetrachloroethene	5	41
Trichloroethene	5	20
1,1-Dichloroethene	7	5.5
cis-1,2-Dichloroethene	70	1.8
Vinyl chloride	2	0.5 U

35BWW20		
Analyte	MCL	May-19
Tetrachloroethene	5	12
Trichloroethene	5	2.8
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW11		
Analyte	MCL	May-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW12		
Analyte	MCL	May-19
Tetrachloroethene	5	6.2
Trichloroethene	5	0.55 J
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW04		
Analyte	MCL	May-19
Tetrachloroethene	5	4.7
Trichloroethene	5	0.58 J
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U



- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Surface Water Location
- Tetrachloroethene Contour
- Trichloroethene Contour
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. MCL = Maximum Contaminant Level
3. J = Value is estimated.
4. U = Result is below method detection limit.

N

0 100 200 Feet

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Figure 2-9
Groundwater Results
May 2019 Y2Q3
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/6/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_GW_Results_May2019.mxd

00955171

35BWW26		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW01		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW25		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.33 J
Trichloroethene	5	15
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW24		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	1.7
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW23		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW05		
Analyte	MCL	Aug-19
Tetrachloroethene	5	1.9
Trichloroethene	5	8.6
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW15		
Analyte	MCL	Aug-19
Tetrachloroethene	5	9.7
Trichloroethene	5	7.6
1,1-Dichloroethene	7	1.1
cis-1,2-Dichloroethene	70	0.39 J
Vinyl chloride	2	0.5 U

35BWW07		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW08		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW16		
Analyte	MCL	Aug-19
Tetrachloroethene	5	9.8
Trichloroethene	5	3.5
1,1-Dichloroethene	7	0.79 J
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW18		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW14		
Analyte	MCL	Aug-19
Tetrachloroethene	5	38
Trichloroethene	5	15
1,1-Dichloroethene	7	4.2
cis-1,2-Dichloroethene	70	1.3
Vinyl chloride	2	0.5 U

35BWW10		
Analyte	MCL	Aug-19
Tetrachloroethene	5	1.6
Trichloroethene	5	2.6
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW13		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW19		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

LHSMW58		
Analyte	MCL	Aug-19
Tetrachloroethene	5	6.8
Trichloroethene	5	0.59 J
1,1-Dichloroethene	7	0.5 UJ
cis-1,2-Dichloroethene	70	0.5 UJ
Vinyl chloride	2	0.5 U

35BWW17		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 UJ
1,1-Dichloroethene	7	0.5 UJ
cis-1,2-Dichloroethene	70	0.5 UJ
Vinyl chloride	2	0.5 U

35BWW09		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	70 J
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW20		
Analyte	MCL	Aug-19
Tetrachloroethene	5	7.5
Trichloroethene	5	2.1
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW11		
Analyte	MCL	Aug-19
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW12		
Analyte	MCL	Aug-19
Tetrachloroethene	5	5.8
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW04		
Analyte	MCL	Aug-19
Tetrachloroethene	5	7.9
Trichloroethene	5	0.93 J
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BSW01
35BWW06
35BWW02
35BSW02
31-A
5 µg/L
5 µg/L
804
804-E
40
6

- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Surface Water Location
- Tetrachloroethene Contour
- Trichloroethene Contour
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. MCL = Maximum Contaminant Level
3. J = Value is estimated.
4. U = Result is below method detection limit.

N

0 100 200 Feet

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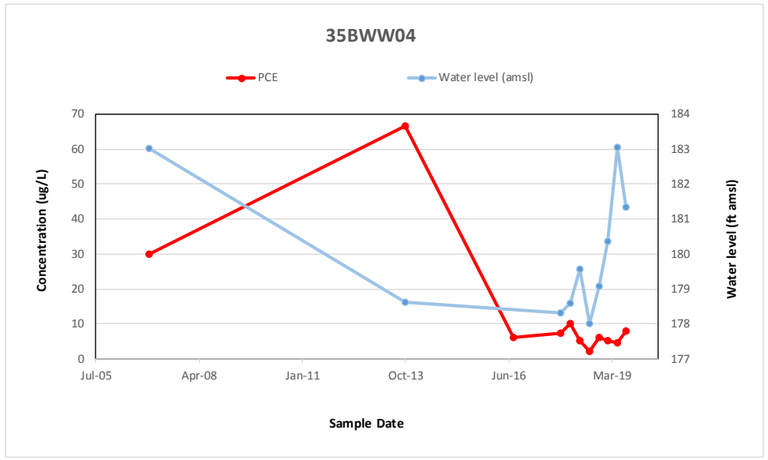
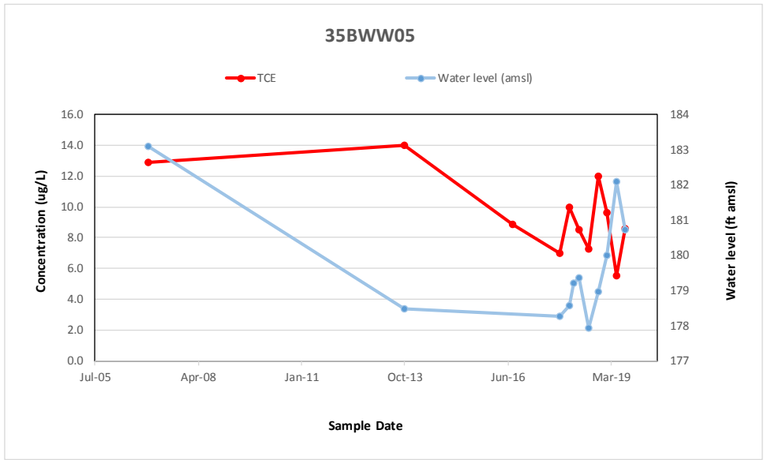
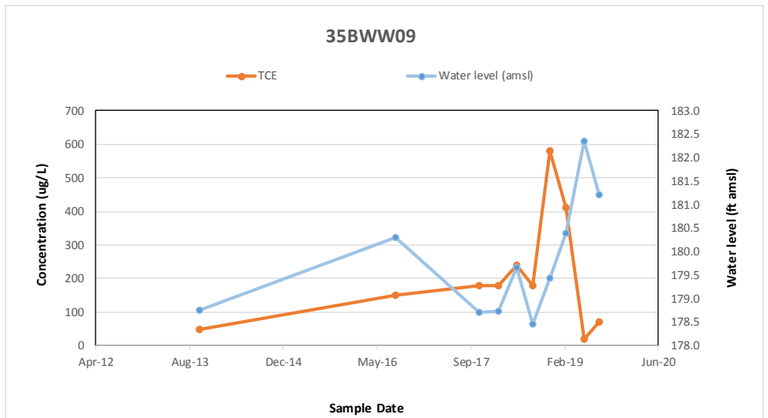
Figure 2-10
Groundwater Results
August 2019 Y2Q4
Second Annual RA-O Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

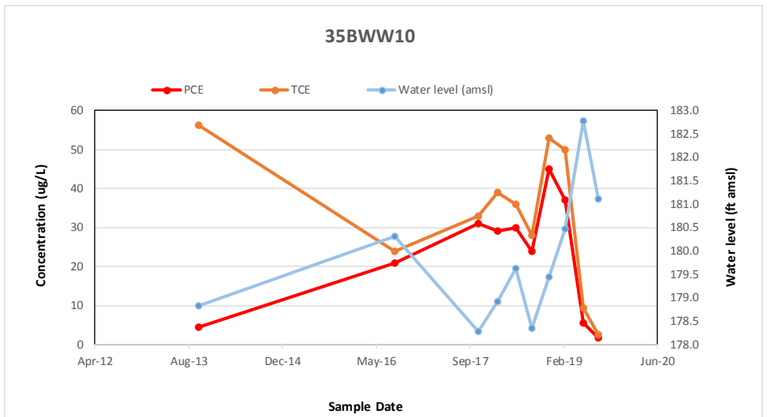
Date: 1/9/2020

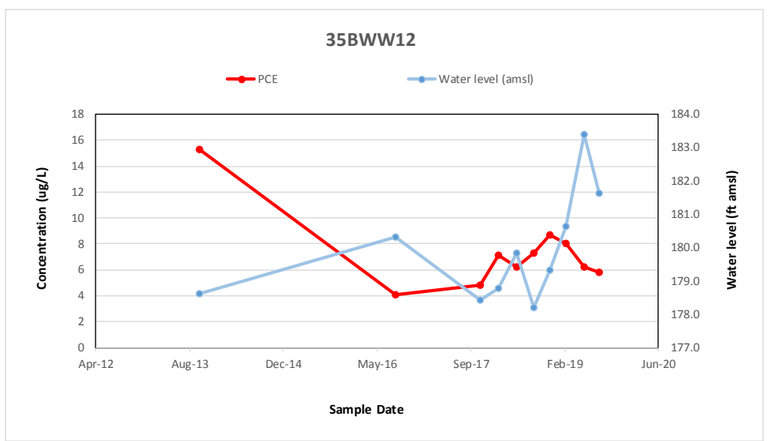
Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_GW_Results_Aug2019.mxd

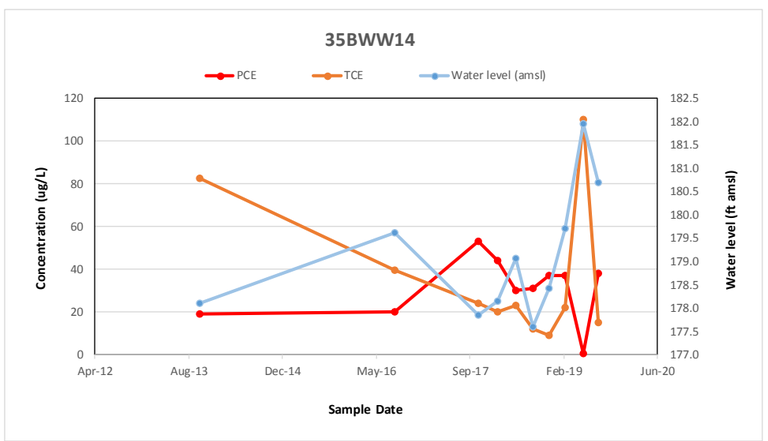












Cleanup Levels:
Tetrachloroethene = 5 µg/L
Trichloroethene = 5 µg/L

Notes:
1. RA-O = Remedial Action Operations
2. PCE = Tetrachloroethene
3. TCE = Trichloroethene

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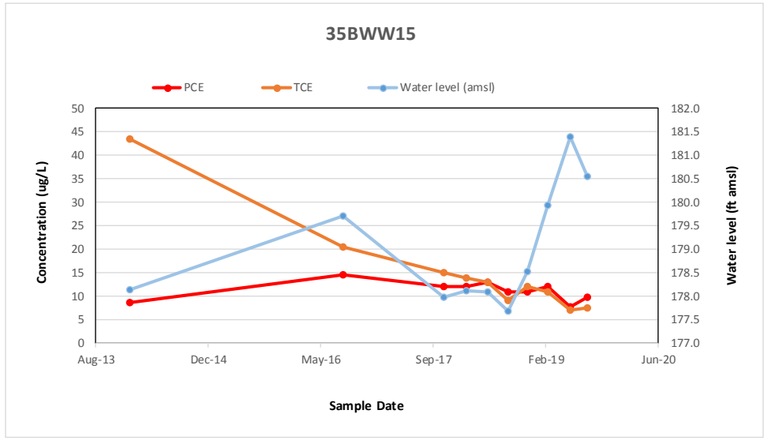
Figure 2-11a

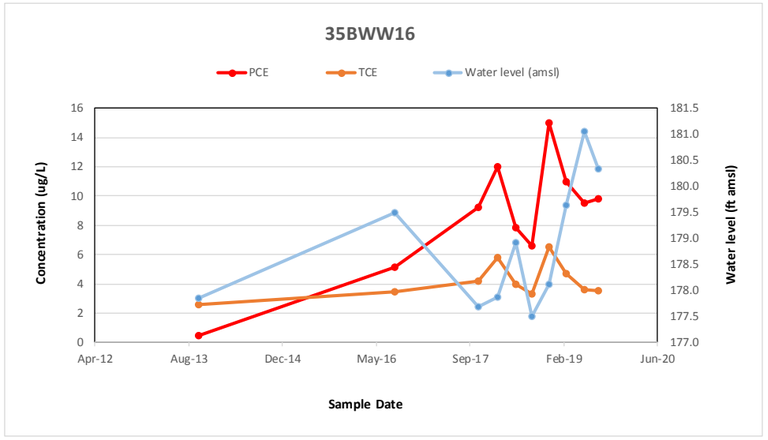
COC Concentrations
Second Annual RA-O Report
LHAAP-35B(37)

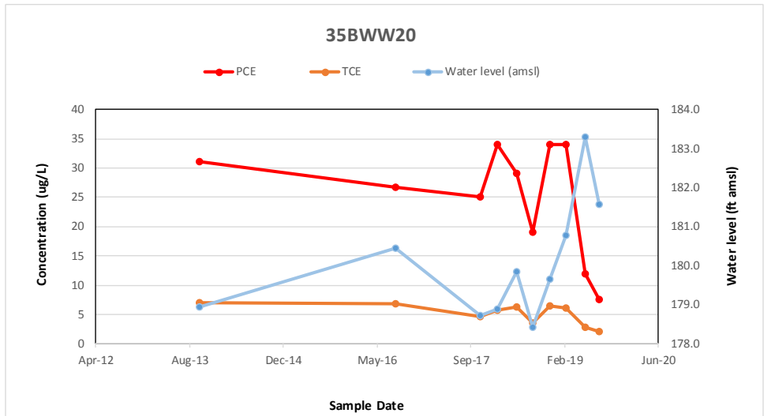
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

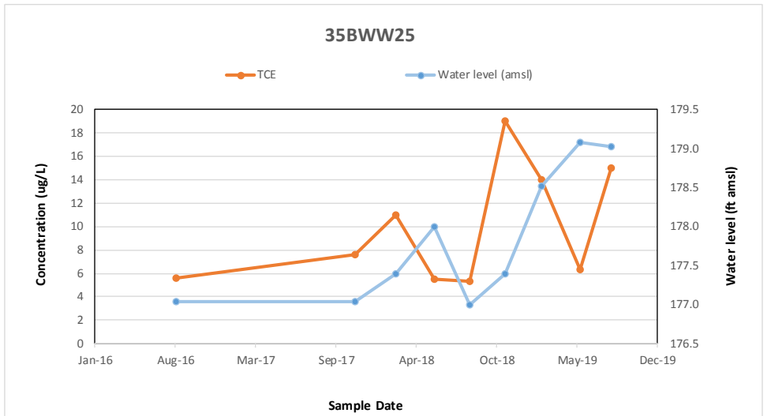
Date: 3/11/2020

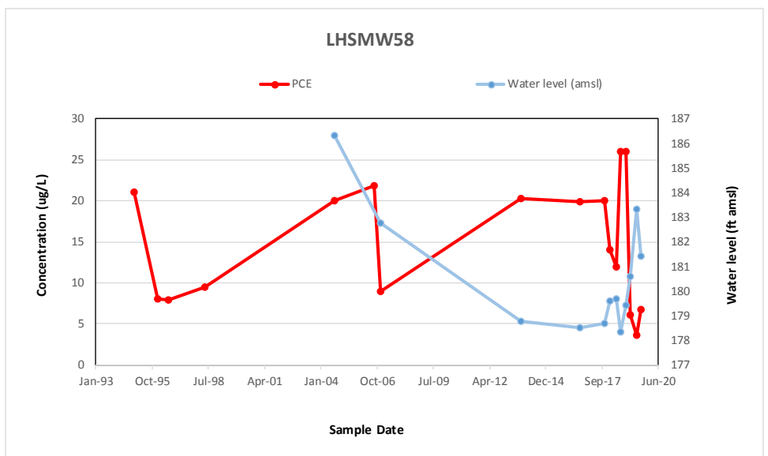
Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_COC_Concentrations.mxd











Cleanup Levels:
Tetrachloroethene = 5 µg/L
Trichloroethene = 5 µg/L

Notes:
1. RA-O = Remedial Action Operations
2. PCE = Tetrachloroethene
3. TCE = Trichloroethene
4. Groundwater elevations at LHSMW58 were not available for all sampling events prior to 2013.

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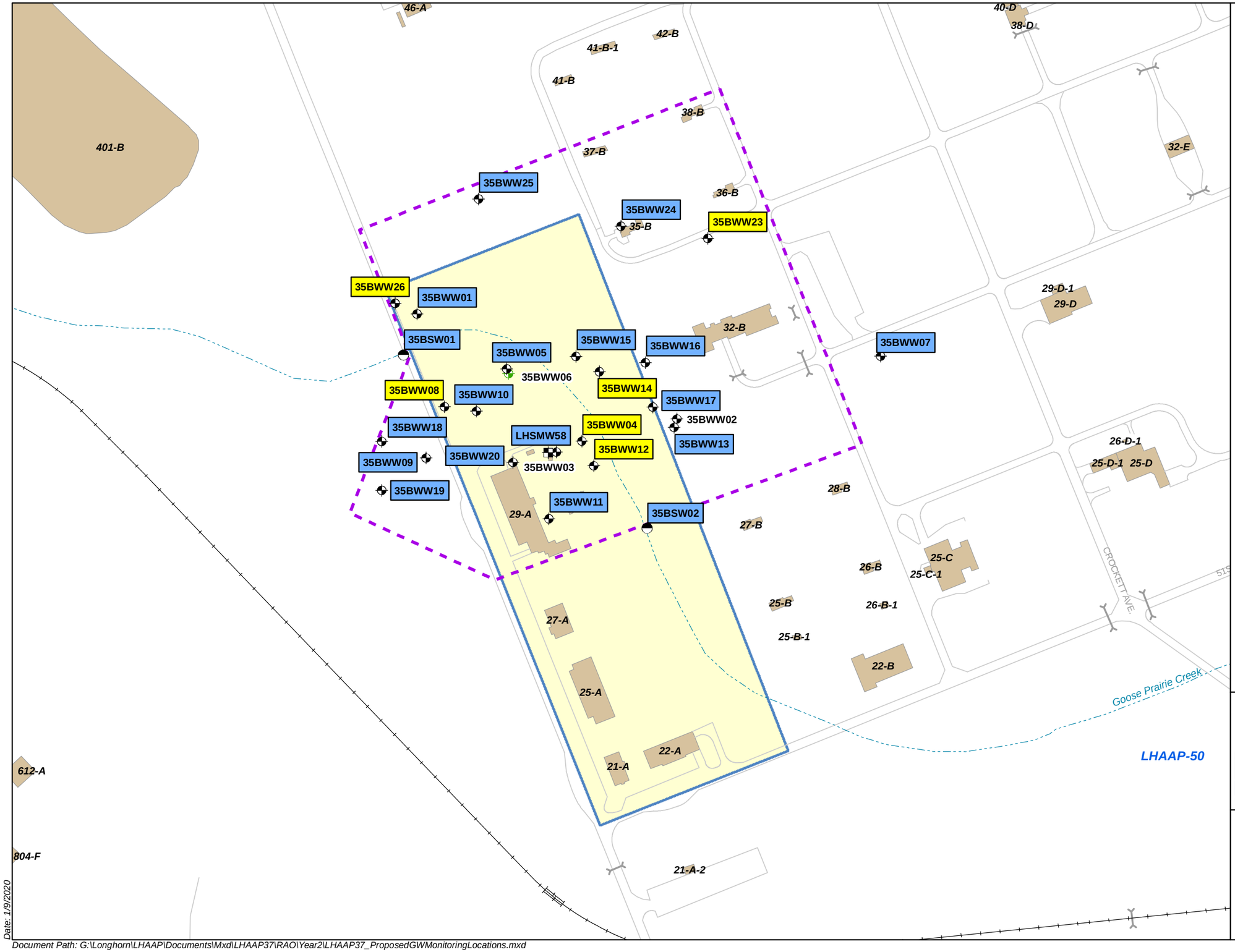
Figure 2-11b

COC Concentrations
Second Annual RA-O Report
LHAAP-35B(37)

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/11/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_COC_Concentrations_2.mxd



- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Intermediate Monitoring Well
- Surface Water Location
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA-O = Remedial Action Operations

35BWW15 Proposed Sampling Location

35BWW14 Proposed Sampling Location including MNA Parameters

2. Monitoring wells 35BWW03 and 35BWW06 will continue to be sampled once every five years to support the Five Year Reviews. The next sampling event for these wells will be in 2021.

N

0 100 200 Feet

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Figure 2-12

Year 3 Sampling Locations
Second Annual RA-O Report
LHAAP-35B(37)

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/9/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year2\LHAAP37_ProposedGWMonitoringLocations.mxd

Appendix A

Annual Land Use Control Compliance Certification and Documentation

Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Action Work Plan dated June 2013 for LHAAP-35B (37) a certification of site was conducted by Aptim [indicate transferee] on 2/15/19.

A summary of land use control mechanism is as follows:

Groundwater restriction – restriction of the use of groundwater to environmental monitoring and testing until cleanup levels are met. A restriction against residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

[Indicate whether groundwater restrictions are still required at LHAAP-35B (37)]

A summary of compliance with land use and restriction covenants is as follows:

No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-35B (37).

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief. I also certify that the non-residential use assumption that forms the basis of the remedy remains the same.

Date: 2/15/19

Name/Title: Scott Beesinger / Senior Fieldtech

Signature: Scott Beesinger

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

Appendix B

Photographic Log

PHOTO LOG

Photo No.	Date	Task and Description
1	August 5, 2019	Well Inspection, 35BWW01
2	August 5, 2019	Well Inspection, 35BWW04
3	August 6, 2019	Well Inspection, 35BWW05
4	August 5, 2019	Well Inspection, 35BWW07
5	August 5, 2019	Well Inspection, 35BWW08
6	August 5, 2019	Well Inspection, 35BWW09
7	August 6, 2019	Well Inspection, 35BWW10
8	August 7, 2019	Well Inspection, 35BWW11
9	August 5, 2019	Well Inspection, 35BWW12
10	August 6, 2019	Well Inspection, 35BWW13
11	August 6, 2019	Well Inspection, 35BWW14
12	August 7, 2019	Well Inspection, 35BWW15
13	August 7, 2019	Well Inspection, 35BWW16
14	August 7, 2019	Well Inspection, 35BWW17
15	August 5, 2019	Well Inspection, 35BWW18
16	August 5, 2019	Well Inspection, 35BWW19
17	August 6, 2019	Well Inspection, 35BWW20
18	August 6, 2019	Well Inspection, 35BWW23
19	August 7, 2019	Well Inspection, 35BWW24
20	August 7, 2019	Well Inspection, 35BWW25
21	August 6, 2019	Well Inspection, 35BWW26
22	August 7, 2019	Well Inspection, LHSMW58

PHOTO 1: 35BWW01
DATE: August 5, 2019

PHOTO 2: 35BWW04
DATE: August 5, 2019

PHOTO 3: 35BWW05
DATE: August 6, 2019

PHOTO 4: 35BWW07
DATE: August 5, 2019

PHOTO 5: 35BWW08
DATE: August 5, 2019

PHOTO 6: 35BWW09
DATE: August 5, 2019

PHOTO 7: 35BWW10
DATE: August 6, 2019

PHOTO 8: 35BWW11
DATE: August 7, 2019

PHOTO 9: 35BWW12
DATE: August 5, 2019

PHOTO 10: 35BWW13
DATE: August 6, 2019

PHOTO 11: 35BWW14
DATE: August 6, 2019

PHOTO 12: 35BWW15
DATE: August 7, 2019

PHOTO 13: 35BWW16
DATE: August 7, 2019

PHOTO 14: 35BWW17
DATE: August 7, 2019

PHOTO 15: 35BWW18
DATE: August 5, 2019

PHOTO 16: 35BWW19
DATE: August 5, 2019

PHOTO 17: 35BWW20
DATE: August 6, 2019

PHOTO 18: 35BWW23
DATE: August 6, 2019

PHOTO 19: 35BWW24
DATE: August 7, 2019

PHOTO 20: 35BWW25
DATE: August 7, 2019

PHOTO 21: 35BWW26
DATE: August 6, 2019

PHOTO 22: LHSMW58
DATE: August 7, 2019

Appendix C

Groundwater Sampling Forms

Note: The sample collection logs (SCLs) For the November 2018 sampling event have been revised to correct pump inlet depth values that were populated on pre-printed forms using a database that was later determined to contain erroneous information. The actual pump inlet depth used in the field during the November 2018 sampling event was recorded in the "Sample Interval" field at the top right of the first page of each two-page SCL. For the February, May, and August 2019 sampling events, the pump inlet depth used in the field was recorded on the form in place of the incorrect printed value, and the "Sample Interval" shown on those forms represents the range of depth to water values recorded during the purging of the well. The "Sample Interval" recorded on the February, May, and August 2019 forms has been crossed out to prevent any confusion.

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): MSM

FIELD CONDITIONS clear skies / 47°F

SAMPLING INFORMATION

Sample No: 35BWW01-181115

DATE/TIME: 11-15-18 / 1633

Sample Interval: 17.50

Sampling Method: LF/PP

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample: Slightly Cloudy

Assoc. QC Samples: N/A

Decontamination Procedures: N/A

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs In Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 14.15 14-15

Depth to Well Bottom (ft) 19 20-84

Screen Interval (ft): 11.71 - 21.11

Approximate depth of pump inlet*(ft): ~~14~~ 17.5

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/PP

Purge Start Date/Time: 11-15-18 / 1549

Purge End Date/Time: 11-15-18 / 1636

Discharge Tube Length: 16

PID Reading: 0.0

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Pump Start Time: 1549

APTIM

Sample Collection Log

Location ID: 35BWW01 Sample No: 35BWW01-1811_15

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-15-18 ~~1553~~	1553	100	1.0	14.40	0.109	18.88	5.17	195.2	209.8	2.56
~~1558~~	1558	100	1.5	14.65	0.105	18.92	5.10	154.7	236.4	2.17
~~1603~~	1603	100	2.0	14.74	0.096	18.82	5.03	142.6	238.4	2.48
	1608	100	2.5	14.80	0.091	18.81	4.97	131.3	232.1	2.42
	1613	100	3.0	14.90	0.096	18.35	4.94	130.0	234.6	2.56
	1618	100	3.5	14.98	0.089	18.29	4.92	124.6	235.1	2.47
	1623	100	4.0	15.05	0.089	18.14	4.87	121.3	239.0	2.85
	1628	100	4.5	15.08	0.089	18.10	4.82	120.1	240.1	2.87
↓	1633	100	5.0	15.10	0.089	18.12	4.84	121.9	240.2	2.87
11-15-18	See	RO								

Logged by: _____ Date: 11-15-18

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP** Location ID: **35BSW01**

Project No: **501032** Sampler(s): [illegible]

FIELD CONDITIONS PC 62°F

SAMPLING INFORMATION

Sample No: 35BSW01-1811[illegible] **DATE/TIME:** 11-16-18 / 1510 **Sample Interval:** ___ - ___

Sampling Method: DB **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Slightly Cloudy	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 14.67

Depth to Water - Initial (DTWi) (ft) 14.67

Depth to Well Bottom (ft)

Screen Interval (ft): _____

Purging Method/Equipment: _____

Purge Start Date/Time: _____

Purge End Date/Time: _____

Discharge Tube Length: _____ PID Reading: _____

Discharge Tube Diameter: _____ Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): Screen Interval Not Defined Pump Start Time: _____

35BSW01 DTW @ 14.67 @ Time of Sample 1510

APTIM

Sample Collection Log

Location ID: 35BSW01 Sample No: 35BSW01-181116

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-16-18	1510	/	/	/	0.055	9.63	5.95	30.6	190.4	11.50

Logged by: _____ Date: 11-16-18

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BSW02**

Project No: **501032** Sampler(s): AM

FIELD CONDITIONS PC / 62°F

SAMPLING INFORMATION

Sample No: 35BSW02-1811 IC **DATE/TIME:** 11-16-18 / 1442 **Sample Interval:** ___ - ___

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Slightly Cloudy / No odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point: Top of Casing

Casing ID (in.): 21.80

Depth to Water - Initial (DTWi) (ft) 21.80

Depth to Well Bottom (ft)

Screen Interval (ft): _____

Purging Method/Equipment: _____

Purge Start Date/Time: _____

Purge End Date/Time: _____

Discharge Tube Length: _____ PID Reading: _____

Discharge Tube Diameter: _____ Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): Screen Interval Not Defined Pump Start Time: _____

DTW @ 35BSW02

21.80' at time of sample

APTIM

Sample Collection Log

Location ID: 35BSW02 Sample No: 35BSW02-181116

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/6/18	1442	/	/	/	0.083	9.75	5.16	29.5	211.3	11.14

Logged by: _____ Date: 11/6/18

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW02**

Project No: **501032** Sampler(s): MM

FIELD CONDITIONS PC/ 59°F

SAMPLING INFORMATION

Sample No: 35BWW02-1811 **DATE/TIME:** / **Sample Interval:** ___ - ___

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples?	Decontamination Procedures
No Sample well	DUP (11-14-18)	

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) DRY

Depth to Well Bottom (ft) 47 16.88

Screen Interval (ft): _____

Approximate depth of pump inlet*(ft): 11.5

Purging Method/Equipment: _____

Purge Start Date/Time: _____

Purge End Date/Time: _____

Discharge Tube Length: _____ PID Reading: _____

Discharge Tube Diameter: _____ Immersible Layer: Y / N

Pump Start Time: _____

APTIM

Sample Collection Log

Location ID: 35BWW02										Sample No: 35BWW02-1811___
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

Logged by: _____ Date: 11-16-18

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP** Location ID: **35BWW13**

Project No: **501032** Sampler(s): NM

FIELD CONDITIONS

PC 59°F

SAMPLING INFORMATION

Sample No: 35BWW13-1811 **DATE/TIME:** 11-16-18 / 1352 **Sample Interval:** 31.01

Sampling Method: LF/HP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
clear / NO odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 25.08 ~~25.08~~

Depth to Well Bottom (ft) 35 37.65

Screen Interval (ft): 22.25 - 34.95

Purging Method/Equipment: LF/HP

Purge Start Date/Time: 11/16/18 / 1323

Purge End Date/Time: 11/16/18 1355

Discharge Tube Length: 36 PID Reading: 0.6

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~27.15~~ 31.01

Pump Start Time: 1323

Edited by Robert Mayer 12Feb2020

APTIM

Sample Collection Log

Location ID: 35BWW13 Sample No: 35BWW13-1811_110

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-16-18	1327	200	1.0	25.18	0.137	18.79	5.26	0.0	209.8	4.15
	1332	200	2.0	25.18	0.137	18.79	5.13	0.0	228.4	4.04
	1337	200	3.0	25.18	0.138	18.74	5.13	0.0	230.4	4.03
	1342	200	4.0	25.18	0.146	18.74	5.12	0.0	233.4	4.02
	1347	200	5.0	25.18	0.138	18.72	5.12	0.0	234.1	4.06
	1352	200	6.0	25.18	0.136	18.72	5.12	0.0	235.5	4.08
11-16-18	Sample									

Logged by: _____ Date: 11-16-18

QC'd by: _____ Date: _____

00955201

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW15**

Project No: **501032** Sampler(s): AM

FIELD CONDITIONS P/C 59°

SAMPLING INFORMATION

Sample No: 35BWW15-1811/16-FD **DATE/TIME:** 11-16-18 / 1155 **Sample Interval:** 36.23

Sampling Method: LF/PP **Sample Purpose:** FD **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear/ No odor	FD	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing 23.23

Casing ID (in.): 2 23.23

Depth to Water - Initial (DTWi) (ft) ~~23.65~~

Depth to Well Bottom (ft) 48 50.08

Screen Interval (ft): 19.54 - 48.24

Purging Method/Equipment: LF/PP

Purge Start Date/Time: 11-16-18 / 1110

Purge End Date/Time: 11-16-18 / 1159

Discharge Tube Length: 4' PID Reading: 0.6

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~32.65~~ 36.23

Edited by Robert Mayer 12Feb2020

Pump Start Time: 1110

APTIM

Sample Collection Log

Location ID: 35BWW15 Sample No: 35BWW15-181116-FD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-16-18	1115	150	1.0	23.65	0.383	19.35	6.83	0.0	124.9	1.35
	1120	150	1.75	23.65	0.388	19.46	6.87	0.0	109.1	1.27
	1125	150	2.50	23.65	0.398	19.49	6.90	0.0	110.7	1.35
	1130	150	3.25	23.65	0.412	19.47	6.91	0.0	106.7	1.02
	1135	150	4.00	23.65	0.441	19.43	6.91	0.6	102.5	0.88
	1140	150	4.75	23.65	0.459	19.28	6.93	0.0	102.1	0.83
	1145	150	5.50	23.65	0.511	19.21	6.96	0.0	88.1	0.72
	1150	150	6.25	23.65	0.515	19.19	6.97	0.0	85.6	0.70
	1155	150	7.00	23.65	0.521	19.16	6.98	0.0	84.3	0.69
11-16-18	Secchi									

Logged by: _____ Date: 11-16-18

QC'd by: _____ Date: _____

+ FO

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW16**

Project No: **501032** Sampler(s): MSM

FIELD CONDITIONS PC / 33°F

SAMPLING INFORMATION

Sample No: 35BWW16-1811UE **DATE/TIME:** 11-16-18 / 1045 **Sample Interval:** 29 - 33

Sampling Method: LF/PP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear / NO ODOR	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.09

Depth to Well Bottom (ft) 33.5 30.87

Screen Interval (ft): 21.66 - 36.36

Approximate depth of pump inlet*(ft): ~~26.15~~ 29.00

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/PP

Purge Start Date/Time: 11-16-18 / 1015

Purge End Date/Time: 11-16-18 / 1045

Discharge Tube Length: 41 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1015

APTIM

Sample Collection Log

Location ID: 35BWW16 Sample No: 35BWW16-1811 /Le

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-16-18	1020	130	1.0	23.30	0.308	17.44	6.15	9.3	161.3	1.30
	1025	130	1.65	23.30	0.301	17.44	6.10	0.0	155.3	1.07
	1030	130	2.30	23.30	0.299	17.44	6.09	0.0	150.6	1.01
	1035	130	2.95	23.30	0.298	17.43	6.11	0.0	149.2	0.99
	1040	130	3.60	23.30	0.296	17.47	6.10	0.0	151.1	0.98
	1045	130	4.25	23.30	0.298	17.48	6.13	0.0	152.3	0.97
11-16-18	Sampled									

Logged by: _____ Date: 11-16-18

QC'd by: _____ Date: _____

00955205

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW17**

Project No: **501032** Sampler(s): MH

FIELD CONDITIONS PC / 59°F

SAMPLING INFORMATION

Sample No: 35BWW17-1811 16 **DATE/TIME:** 11-14-18 / 1300 **Sample Interval:** 29.08

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear / No odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2 22.33

Depth to Water - Initial (DTWi) (ft) 22.33

Depth to Well Bottom (ft) 33.5 36.28

Screen Interval (ft): 21.14 - 35.84

Approximate depth of pump inlet*(ft): ~~25.65~~ 29.08

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/PP

Purge Start Date/Time: 11-14-18 / 1230

Purge End Date/Time: 11-14-18 / 1304

Discharge Tube Length: 35 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1230

APTIM

Sample Collection Log

Location ID: 35BWW17 Sample No: 35BWW17-1811_16

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-16-18	1235	200	1	22.63	0.194	18.82	6.22	0.0	175.4	1.38
	1240	200	2	22.63	0.190	19.08	5.23	0.0	206.8	0.60
	1245	200	3	22.63	0.193	19.05	5.20	0.0	209.3	0.54
	1250	200	4	22.63	0.190	19.03	5.18	0.0	212.7	0.42
	1255	200	5	22.63	0.187	19.08	5.18	0.0	213.7	0.44
↓	1300	200	6	22.63	0.183	19.08	5.19	0.0	214.0	0.44
11-16-18	Sample									

Logged by: _____ Date: 11-16-18

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW24**

Project No: **501032** Sampler(s): MSM

FIELD CONDITIONS P/C 33°F

SAMPLING INFORMATION

Sample No: 35BWW24-1811(G) **DATE/TIME:** 11-16-18 / 0930 **Sample Interval:** 31.00

Sampling Method: LF/PP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear / NO ODOR	MS/MSD	N/A

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 29.41

Depth to Well Bottom (ft) ~~30.2~~ 32.70

Screen Interval (ft): 22.92 - 32.42

Approximate depth of pump inlet*(ft): ~~24.75~~ 31.00

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/PP

Purge Start Date/Time: 11-16-18 / 0855

Purge End Date/Time: 11-16-18 / 0934

Discharge Tube Length: 36 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 0855

APTIM

Sample Collection Log

Location ID: 35BWW24 Sample No: 35BWW24-1811 16

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-14-18	0900	100	1.0	29.78	1.454	15.33	6.06	21.9	100.7	2.21
	0905	100	1.5	29.84	1.462	15.10	6.05	20.3	94.1	2.01
	0910	100	2.0	29.87	1.483	14.95	6.04	19.2	82.0	1.90
	0915	100	2.5	30.00	1.484	14.79	6.05	10.0	78.5	1.51
	0920	100	3.0	30.10	1.483	14.97	6.07	4.3	80.9	1.69
	0925	100	3.5	30.15	1.483	14.99	6.09	0.0	87.1	1.69
	0930	100	4.0	30.18	1.483	15.00	6.09	0.0	88.9	1.69
11-14-18	Sample									

Logged by: _____ Date: 11-14-18

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP** Location ID: **35BWW25**

Project No: **501032** Sampler(s): MSM

FIELD CONDITIONS

PC / 33°F

SAMPLING INFORMATION

Sample No: 35BWW25-1811 16 **DATE/TIME:** 11-16-18 / 0825 **Sample Interval:** 30 - 92

Sampling Method: LF/PP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear / no odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4 24.92

Depth to Water - Initial (DTWi) (ft) 24.92

Depth to Well Bottom (ft) 30.2 32.45

Screen Interval (ft): 23.91-32.41

Approximate depth of pump inlet*(ft): ~~24.75~~ 30.92

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/PP

Purge Start Date/Time: 11-16-18 / 0755

Purge End Date/Time: 11-16-18 / 0850

Discharge Tube Length: 35 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 0755

00955210

APTIM

Sample Collection Log

Location ID: 35BWW25 Sample No: 35BWW25-1811_16

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-16-18	0800	110	1.0	27.28	0.806	16.19	5.99	7.6	179.5	1.23
	0805	110	1.55	27.41	0.808	15.78	6.11	0.0	172.2	1.16
	0810	110	2.10	27.50	0.810	15.73	6.18	0.0	170.1	0.97
	0815	110	2.45	27.53	0.812	15.72	6.21	0.0	169.1	0.96
	0820	110	3.20	27.58	0.815	15.69	6.22	0.0	168.8	0.94
	0825	110	3.75	27.60	0.816	15.71	6.23	0.0	168.5	0.97
11-16-18	Sample									

Logged by: _____ Date: 11-16-18

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW05**

Project No: **501032** Sampler(s): AMM

FIELD CONDITIONS Cloudy 60°F

SAMPLING INFORMATION

Sample No: 35BWW05-181118 **DATE/TIME:** 11-18-18 / 1247 **Sample Interval:** 31 - 36'

Sampling Method: LF / PP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear / no odor	N/A	N/A

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2 23.59

Depth to Water - Initial (DTWi) (ft) 23.59

Depth to Well Bottom (ft) 36 37.92

Screen Interval (ft): ~~28.6 - 38.6~~ 26 - 36

Approximate depth of pump inlet*(ft): 31

Purging Method/Equipment: LF / PP

Purge Start Date/Time: 11-18-18 / 1212

Purge End Date/Time: 11-18-18 / 1250

Discharge Tube Length: 3 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1212

APTIM

Sample Collection Log

Location ID: 35BWW05 Sample No: 35BWW05-1811 18

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		+0.1 units	No criteria		± 10% or 0.2 mg/L
11-8-18	1217	150	1.0	23.73	0.260	18.92	6.35	0.0	67.7	2.84
	1222	150	1.75	23.73	0.244	18.85	6.43	0.0	72.7	1.69
	1227	150	2.50	23.73	0.204	18.87	6.47	0.0	74.1	1.54
	1232	150	3.25	23.73	0.244	18.89	6.50	0.0	78.4	1.50
	1237	150	4.0	23.73	0.263	18.90	6.53	0.0	74.1	1.55
	1242	150	4.75	23.73	0.269	18.88	6.57	0.0	75.1	1.51
↓	1247	150	5.50	23.73	0.270	18.87	6.55	0.0	75.1	1.51
11-8-18	See COC									

Logged by: _____ Date: 11-8-18

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW06**

Project No: **501032** Sampler(s): MSM

FIELD CONDITIONS Cloudy 59°F

SAMPLING INFORMATION

Sample No: 35BWW06-1811 18 **DATE/TIME:** 11-18-18 / 1203 **Sample Interval:** 47 : 00

Sampling Method: LF/PP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear / no odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4 24-34

Depth to Water - Initial (DTWi) (ft) 24.34

Depth to Well Bottom (ft) 52 53.48

Screen Interval (ft): 42-52

Approximate depth of pump inlet*(ft): 47

Purging Method/Equipment: LF/PP

Purge Start Date/Time: 11-18-18 / 1133

Purge End Date/Time: 11-18-18 / 1206

Discharge Tube Length: 53 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1133

APTIM

Sample Collection Log

Location ID: 35BWW06 Sample No: 35BWW06-1811 18

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-18-18	1138	100	1.0	24.90	0.905	18.56	5.81	0.0	-23.1	2.29
	1143	100	1.5	25.05	0923	18.52	5.79	0.0	-19.5	1.22
	1148	100	2.0	25.40	0.926	18.54	5.81	0.0	-19.9	1.19
	1153	100	2.5	25.48	0.927	18.54	5.82	0.0	-20.0	1.17
	1158	100	3.0	25.50	0.928	18.56	5.82	0.0	-20.1	1.15
	1203	100	3.5	25.51	0.928	18.58	5.82	0.0	-20.0	1.15
11-18-18	See 18									

Logged by: _____ Date: 11-18-18

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW07**

Project No: **501032** Sampler(s): MM

FIELD CONDITIONS

Cloudy 60's F

SAMPLING INFORMATION

Sample No: 35BWW07-1811 18 **DATE/TIME:** 11-18-18 / 1553 **Sample Interval:** 30.20

Sampling Method: LF/PP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear / no odor	N/A	N/A

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCl <pH2

WELL AND PURGING INFORMATION

Measuring Point: Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) ~~27.45~~

Depth to Well Bottom (ft) 28.5 ~~31.38~~

Screen Interval (ft): ~~20.47 - 30.47~~

Approximate depth of pump inlet*(ft): ~~23~~ 30.20

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/PP

Purge Start Date/Time: 11-18-18 / 1523

Purge End Date/Time: 11-18-18 / 1556

Discharge Tube Length: 32

Discharge Tube Diameter: 1/4"

PID Reading: 0.0

Immersible Layer: Y / N

Pump Start Time: 1523

APTIM

Sample Collection Log

Location ID: 35BWW07 Sample No: 35BWW07-1811 IF

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-18-18	1528	100	1.0	28.10	0.926	14.76	6.95	0.0	115.6	2.11
	1533	100	1.5	28.51	0.937	14.81	7.00	0.0	104.7	1.73
	1538	100	2.0	28.73	0.939	14.81	7.01	0.0	93.4	1.21
	1543	100	2.5	29.05	0.940	14.81	7.01	0.0	82.9	1.11
	1548	100	3.0	29.25	0.939	14.83	7.00	0.0	77.8	1.18
	1553	100	3.5	29.28	0.938	14.82	7.01	0.0	77.4	1.18
11-18-18	Sampled									

Logged by: _____ Date: 11-18-18

QC'd by: _____ Date: _____

00955217

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW10**

Project No: **501032** Sampler(s): [illegible]

FIELD CONDITIONS Cloudy 61°F

SAMPLING INFORMATION

Sample No: 35BWW10-1811 18 **DATE/TIME:** 11/8/18 / 1345 **Sample Interval:** 30 x 17

Sampling Method: LF/AP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear/No odor	NA	N/A

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.34

Depth to Well Bottom (ft) 33.5 36.42

Screen Interval (ft): 21.23 - 36.42

Purging Method/Equipment: LF/AP

Purge Start Date/Time: 11/8/18 / 1305

Purge End Date/Time: 11/8/18 / 1348

Discharge Tube Length: 36 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~25.615~~ 30.17 Pump Start Time: 1305

Edited by
Robert Mayer
12Feb2020

APTIM

Sample Collection Log

Location ID: 35BWW10 Sample No: 35BWW10-1811 1d

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/l
11-14-18	1310	140	1.0	24.34	0358	19.74	7.06	0.0	86.2	1.18
	1315	140	1.7	24.34	0.361	19.68	7.28	0.0	78.4	1.01
	1320	140	2.4	24.34	0362	19.52	7.24	0.0	72.6	0.79
	1325	140	3.1	24.34	0.363	19.48	7.26	0.0	67.4	0.64
	1330	140	3.8	24.34	0.362	19.58	7.26	0.0	65.4	0.62
	1335	146	4.5	24.34	0.364	19.38	7.27	0.0	63.2	0.56
	1340	140	5.2	24.34	0.365	19.36	7.26	0.0	62.9	0.57
	1345	140	5.9	24.34	0365	19.33	7.24	0.0	62.1	0.58
11-15-18	Sample									

Logged by: _____ Date: 11-15-18

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW11**

Project No: **501032** Sampler(s): MJW

FIELD CONDITIONS Cloudy 60's F

SAMPLING INFORMATION

Sample No: 35BWW11-1811 18 **DATE/TIME:** 11-8-18 / 1440 **Sample Interval:** 30 - [illegible]

Sampling Method: LF/AP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear/ no odor	N/A	N/A

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCl <pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4 22.77

Depth to Water - Initial (DTWi) (ft) 22.77

Depth to Well Bottom (ft) 35 37.63

Screen Interval (ft): 27.41 - 36.91

Approximate depth of pump inlet*(ft): 30

Purging Method/Equipment: LF/AP

Purge Start Date/Time: 11-8-18 / 1410

Purge End Date/Time: 11-8-18 / 1443

Discharge Tube Length: 37 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1410

APTIM

Sample Collection Log

Location ID: 35BWW11 Sample No: 35BWW11-1811 18

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-18-18	1415	100	1.0	23.38	0.468	19.03	6.82	0.0	124.3	2.55
	1420	100	1.5	23.38	0.459	18.91	6.53	0.0	119.4	1.01
	1425	100	2.0	23.38	0.454	18.89	6.45	0.0	114.2	0.89
	1430	100	2.5	23.38	0.449	18.70	6.44	0.0	109.7	0.69
	1435	100	3.0	23.38	0.446	18.68	6.44	0.0	107.1	0.68
	1440	100	3.5	23.38	0.446	18.71	6.44	0.0	103.5	0.68
11-18-18	Sample									

Logged by: _____ Date: 11-18-18

QC'd by: _____ Date: _____

00955221

APTIM

Sample Collection Log

Project Name: **Longhorn AAP** Location ID: **35BWW20**

Project No: **501032** Sampler(s): MM

FIELD CONDITIONS Cloudy 57°F

SAMPLING INFORMATION

Sample No: 35BWW20-181118 **DATE/TIME:** 11-18-18 / 1625 **Sample Interval:** 29.02 ✓

Sampling Method: LF/AP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear/no odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2 25.58

Depth to Water - Initial (DTWi) (ft) 25.58

Depth to Well Bottom (ft) 30.4 ~~32.91~~

Screen Interval (ft): 17.7 - 32.4

Approximate depth of pump inlet*(ft): ~~22.52~~ 29.02

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/AP

Purge Start Date/Time: 11-18-18 / 0950

Purge End Date/Time: 11-18-18 / 1029

Discharge Tube Length: 34 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 0950

APTIM

Sample Collection Log

Location ID: 35BWW20 Sample No: 35BWW20-1811_18

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-18-18	0955	120	1	25.93	0.413	20.23	7.21	57.4	120.2	1.61
	1000	120	1.6	25.93	0.407	20.31	6.92	17.2	126.2	2.08
	1005	120	2.2	25.93	0.392	20.44	6.87	4.4	129.7	3.07
	1010	120	2.8	25.93	0.385	20.67	6.86	0.0	131.0	3.49
	1015	120	3.4	25.93	0.380	20.69	6.84	0.0	131.9	3.50
	1020	120	4.0	25.93	0.378	20.70	6.85	0.0	130.9	3.51
	1025	120	4.6	25.93	0.376	20.71	6.85	0.0	130.1	3.52
11-18-18	Sampled									

Logged by: _____ Date: 11-18-18

QC'd by: _____ Date: _____

00955223

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **LHSMW58**

Project No: **501032** Sampler(s): MSM

FIELD CONDITIONS Cloudy 57°F

SAMPLING INFORMATION

Sample No: LHSMW58-181118 **DATE/TIME:** 11-18-18 / 1110 **Sample Interval:** 30-35

Sampling Method: LF/AP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear/ NO odor	FD	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 24.13

Depth to Well Bottom (ft) 34 35.12

Screen Interval (ft): 25.15 - 35.15

Approximate depth of pump inlet*(ft): ~~26.4~~ 30.15

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/AP

Purge Start Date/Time: 11-18-18 / 1045

Purge End Date/Time: 11-18-18 / 1110

Discharge Tube Length: 35' PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1045

APTIM

Sample Collection Log

Location ID: LHSMW58 Sample No: LHSMW58-1811_18

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-18-18	1050	200	1.0	24.24	0.233	19.71	6.88	0.0	142.1	5.24
	1055	200	2.0	24.24	0.233	19.63	6.70	0.0	142.9	5.10
	1100	200	3.0	24.24	0.233	19.57	6.65	0.0	143.6	5.04
	1105	200	4.0	24.24	0.233	19.54	6.63	0.0	143.8	5.02
	1110	200	5.0	24.24	0.233	19.56	6.63	0.0	143.9	5.01
11-18-18	Sample + FD									

Logged by: _____ Date: 11-18-18

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW09**

Project No: **501032** Sampler(s): MGM

FIELD CONDITIONS P/C 55°F

SAMPLING INFORMATION

Sample No: 35BWW09-181119 **DATE/TIME:** 11-19-18 / 1315 **Sample Interval:** 30.00

Sampling Method: LF/AP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear/no odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 25.73' 25.73'

Depth to Well Bottom (ft) 35 37.10

Screen Interval (ft): 27.01 - 36.51

Approximate depth of pump inlet*(ft): 30

Purging Method/Equipment: LF/AP

Purge Start Date/Time: 11-19-18 / 1235

Purge End Date/Time: 11-19-18 / 1318

Discharge Tube Length: 37 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1235

00955226

APTIM

Sample Collection Log

Location ID: 35BWW09 Sample No: 35BWW09-1811[19]

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/9/18	1240	200	1	25-80	0.750	16.79	6.78	0.0	158.0	1.71
	1245	200	2	25-80	0.757	16.47	6.88	0.0	133.5	1.57
	1250	200	3	25-80	0.757	16.70	6.96	0.0	128.6	1.60
	1255	200	4	25-80	0.755	16.79	7.00	0.0	124.3	1.52
	1300	200	5	25-80	0.755	16.88	7.04	0.0	122.2	1.43
	1305	200	6	25-80	0.754	16.90	7.05	0.0	120.6	1.13
	1310	200	7	25-80	0.754	16.91	7.05	0.0	119.1	1.15
↓	1315	200	8	25-80	0.754	16.94	7.07	0.0	118.0	1.14
11/9/18	Sample									

Logged by: _____ Date: 11-19-18

QC'd by: _____ Date: _____

00955227

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW18**

Project No: **501032** Sampler(s): MSM

FIELD CONDITIONS PC / 55°F

SAMPLING INFORMATION

Sample No: 35BWW18-181119 **DATE/TIME:** 11-19-18 / 1445 **Sample Interval:** 31-39

Sampling Method: LF/HP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
clear / no odor	N/A	N/A

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCl <pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 27.39

Depth to Well Bottom (ft) 32.5 35-40

Screen Interval (ft): 20.69 - 35.42

Approximate depth of pump inlet*(ft): ~~25.135~~ 31.39

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/HP

Purge Start Date/Time: 11/19/18 1420

Purge End Date/Time: 11/19/18 1458

Discharge Tube Length: 35 PID Reading: 0-0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1420

APTIM

Sample Collection Log

Location ID: 35BWW18 Sample No: 35BWW18-1811[19]

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-19-18	1425	180	1.0	27.79	0.781	17.77	6.44	8.9	151.5	2.89
	1430	180	1.9	27.79	0.777	17.84	6.29	0.0	154.3	2.42
	1435	180	2.8	27.79	0.767	17.90	6.13	0.0	154.4	2.36
	1440	180	3.7	27.79	0.772	17.89	6.12	0.0	155.8	1.88
	1445	180	4.6	27.79	0.783	17.92	6.18	0.0	154.5	1.50
	1450	180	5.5	27.79	0.787	17.95	6.15	0.0	153.3	1.49
	1455	180	6.4	27.79	0.787	17.93	6.14	0.0	157.1	1.47
11-19-18	Sample									

Logged by: _____ Date: 11-19-18

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW19**

Project No: **501032** Sampler(s): HH

FIELD CONDITIONS PC / 55°F

SAMPLING INFORMATION

Sample No: 35BWW19-1811 19 **DATE/TIME:** 11-19-18 / 1410 **Sample Interval:** 31 - 91

Sampling Method: LF/AP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear/ no odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 27.21 ~~27.21~~

Depth to Well Bottom (ft) 33.98 ~~36.61~~

Screen Interval (ft): 21.31 - 36.04

Purging Method/Equipment: LF/AP

Purge Start Date/Time: 11/19/18 1340

Purge End Date/Time: 11/19/18 1414

Discharge Tube Length: 36 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~26.115~~ 31.91

Edited by Robert Mayer 12Feb2020

Pump Start Time: 1340

APTIM

Sample Collection Log

Location ID: 35BWW19 Sample No: 35BWW19-1811_M

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-19-18	1345	120	1.0	27.52	2.663	17.48	6.51	0.0	147.1	1.92
	1350	120	1.0	27.52	2.681	17.44	6.49	0.0	146.1	1.79
	1355	120	2.2	27.52	2.704	17.43	6.44	0.0	~~137.9~~	1.76
	1400	120	2.8	27.52	2.720	17.44	6.47	0.0	144.1	1.70
	1405	120	3.4	27.52	2.721	17.45	6.48	0.0	144.8	1.69
	1410	120	4.0	27.52	2.723	17.45	6.48	0.0	144.6	1.68
11-19-18	Sample									

Logged by: _____ Date: 11-19-18

QC'd by: _____ Date: _____

00955231

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW04**

Project No: **501032** Sampler(s): MSM

FIELD CONDITIONS Clear Skies 48°F

SAMPLING INFORMATION

Sample No: 35BWW04-1811 20 **DATE/TIME:** 11-20-18 / 1410 **Sample Interval:** 27 - 93

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear / NC open	FD	

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300	1 x 250 mL HDPE	Cool 4C
			~~Carbon Dioxide in Water by RSK175~~	~~3 x 40 mL Glass~~	~~Cool 4C~~
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			~~TIC in Water by E415.1~~	~~2 x 40 mL Glass~~	~~Cool 4C~~
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 23.02

Depth to Well Bottom (ft) 30 33.23

Screen Interval (ft): 22.85 - 32.85

Approximate depth of pump inlet*(ft): ~~25~~ 27.93

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/AP

Purge Start Date/Time: 11-20-18 / 1330

Purge End Date/Time: 11-20-18 / 1428

Discharge Tube Length: 33 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1330

APTIM

Sample Collection Log

Location ID: 35BWW04 Sample No: 35BWW04-181120

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-2018	1335	100	1-0	23.41	0.331	19.55	6.00	0.0	139.2	3.03
	1340	100	1-5	23.52	0.330	19.52	6.01	0.0	148.2	3.30
	1345	100	2.0	23.61	0.330	19.51	6.00	0.0	153.6	3.99
	1350	100	2.5	23.70	0.329	19.50	5.98	0.0	161.6	4.53
	1355	100	3.0	23.80	0.330	19.40	5.93	0.0	155.1	3.86
	1400	100	3.5	23.80	0.330	19.41	6.00	0.0	155.0	4.76
	1405	100	4.0	23.80	0.330	19.42	6.02	0.0	154.9	4.77
	1410	100	4.5	23.80	0.330	19.43	6.02	0.0	152.7	4.73
11-2018	Sampled						FD			

Logged by: _____ Date: 11-20-18

QC'd by: _____ Date: _____

Fe @ 0.05 mg/L

00955233

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW08**

Project No: **501032** Sampler(s): MW

FIELD CONDITIONS Sunny 44°F

SAMPLING INFORMATION

Sample No: 35BWW08-181120 **DATE/TIME:** 11-2018 / 1258 **Sample Interval:** 29.47

Sampling Method: CF/AP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample: clear / no odor **Assoc. QC Samples:** MS/MSD **Decontamination Procedures:** NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			TIC in Water by E415.1	2 x 40 mL Glass	Cool 4C
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.54

Depth to Well Bottom (ft) 32.5 ~~34.23~~

Screen Interval (ft): 24.72 - 34.72

Approximate depth of pump inlet*(ft): ~~27~~ 29.47

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: CF/AP

Purge Start Date/Time: 11-20-18 / 1223

Purge End Date/Time: 11-2018 / 1324

Discharge Tube Length: 34 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1223

APTIM

Sample Collection Log

Location ID: 35BWW08 Sample No: 35BWW08-1811 20

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-2018	1228	200	1	24.70	0.341	19.86	10.02	0.0	47.9	5.09
	1233	200	2	24.70	0.342	19.70	10.01	0.0	46.1	
	1238	200	3	24.70	0.346	19.49	9.97	0.0	45.8	4.72
	1243	200	4	24.70	0.345	19.54	9.93	0.0	46.1	4.70
	1248	200	5	24.70	0.346	19.58	9.94	0.0	43.7	4.58
	1253	200	6	24.70	0.345	19.60	9.92	0.0	46.2	4.57
	1258	200	7	24.70	0.343	19.60	9.92	0.0	46.5	4.57
11-2018	Sample									
					+ MS/MSD					

Logged by: _____ Date: 11-2018

QC'd by: _____ Date: _____

Fe @ 0.00 mg/L

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW12**

Project No: **501032**

Sampler(s): MM

FIELD CONDITIONS Sunny / 50°F

SAMPLING INFORMATION

Sample No: 35BWW12-1811 20

DATE/TIME: 11-20-18 / 1510

Sample Interval: 77 - 95

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample: Clear / NO odor

Assoc. QC Samples: NA

Decontamination Procedures: NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300	1 x 250 mL HDPE	Cool 4C
			~~Carbon Dioxide in Water by~~ RSK175	~~3 x 40 mL Glass~~	Cool 4C
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			~~TIC in Water by E415.1~~	2 x 40 mL Glass	Cool 4C
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.80

Depth to Well Bottom (ft) 35.5 35.80

Screen Interval (ft): 20.35 ~~25.42~~ - 35.00

Approximate depth of pump inlet*(ft): 27.65

Purging Method/Equipment: BF/AP

Purge Start Date/Time: 11-20-18 / 1435

Purge End Date/Time: 11-20-18 / 1531

Discharge Tube Length: 35

PID Reading: 0.0

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Pump Start Time: 1435

00955236

APTIM

Sample Collection Log

Location ID: 35BWW12 Sample No: 35BWW12-1811 20

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-20-18	1440	200	1	21.93	0.384	18.93	6.59	0.0	134.1	2.42
	1445	200	2	21.93	0.387	18.99	6.48	0.0	137.1	2.20
	1450	200	3	21.93	0.391	19.02	6.41	0.0	141.8	2.02
	1455	200	4	21.93	0.402	19.04	6.34	0.0	141.8	2.02
	1500	200	5	21.93	0.409	18.98	6.36	0.0	139.1	1.60
	1505	200	6	21.93	0.412	18.97	6.37	0.0	140.2	1.58
↓	1510	200	7	21.93	0.414	18.95	6.37	0.0	140.0	1.57
11-20-18	Sample									

Logged by: _____ Date: 11-20-18

QC'd by: _____ Date: _____

Fe @ 0.00 mg/L

APTIM

Sample Collection Log

Project Name: **Longhorn AAP** Location ID: **35BWW14**

Project No: **501032** Sampler(s): MM

FIELD CONDITIONS Clear Skies 46°F

SAMPLING INFORMATION

Sample No: 35BWW14-1811 20 **DATE/TIME:** 11-20-18 / **Sample Interval:** 32 - ∞

Sampling Method: LF/HP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear/ No odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300	1 x 250 mL HDPE	Cool 4C
			Carbon Dioxide in Water by ~~RSK175~~	3 x 40 mL Glass	~~Cool 4C~~
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			~~TIC in Water by E415.1~~	~~2 x 40 mL Glass~~	~~Cool 4C~~
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 22.83

Depth to Well Bottom (ft) @ 37.22

Screen Interval (ft): 27.71 - 37.21

Approximate depth of pump inlet*(ft): ~~30~~ 32.00

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/HP

Purge Start Date/Time: 11-2018 / 1023

Purge End Date/Time: 11-2018 / 1113

Discharge Tube Length: 37 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1023

APTIM

Sample Collection Log

Location ID: 35BWW14 Sample No: 35BWW14-181120

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-2018	1028	200	1.0	22.96	0.408	19.83	7.00	0.0	127.9	1.74
	1033	200	2.0	22.96	0.407	19.28	7.00	0.0	122.3	0.99
	1038	200	3.0	22.96	0.407	19.24	7.00	0.0	121.1	0.86
	1043	200	4.0	22.96	0.410	19.28	7.00	0.0	118.1	0.73
	1048	200	5.0	22.96	0.409	19.25	7.00	0.0	115.3	0.73
	1053	200	6.0	22.96	0.409	19.27	7.00	0.0	113.1	0.73
11-2018	Sampled									

Logged by: _____ Date: 11-2018

QC'd by: _____ Date: _____

Fe @ 0.02 mg/L

Sample Collection Log

APTIM

Project Name: **Longhorn AAP** Location ID: **35BWW23**

Project No: **501032** Sampler(s): MM

FIELD CONDITIONS Clear Sky 44°F

SAMPLING INFORMATION

Sample No: 35BWW23-1811 20 **DATE/TIME:** 11-20-18 / 0955 **Sample Interval:** 31 - 04

Sampling Method: LF/PP **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear/ No odor	N/A	N/A

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300	1 x 250 mL HDPE	Cool 4C
			~~Carbon Dioxide in Water by RSK175~~	~~3 x 40 mL Glass~~	~~Cool 4C~~
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			~~TIC in Water by E415.1~~	~~2 x 40 mL Glass~~	~~Cool 4C~~
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4 28.48'

Depth to Water - Initial (DTWi) (ft) 28.48

Depth to Well Bottom (ft) 33.61 33.60

Screen Interval (ft): 23.63 - 33.63

Approximate depth of pump inlet*(ft): ~~25~~ 31.04

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/PP

Purge Start Date/Time: 11-20-18 / 0925

Purge End Date/Time: 11-20-18 / 1012

Discharge Tube Length: 34 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 0925

APTIM

Sample Collection Log

Location ID: 35BWW23 Sample No: 35BWW23-1811 2C

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-20-18	0930	100	1.0	28.85	0.655	15.92	6.61	0.0	145.9	1.82
	0935	100	1.5	29.00	0.667	15.81	6.49	0.0	148.2	1.53
	0940	100	2.0	29.10	0.671	15.86	6.45	0.0	150.7	1.58
	0945	100	2.5	29.15	0.670	15.89	6.44	0.0	150.8	1.48
	0950	100	3.0	29.18	0.669	15.90	6.42	0.0	151.3	1.47
↓	0955	100	3.5		0.670	15.92	6.41	0.0	150.6	1.47
11-20-18	Sample									

Logged by: _____ Date: 11-20-18

QC'd by: _____ Date: _____

Fe @ 0.01 mg/L

APTIM

Sample Collection Log

Project Name: **Longhorn AAP** Location ID: **35BWW26**

Project No: **501032** Sampler(s): MM

FIELD CONDITIONS Clear Sky / Sunny 57°F

SAMPLING INFORMATION

Sample No: 35BWW26-1811 20 **DATE/TIME:** 11-2018 / 1156 **Sample Interval:** 32.91

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures
Clear / No odor	NA	NA

Chain of Custody	Lab	COC Notes	Analyses	Container	Preserv
	ALSHT		Anions in Water by E300	1 x 250 mL HDPE	Cool 4C
			~~Carbon Dioxide in Water by RSK175~~	~~3 x 40 mL Glass~~	~~Cool 4C~~
			DHC in Wate by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C
			Dissolved Gases in Water by RSK175	3 x 40 mL Glass	Cool 4C
			~~TIC in Water by E415.1~~	~~2 x 40 mL Glass~~	~~Cool 4C~~
			TOC in Water by E415.1	2 x 40 mL Amber	H2SO4
			VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 27.48' 27.48'

Depth to Well Bottom (ft) 35.5 37.97

Screen Interval (ft): 28.46 – 37.46

Approximate depth of pump inlet*(ft): ~~30.05~~ 32.91

Edited by Robert Mayer 12Feb2020

Purging Method/Equipment: LF/LP

Purge Start Date/Time: 11-2018 / 1121

Purge End Date/Time: 11-2018 / 1217

Discharge Tube Length: 37 PID Reading: 0.0

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 1121

APTIM

Sample Collection Log

Location ID: 35BWW26 Sample No: 35BWW26-181120

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11-20-18	1126	100	1	27.95	0.320	19.20	6.46	0.0	149.8	2.55
	1131	100	1.5	28.10	0.324	19.04	5.90	0.0	160.3	2.31
	1136	100	2.0	28.15	0.319	18.73	5.87	0.0	159.7	1.96
	1141	100	2.5	28.21	0.318	18.66	5.89	0.0	159.3	1.98
	1146	100	3.0	28.27	0.317	18.60	5.89	0.0	160.0	1.93
	1151	100	3.5	28.30	0.316	18.58	5.86	0.0	160.4	1.91
↓	1156	100	4.0	28.34	0.318	18.56	5.87	0.0	159.6	1.95
11-20-18	Sample									

Logged by: _____ Date: 11-20-18

QC'd by: _____ Date: _____

Fe @ 0.03 mg/L

00955243

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): Scott Baesinger

FIELD CONDITIONS Cool / windy

SAMPLING INFORMATION

Sample No: 35BWW01-190212

DATE/TIME: 2/12/19 / 1144

Sample Interval: ~~8.11~~ - ~~8.34~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 8.11

Depth to Well Bottom (ft) ~~19~~ 21.00

Screen Interval (ft): 11.21 - 21.21

Approximate depth of pump inlet*(ft): ~~14~~ 16.21

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 2/12/19 1150

Purge End Date/Time: 2/12/19 1220

Discharge Tube Length: ~~2~~ NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1150

2ND DTW PRE-PURGE - 8.11

APTIM

Sample Collection Log

Location ID: 35BWW01 Sample No: 35BWW01-190212

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/19	1155	100	.5	8.19	0.111	16.66	6.05	33.6	337	4.39
	1200	100	1.0	8.25	0.104	16.34	5.83	33.0	343	4.15
	1205	100	1.5	8.28	0.104	16.12	5.60	33.1	353	3.98
	1210	100	2.0	8.30	0.104	16.04	5.54	33.7	353	3.95
	1215	100	2.5	8.32	0.104	15.97	5.58	33.2	354	3.93
	1220	100	3.0	8.34	0.104	15.91	5.57	33.5	354	3.91

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cool / windy

SAMPLING INFORMATION

Sample No: 35BWW01-1902 12-FD

DATE/TIME: 2/12/19 1144

Sample Interval: ~~8.11 - 8.31~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 8.11

Depth to Well Bottom (ft) ~~19~~ 21.00

Screen Interval (ft): 11.21 - 21.21

Approximate depth of pump inlet*(ft): ~~14~~ 16.21

Purging Method/Equipment: Lowflow/Bladder Pump

Purge Start Date/Time: 2/12/19 1150

Purge End Date/Time: 2/12/19 1220

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1150

2ND DTW PRE-PURGE - 8.11

APTIM

Sample Collection Log

Location ID: 35BWW01 **Sample No: 35BWW01-190212-FD**

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/19	1155	100	.5	8.19	0.111	16.66	6.05	33.6	337	4.39
	1200	100	1.0	8.25	0.104	16.34	5.83	33.0	343	4.15
	1205	100	1.5	8.28	0.104	16.12	5.60	33.1	353	3.98
	1210	100	2.0	8.30	0.104	16.04	5.59	33.7	353	3.95
	1215	100	2.5	8.32	0.104	15.97	5.58	33.2	354	3.93
	1220	100	3.0	8.34	0.104	15.91	5.57	33.5	354	3.91

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW02**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

SAMPLING INFORMATION

Sample No: 35BWW02-190211

DATE/TIME: 2/14/19 / 1010

Sample Interval: ___ - ___

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft): DRY

Depth to Well Bottom (ft): ~~14~~ 16.98

Screen Interval (ft): 11.36 - 16.36

Approximate depth of pump inlet*(ft): ~~15~~ 16

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Pump Start Time: NA

APTIM

Sample Collection Log

Location ID: 35BWW02				Sample No: 35BWW02-1902___						
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

DRY WELL

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW04**

Sampler(s): Scott Baessinger

FIELD CONDITIONS

COLD / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW04-190213

DATE/TIME: 2/13/19 / 0843

Sample Interval: ~~21.75-31.97~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	MEE in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TIC in Water by SM5310C	2 x 40 mL Glass	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2
		MI	DHC in Water by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 21.75

Depth to Well Bottom (ft) ~~32~~ 32.36

Screen Interval (ft): 22.85-32.85

Approximate depth of pump inlet*(ft): ~~25~~ 27.85

Purging Method/Equipment: Low flow / BLADDER Pump

Purge Start Date/Time: 2/13/19 0855

Purge End Date/Time: 2/13/19 0930

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Pump Start Time: 0855

Field Measurement
Ferrous iron concentration 0.00 unit mg/L

2ND DTW PRE-PURGE - 21.75

APTIM

Sample Collection Log

Location ID: 35BWW04 **Sample No: 35BWW04-190213**

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	0900	100	.5	21.83	0.330	13.70	5.86	35.5	373	1.55
	0905	100	1.0	21.88	0.334	14.85	5.61	31.1	369	1.40
	0910	100	1.5	21.91	0.335	15.10	5.54	16.5	366	1.25
	0915	100	2.0	21.94	0.334	15.17	5.45	7.3	365	1.19
	0920	100	2.5	21.96	0.333	15.25	5.44	6.5	364	1.18
	0925	100	3.0	21.97	0.333	15.32	5.43	5.6	364	1.17
	0930	100	3.5	21.97	0.333	15.39	5.43	4.9	364	1.16

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW04**

Sampler(s): Scott Beesinger

FIELD CONDITIONS COLD / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW04-190213-MS

DATE/TIME: 2/13/19 / 0843

Sample Interval: ~~21.75~~ - ~~21.97~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: MS

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	MEE in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TIC in Water by SM5310C	2 x 40 mL Glass	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 21.75

Depth to Well Bottom (ft) ~~30~~ 32.36

Screen Interval (ft): 22.85 - 32.85

Approximate depth of pump inlet*(ft): ~~25~~ 27.85

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 2/13/19 0855

Purge End Date/Time: 2/13/19 0930

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0855

APTIM

Sample Collection Log

Location ID: 35BWW04				Sample No: 35BWW04-190213-MS						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	0900	100	.5	21.83	0.330	13.70	5.86	35.5	373	1.55
	0905	100	1.0	21.88	0.334	14.85	5.61	31.1	369	1.40
	0910	100	1.5	21.91	0.335	15.10	5.54	16.5	366	1.25
	0915	100	2.0	21.94	0.334	15.17	5.45	7.3	365	1.19
	0920	100	2.5	21.96	0.333	15.25	5.44	6.5	364	1.18
	0925	100	3.0	21.97	0.333	15.32	5.43	5.6	364	1.17
↓	0930	100	3.5	21.97	0.333	15.39	5.43	4.9	364	1.16

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW04**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

COLD / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW04-1902 13 -MSD

DATE/TIME: 2/13/19 / 0843

Sample Interval: ~~21.75~~ 21.97

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: MSD

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	MEE in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TIC in Water by SM5310C	2 x 40 mL Glass	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 21.75

Depth to Well Bottom (ft) ~~30~~ 32.36

Screen Interval (ft): 22.85 - 32.85

Approximate depth of pump inlet*(ft): ~~25~~ 27.85

Purging Method/Equipment: Low Flow / Bladder Pump

Purge Start Date/Time: 2/13/19 0855

Purge End Date/Time: 2/13/19 0930

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0855

APTIM

Sample Collection Log

Location ID: 35BWW04 Sample No: 35BWW04-190213-MSD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	0900	100	.5	21.83	0.330	13.70	5.86	35.5	373	1.55
	0905	100	1.0	21.88	0.334	14.85	5.61	31.1	369	1.40
	0910	100	1.5	21.91	0.335	15.10	5.54	16.5	366	1.25
	0915	100	2.0	21.94	0.334	15.17	5.45	7.3	365	1.19
	0920	100	2.5	21.96	0.333	15.25	5.44	6.5	364	1.18
	0925	100	3.0	21.97	0.333	15.32	5.43	5.6	364	1.17
↓	0930	100	3.5	21.97	0.333	15.39	5.43	4.9	364	1.16

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00955255

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW05**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Sunny

SAMPLING INFORMATION

Sample No: 35BWW05-190213

DATE/TIME: 2/13/19 / 1139

Sample Interval: ~~22.57- 22.82~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 22.57

Depth to Well Bottom (ft) ~~38~~ 38.00

Screen Interval (ft): 28.60-38.60

Approximate depth of pump inlet*(ft): ~~34~~ 33.60

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 2/13/19 1145

Purge End Date/Time: 2/13/19 1215

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1145

2ND DTW PRE-PURGE -

APTIM

Sample Collection Log

Location ID: 35BWW05 Sample No: 35BWW05-190213

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	1150	100	.5	22.65	0.332	18.64	6.60	300	301	1.21
	1155	100	1.0	22.71	0.332	18.42	6.56	270	176	0.89
	1200	100	1.5	22.75	0.326	18.91	6.51	225	171	0.60
	1205	100	2.0	22.78	0.325	18.90	6.50	223	170	0.58
	1210	100	2.5	22.80	0.324	18.89	6.50	222	169	0.57
	1215	100	3.0	22.82	0.324	18.89	6.50	221	168	0.56

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW07**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cool / windy

SAMPLING INFORMATION

Sample No: 35BWW07-190214

DATE/TIME: 2/14/19 / 0920

Sample Interval: ~~25.76 26.50~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 25.76

Depth to Well Bottom (ft) ~~28.5~~ 31.35

Screen Interval (ft): 20.67 - 30.67

Approximate depth of pump inlet*(ft): ~~29~~ 26.50

Purging Method/Equipment: Low Flow/Bladder Pump

Purge Start Date/Time: 2/14/19 0930

Purge End Date/Time: 2/14/19 1000

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0930

2ND DTW PRE-PURGE - 25.76

APTIM

Sample Collection Log

Location ID: 35BWW07 Sample No: 35BWW07-190214

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/19	0935	100	.5	25.84	0.874	15.59	6.20	5.7	360	1.07
	0940	100	1.0	25.90	0.877	16.17	5.75	1.9	345	0.39
	0945	100	1.5	25.94	0.880	16.25	5.79	0.0	328	0.15
	0950	100	2.0	25.97	0.880	16.31	5.80	0.0	327	0.14
	0955	100	2.5	25.99	0.881	16.37	5.80	0.0	326	0.15
	1000	100	3.0	26.00	0.881	16.41	5.80	0.0	325	0.14

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW08**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cool / windy

SAMPLING INFORMATION

Sample No: 35BWW08-190212

DATE/TIME: 2/12/19 / 0947

Sample Interval: 23.67 - 23.89

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	MEE in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TIC in Water by SM5310C	2 x 40 mL Glass	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2
		MI	DHC in Water by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.67

Depth to Well Bottom (ft) 34.28

Screen Interval (ft): 24.72 - 34.72

Approximate depth of pump inlet*(ft): 29.72

Purging Method/Equipment: Lowflow/Bladder Pump

Purge Start Date/Time: 2/12/19 0955

Purge End Date/Time: 2/12/19 1025

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0955

Field Measurement
Ferrous iron concentration 0.02 unit mg/L

2ND DTW PRE-PURGE -

APTIM

Sample Collection Log

Location ID: 35BWW08 **Sample No: 35BWW08-190212**

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/19	1000	100	.5	23.75	0.333	17.09	9.72	59.3	232	4.05
	1005	100	1.0	23.80	0.321	17.55	9.65	20.2	237	3.91
	1010	100	1.5	23.84	0.319	17.90	9.52	11.9	244	3.80
	1015	100	2.0	23.86	0.318	17.97	9.53	11.3	245	3.78
	1020	100	2.5	23.88	0.318	18.08	9.54	10.9	245	3.77
	1025	100	3.0	23.89	0.318	18.19	9.54	10.5	245	3.76

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW09**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Sunny

SAMPLING INFORMATION

Sample No: 35BWW09-190213

DATE/TIME: 2/13/19 1315

Sample Interval: ~~24.77-25.03~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 24.77

Depth to Well Bottom (ft) ~~37~~ 37.18

Screen Interval (ft): 27.01 - 36.51

Approximate depth of pump inlet*(ft): ~~31~~ 31.76

Purging Method/Equipment: Low Flow/Bladder Pump

Purge Start Date/Time: 2/13/19 1320

Purge End Date/Time: 2/13/19 1350

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1320

2ND DTW PRE-PURGE - 24.77

APTIM

Sample Collection Log

Location ID: 35BWW09 Sample No: 35BWW09-190213

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	1325	100	.5	24.86	0.665	19.27	7.12	0.0	268	1.55
	1330	100	1.0	24.91	0.691	18.43	6.76	0.0	270	1.28
	1335	100	1.5	24.95	0.692	18.41	6.65	0.0	272	1.06
	1340	100	2.0	24.97	0.693	18.39	6.64	0.0	272	1.04
	1345	100	2.5	24.99	0.693	18.37	6.63	0.0	273	1.02
↓	1350	100	3.0	25.00	0.693	18.35	6.63	0.0	273	1.01

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW10**

Sampler(s): Scott Beesinger

FIELD CONDITIONS COOL | WINDY

SAMPLING INFORMATION

Sample No: 35BWW10-190212

DATE/TIME: 2/12/19 / 1231

Sample Interval: ~~23.31 - 23.55~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.31

Depth to Well Bottom (ft) ~~38.5~~ 36.49

Screen Interval (ft): 21.23 - 36.00

Approximate depth of pump inlet*(ft): ~~25.615~~ 28.62

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 2/12/19 1240

Purge End Date/Time: 2/12/19 1310

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 1240

2ND DTW PRE-PURGE - 23.31

APTIM

Sample Collection Log

Location ID: 35BWW10 Sample No: 35BWW10-1902 12

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/18	1245	100	.5	23.39	0.367	18.84	6.60	77.3	349	0.69
	1250	100	1.0	23.45	0.370	19.43	7.10	52.9	327	0.15
	1255	100	1.5	23.49	0.370	19.48	7.25	42.0	315	0.09
	1300	100	2.0	23.52	0.370	19.55	7.26	41.8	314	0.09
	1305	100	2.5	23.54	0.370	19.62	7.27	41.3	313	0.08
	1310	100	3.0	23.55	0.370	19.68	7.27	40.7	312	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW11**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cool / Sunny

SAMPLING INFORMATION

Sample No: 35BWW11-1902 13

DATE/TIME: 2/13/19 / 1049

Sample Interval: ~~21.44 - 21.72~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 21.49

Depth to Well Bottom (ft) ~~35~~ 37.80

Screen Interval (ft): 27.41 - 36.91

Approximate depth of pump inlet*(ft): ~~30~~ 32.16

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 2/13/19 1100

Purge End Date/Time: 2/13/19 1130

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y (N)

Pump Start Time: 1100

2ND DTW PREPURGE - 21.49

APTIM

Sample Collection Log

Location ID: 35BWW11 Sample No: 35BWW11-1902_13

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	1105	100	.5	21.57	0.354	16.85	6.47	0.0	368	1.08
	1110	100	1.0	21.62	0.349	17.57	5.96	0.0	363	0.55
	1115	100	1.5	21.66	0.348	17.65	5.81	0.0	360	0.30
	1120	100	2.0	21.69	0.348	17.70	5.80	0.0	359	0.29
	1125	100	2.5	21.71	0.348	17.76	5.80	0.0	358	0.28
	1130	100	3.0	21.72	0.348	17.81	5.80	0.0	358	0.27

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW12**

Sampler(s): Scott Beesinger

FIELD CONDITIONS COLD / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW12-190213

DATE/TIME: 2/13/19 / 0733

Sample Interval: ~~20.52 20.76~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	MEE in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TIC in Water by SM5310C	2 x 40 mL Glass	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2
		MI	DHC in Water by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 20.52

Depth to Well Bottom (ft) ~~38.25~~ 38.36

Screen Interval (ft): 22.92–37.65

Approximate depth of pump inlet*(ft): ~~27.65~~ 30.29

Purging Method/Equipment: Low flow/BLADDER PUMP

Purge Start Date/Time: 2/13/19 0745

Purge End Date/Time: 2/13/19 0815

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0745

Field Measurement
Ferrous iron concentration 0.78 unit mg/L

2ND DTW PRE-PURGE - 20.52

APTIM

Sample Collection Log

Location ID: 35BWW12 Sample No: 35BWW12-190213

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	0750	100	.5	20.60	0.372	13.74	5.81	193	394	0.85
	0755	100	1.0	20.66	0.389	14.70	5.49	145	380	0.40
	0800	100	1.5	20.70	0.413	14.91	5.57	137	358	0.11
	0805	100	2.0	20.73	0.414	14.99	5.59	136	356	0.10
	0810	100	2.5	20.75	0.415	15.12	5.60	135	355	0.10
↓	0815	100	3.0	20.76	0.415	15.27	5.60	134	353	0.10

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW12**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cold / Sunny

SAMPLING INFORMATION

Sample No: 35BWW12-190213-FD

DATE/TIME: 2/13/19 / 0733

Sample Interval: ~~20.52~~ - ~~30.76~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	MEE in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TIC in Water by SM5310C	2 x 40 mL Glass	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 20.52

Depth to Well Bottom (ft) ~~38~~ 38.36

Screen Interval (ft): 22.42 - 37.65

Approximate depth of pump inlet*(ft): ~~27~~ 30.29

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 2/13/19 0745

Purge End Date/Time: 2/13/19 0815

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0745

APTIM

Sample Collection Log

Location ID: 35BWW12 Sample No: 35BWW12-190213-FD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	0750	100	.5	20.60	0.372	13.74	5.81	193	394	0.85
	0755	100	1.0	20.66	0.389	14.70	5.49	145	380	0.40
	0800	100	1.5	20.70	0.413	14.91	5.57	137	358	0.11
	0805	100	2.0	20.73	0.414	14.99	5.59	136	356	0.10
	0810	100	2.5	20.75	0.415	15.12	5.60	135	355	0.10
	0815	100	3.0	20.76	0.415	15.27	5.60	134	353	0.10

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW13**

Sampler(s): Seth Belsinger

FIELD CONDITIONS Sunny / Windy

SAMPLING INFORMATION

Sample No: 35BWW13-190214

DATE/TIME: 2/14/19 / 1143

Sample Interval: ~~22.75~~ ~~37.73~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 22.75

Depth to Well Bottom (ft) ~~35~~ 37.73

Screen Interval (ft): 22.25 - 36.95

Approximate depth of pump inlet*(ft): ~~27.75~~ 29.60

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 2/14/19 1155

Purge End Date/Time: 2/14/19 1225

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1155

2ND DTW PRE-PURGE - 22.75

APTIM

Sample Collection Log

Location ID: 35BWW13 Sample No: 35BWW13-1902 14

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/19	1200	100	.5	22.83	0.230	17.33	4.54	377	395	1.22
	1205	100	1.0	22.89	0.211	17.21	4.22	302	420	0.98
	1210	100	1.5	22.92	0.205	17.23	4.25	285	430	0.85
	1215	100	2.0	22.95	0.204	17.25	4.26	284	431	0.83
	1220	100	2.5	22.97	0.204	17.27	4.26	283	432	0.81
	1225	100	3.0	22.99	0.204	17.29	4.26	283	433	0.80

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW14**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cool / windy

SAMPLING INFORMATION

Sample No: 35BWW14-190212

DATE/TIME: 2/12/19 / 0948

Sample Interval: ~~21.54~~ 21.74

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	MEE in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TIC in Water by SM5310C	2 x 40 mL Glass	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2
		MI	DHC in Water by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 21.54

Depth to Well Bottom (ft) ~~37~~ 37.36

Screen Interval (ft): 27.71 - 37.21

Approximate depth of pump inlet*(ft): ~~32~~ 32.46

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 2/12/19 0855

Purge End Date/Time: 2/12/19 0925

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0855

Field Measurement
Ferrous iron concentration 0.67 unit mg/L

2ND DTW PRE-PURGE - 21.54

APTIM

Sample Collection Log

Location ID: 35BWW14 Sample No: 35BWW14-190212

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/19	0900	100	.5	21.60	0.438	15.36	6.16	0.0	312	0.97
	0905	100	1.0	21.65	0.437	16.06	5.59	0.0	317	0.59
	0910	100	1.5	21.69	0.435	16.20	5.45	0.0	326	0.43
	0915	100	2.0	21.71	0.435	16.29	5.44	0.0	326	0.42
	0920	100	2.5	21.73	0.435	16.38	5.43	0.0	327	0.41
↓	0925	100	3.0	21.74	0.435	16.48	5.42	0.0	327	0.40

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW15**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Sunny / windy

SAMPLING INFORMATION

Sample No: 35BWW15-190214 1233

DATE/TIME: 2/14/19 /

Sample Interval: ~~21.54 - 22.06~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.81

Depth to Well Bottom (ft) ~~49~~ 50.16

Screen Interval (ft): 19.54 - 49.24

Approximate depth of pump inlet*(ft): ~~32.65~~ 34.39

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 2/14/19 1240

Purge End Date/Time: 2/14/19 1310

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1240

2ND DTW PRE-PURGE - 21.81

APTIM

Sample Collection Log

Location ID: 35BWW15 Sample No: 35BWW15-190214

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/19	1245	100	.5	21.90	0.371	19.19	5.86	8.9	398	0.82
	1250	100	1.0	21.96	0.378	18.98	5.75	5.9	385	0.30
	1255	100	1.5	22.00	0.388	19.05	5.83	5.5	376	0.06
	1300	100	2.0	22.03	0.388	19.11	5.85	6.3	375	0.05
	1305	100	2.5	22.05	0.389	19.16	5.86	6.8	375	0.05
	1310	100	3.0	22.06	0.389	19.20	5.87	7.4	374	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00955277

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW16**

Sampler(s): ~~Scott~~ BAEBINGER

FIELD CONDITIONS COOL / CLOUDY

SAMPLING INFORMATION

Sample No: 35BWW16-190215

DATE/TIME: 2/15/19 / 0717

Sample Interval: ~~21.57~~ 21.80

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.57

Depth to Well Bottom (ft) ~~38.5~~ 36.95

Screen Interval (ft): 21.86 - 36.86

Approximate depth of pump inlet*(ft): ~~28.45~~ 29.01

Purging Method/Equipment: Lowflow/BLADDER Pump

Purge Start Date/Time: 2/15/19 0730

Purge End Date/Time: 2/15/19 0800

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0730

AND DTW PRE-PURGE - 21.57

APTIM

Sample Collection Log

Location ID: 35BWW16 Sample No: 35BWW16-190215

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/15/19	0735	100	.5	21.65	0.289	16.23	4.86	301	445	1.02
	0740	100	1.0	21.71	0.292	16.67	4.62	240	450	0.41
	0745	100	1.5	21.75	0.295	16.71	4.62	230	448	0.09
	0750	100	2.0	21.78	0.296	16.75	4.61	228	448	0.08
	0755	100	2.5	21.80	0.296	16.78	4.61	227	447	0.09
	0800	100	3.0	21.81	0.296	16.82	4.61	226	447	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW17**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Sunny / windy

SAMPLING INFORMATION

Sample No: 35BWW17-1902/4

DATE/TIME: 2/14/19 / 1318

Sample Interval: ~~20.12 - 20.34~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 20.12

Depth to Well Bottom (ft) ~~35.8~~ 36.28

Screen Interval (ft): 21.14 - 35.84

Approximate depth of pump inlet*(ft): ~~25.85~~ 28.49

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 2/14/19 1325

Purge End Date/Time: 2/14/19 1355

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1325

2ND DTW PRE-PURGE - 20.12

APTIM

Sample Collection Log

Location ID: 35BWW17		Sample No: 35BWW17-190214								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/19	1330	100	.5	20.20	0.082	18.57	4.99	400	397	1.40
	1335	100	1.0	20.26	0.078	18.34	4.75	367	405	1.24
	1340	100	1.5	20.29	0.072	18.31	4.64	362	407	1.17
	1345	100	2.0	20.31	0.072	18.28	4.65	361	408	1.15
	1350	100	2.5	20.33	0.072	18.25	4.66	360	409	1.14
	1355	100	3.0	20.34	0.072	18.22	4.67	359	410	1.12

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00955281

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW18**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cool / windy

SAMPLING INFORMATION

Sample No: 35BWW18-190214

DATE/TIME: 2/14/19 / 0820

Sample Interval: ~~26.37 - 26.63~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 26.37

Depth to Well Bottom (ft) ~~32.5~~ 35.58

Screen Interval (ft): 20.69-35.42

Approximate depth of pump inlet*(ft): ~~25-135~~ 28.06

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 2/14/19 0830

Purge End Date/Time: 2/14/19 0905

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Pump Start Time: 0830

2ND DTW PRE-PURGE - 26.37

APTIM

Sample Collection Log

Location ID: 35BWW18 Sample No: 35BWW18-190214

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/19	0835	100	.5	26.45	0.866	15.96	6.04	34.1	377	0.95
	0840	100	1.0	26.51	0.848	16.64	5.58	15.3	375	0.53
	0845	100	1.5	26.55	0.846	16.70	5.56	8.9	374	0.29
	0850	100	2.0	26.58	0.849	16.74	5.58	6.0	372	0.10
	0855	100	2.5	26.60	0.850	16.79	5.59	3.7	371	0.10
	0900	100	3.0	26.62	0.850	16.83	5.60	2.5	370	0.09
	0905	100	3.5	26.63	0.850	16.89	5.61	1.2	369	0.09

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW19**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cool / windy

SAMPLING INFORMATION

Sample No: 35BWW19-190214

DATE/TIME: 2/14/19 / 0730

Sample Interval: ~~26.40~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 26.19

Depth to Well Bottom (ft) ~~38.98~~ 36.78

Screen Interval (ft): 21.31 - 36.04

Approximate depth of pump inlet*(ft): ~~28.115~~ 28.68

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 2/14/19 0740

Purge End Date/Time: 2/14/19 0810

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 0740

2ND DTW PRE-PURGE - 26.19

APTIM

Sample Collection Log

Location ID: 35BWW19 Sample No: 35BWW19-190214

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/19	0745	100	.5	26.25	2.64	14.79	6.00	39.3	389	1.79
	0750	100	1.0	26.30	2.66	15.89	6.33	20.4	383	1.37
	0755	100	1.5	26.34	2.67	15.97	6.39	9.8	378	1.12
	0800	100	2.0	26.37	2.68	16.08	6.40	7.0	377	1.10
	0805	100	2.5	26.39	2.68	16.19	6.40	6.4	377	1.09
	0810	100	3.0	26.40	2.68	16.27	6.40	5.7	376	1.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW20**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Sunny

SAMPLING INFORMATION

Sample No: 35BWW20-1902 / 3

DATE/TIME: 2/13/19 / 1224

Sample Interval: ~~24.47 - 24.72~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.47

Depth to Well Bottom (ft) ~~36.4~~ 33.05

Screen Interval (ft): 17.70 - 32.46

Approximate depth of pump inlet*(ft): ~~32.52~~ 25.08

Purging Method/Equipment: Lowflow/Bladder Pump

Purge Start Date/Time: 2/13/19 1235

Purge End Date/Time: 2/13/19 1305

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 1235

2ND DTW PRE-PURGE - 24.47

APTIM

Sample Collection Log

Location ID: 35BWW20		Sample No: 35BWW20-190213								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	1240	100	.5	24.55	0.324	20.39	6.87	207	223	2.77
	1245	100	1.0	24.61	0.327	20.74	6.90	188	228	2.29
	1250	100	1.5	24.65	0.330	20.75	6.90	169	229	2.12
	1255	100	2.0	24.68	0.331	20.77	6.91	168	230	2.10
	1300	100	2.5	24.70	0.331	20.78	6.91	167	231	2.09
	1305	100	3.0	24.72	0.331	20.79	6.91	166	231	2.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW23**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cool / windy

SAMPLING INFORMATION

Sample No: 35BWW23-190212

DATE/TIME: 2/12/19 / 0742

Sample Interval: ~~27.55 27.63~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	MEE in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TIC in Water by SM5310C	2 x 40 mL Glass	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2
		MI	DHC in Water by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 27.55

Depth to Well Bottom (ft) ~~33.61~~ 33.73

Screen Interval (ft): 23.63 - 33.63

Approximate depth of pump inlet*(ft): ~~28~~ 28.63

Purging Method/Equipment: Low flow / BLADDER PUMP

Purge Start Date/Time: 2/12/19 0755

Purge End Date/Time: 2/12/19 0825

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 0755

Field Measurement

Ferrous iron concentration 0.07 unit mg/L

2ND DTW PRE-PURGE - 27.55

APTIM

Sample Collection Log

Location ID: 35BWW23 Sample No: 35BWW23-190212

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/19	0800	100	.5	27.63	0.720	14.85	5.85	0.0	382	1.10
	0805	100	1.0	27.69	0.670	15.41	5.51	0.0	361	0.89
	0810	100	1.5	27.73	0.668	15.44	5.40	0.0	328	0.75
	0815	100	2.0	27.76	0.667	15.48	5.39	0.0	327	0.73
	0820	100	2.5	27.78	0.667	15.52	5.39	0.0	326	0.72
	0825	100	3.0	27.80	0.667	15.56	5.38	0.0	325	0.71

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00955289

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW24**

Sampler(s): Scott Baessinger

FIELD CONDITIONS Cool / cloudy

SAMPLING INFORMATION

Sample No: 35BWW24-1902 15

DATE/TIME: 2/15/19 / 0809

Sample Interval: ~~28.27 28.54~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 28.27

Depth to Well Bottom (ft) ~~30.32~~ 32.80

Screen Interval (ft): 22.92 - 32.42

Approximate depth of pump inlet*(ft): ~~24.78~~ 29.50

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 2/15/19 0825

Purge End Date/Time: 2/15/19 0855

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Pump Start Time: 0825

2ND DTW PRE-PURGE - 28.27

APTIM

Sample Collection Log

Location ID: 35BWW24 Sample No: 35BWW24-190215

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/15/19	0830	100	.5	28.35	1.44	16.55	5.83	1.2	422	1.10
	0835	100	1.0	28.41	1.46	16.86	5.54	3.3	345	0.77
	0840	100	1.5	28.45	1.47	16.89	5.46	3.0	312	0.59
	0845	100	2.0	28.48	1.47	16.92	5.46	3.2	311	0.58
	0850	100	2.5	28.51	1.47	16.96	5.46	3.5	310	0.56
	0855	100	3.0	28.54	1.47	17.00	5.45	3.8	309	0.55

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW25**

Sampler(s): Scott Baessinger

FIELD CONDITIONS Cool / cloudy

SAMPLING INFORMATION

Sample No: 35BWW25-190215

DATE/TIME: 2/15/19 / 0904

Sample Interval: ~~2580 26.04~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 25.80

Depth to Well Bottom (ft) ~~30.72~~ 32.60

Screen Interval (ft): 22.91 - 32.41

Approximate depth of pump inlet*(ft): ~~24.75~~ 27.66

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 2/15/19 0915

Purge End Date/Time: 2/15/19 0945

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 0915

2ND DTW PRE-PURGE - 25.80

APTIM

Sample Collection Log

Location ID: 35BWW25				Sample No: 35BWW25-190215						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/15/19	0920	100	.5	25.88	0.706	16.61	5.87	2.7	301	0.83
	0925	100	1.0	25.94	0.707	16.78	5.44	2.0	321	0.33
	0930	100	1.5	25.98	0.705	16.82	5.32	1.7	330	0.18
	0935	100	2.0	26.01	0.705	16.85	5.31	2.7	331	0.17
	0940	100	2.5	26.02	0.705	16.89	5.30	2.3	331	0.16
	0945	100	3.0	26.04	0.705	16.92	5.30	2.0	332	0.16

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW26**

Sampler(s): Scott Baessinger

FIELD CONDITIONS Cool / windy

SAMPLING INFORMATION

Sample No: 35BWW26-190212

DATE/TIME: 2/12/19 / 0644

Sample Interval: ~~28.16 - 37.66~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	MEE in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TIC in Water by SM5310C	2 x 40 mL Glass	Cool 4C
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2
		MI	DHC in Water by CENSUS-qPCR	1 x 1 L HDPE	Cool 4C

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 26.50

Depth to Well Bottom (ft) ~~38.5~~ 38.04

Screen Interval (ft): 28.16-37.66

Approximate depth of pump inlet*(ft): ~~38.25~~ 32.91

Purging Method/Equipment: Low flow / BLADDER PUMP

Purge Start Date/Time: 2/12/19 1055

Purge End Date/Time: 2/12/19 1125

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Pump Start Time: 1055

Field Measurement
Ferrous iron concentration 0.00 unit mg/L

2ND DTW PRE-PURGE - 26.50

APTIM

Sample Collection Log

Location ID: 35BWW26 Sample No: 35BWW26-1902_12

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/19	1100	100	.5	26.58	0.342	17.19	6.80	0.0	307	1.07
	1105	100	1.0	26.65	0.328	17.37	5.70	0.0	330	0.61
	1110	100	1.5	26.70	0.329	17.59	5.47	0.0	337	0.30
	1115	100	2.0	26.73	0.330	17.68	5.45	0.0	338	0.29
	1120	100	2.5	26.75	0.330	17.75	5.44	0.0	338	0.28
	1125	100	3.0	26.77	0.330	17.83	5.44	0.0	339	0.27

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **LHSMW58**

Project No: **501032**

Sampler(s): Scott Bressinger

FIELD CONDITIONS Cool / sunny

SAMPLING INFORMATION

Sample No: LHSMW58-190213

DATE/TIME: 2/13/19 / 1000

Sample Interval: ~~22.15 - 23.22~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: LowFlow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/13/19 1010

Depth to Water - Initial (DTWi) (ft) 22.98

Purge End Date/Time: 2/13/19 1040

Depth to Well Bottom (ft) ~~35~~ 35.23

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 25.15-35.15

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~26~~ 30.15

Pump Start Time: 1010

2ND DTW PRE-PURGE - 22.98

APTIM

Sample Collection Log

Location ID: LHSMW58 **Sample No: LHSMW58-190213**

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/19	1015	100	.5	23.06	0.202	15.05	6.40	33.6	364	6.88
	1020	100	1.0	23.12	0.200	16.15	6.80	14.5	362	6.51
	1025	100	1.5	23.15	0.200	16.25	7.00	6.3	356	6.32
	1030	100	2.0	23.18	0.200	16.31	7.01	4.1	356	6.30
	1035	100	2.5	23.20	0.200	16.36	7.01	2.9	355	6.28
↓	1040	100	3.0	23.22	0.200	16.40	7.02	1.0	~~355~~ 355	6.26

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Action Work Plan dated June 2013 for LHAAP-35B (37) a certification of site was conducted by Aptim [indicate transferee] on 2/15/19.

A summary of land use control mechanism is as follows:

Groundwater restriction – restriction of the use of groundwater to environmental monitoring and testing until cleanup levels are met. A restriction against residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

[Indicate whether groundwater restrictions are still required at LHAAP-35B (37)]

A summary of compliance with land use and restriction covenants is as follows:

No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-35B (37).

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief. I also certify that the non-residential use assumption that forms the basis of the remedy remains the same.

Date: 2/15/19

Name/Title: Scott Beesinger/Senior Fieldtech

Signature: Scott Beesinger

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): Scott Baesinger

FIELD CONDITIONS OVERCAST

SAMPLING INFORMATION

Sample No: 35BWW01-190520

DATE/TIME: 5/20/19 / 0914

Sample Interval: ~~7.18 - 7.40~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/20/19 0920

Depth to Water - Initial (DTWi) (ft) 7.18

Purge End Date/Time: 5/20/19 0950

Depth to Well Bottom (ft) 21.11

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 11.21 - 21.11

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 16.21

Pump Start Time: 0920

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 7.18

APTIM

Sample Collection Log

Location ID: 35BWW01		Sample No: 35BWW01-190520								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/20/19	0925	100	.5	7.25	0.136	22.13	5.75	65.3	273	1.29
	0930	100	1.0	7.31	0.114	21.70	4.31	58.7	331	0.87
	0935	100	1.5	7.35	0.116	21.68	4.07	54.9	354	1.01
	0940	100	2.0	7.37	0.117	21.65	4.07	54.3	355	1.02
	0945	100	2.5	7.39	0.117	21.63	4.06	53.7	356	1.03
↓	0950	100	3.0	7.40	0.117	21.60	4.06	53.1	357	1.04

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): Scott Baessinger

FIELD CONDITIONS

OVERCAST

SAMPLING INFORMATION

Sample No: 35BWW01-190520-FD

DATE/TIME: 5/20/19 0914

Sample Interval: ~~7.18 - 21.40~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 7.18

Depth to Well Bottom (ft) ~~15~~ 21.11

Screen Interval (ft): 11.21-21.11

Approximate depth of pump inlet*(ft): ~~15~~ 16.21

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: Low flow / BLADDER Pump

Purge Start Date/Time: 5/20/19 0920

Purge End Date/Time: 5/20/19 0950

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0920

APTIM

Sample Collection Log

Location ID: 35BWW01		Sample No: 35BWW01-190520-FD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/20/19	0925	100	.5	7.25	0.136	22.13	5.75	65.3	273	1.29
	0930	100	1.0	7.31	0.114	21.70	4.31	58.7	331	0.87
	0935	100	1.5	7.35	0.116	21.68	4.07	54.9	354	1.01
	0940	100	2.0	7.37	0.117	21.65	4.07	54.3	353	1.02
	0945	100	2.5	7.39	0.117	21.63	4.06	53.7	356	1.03
↓	0950	100	3.0	7.40	0.117	21.60	4.06	53.1	357	1.04

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW04**

Sampler(s): Scott Bressinger

FIELD CONDITIONS OVERCAST

SAMPLING INFORMATION

Sample No: 35BWW04-190520

DATE/TIME: 5/20/19 / 1210

Sample Interval: ~~17-28~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 19.07

Depth to Well Bottom (ft) ~~33~~ 33.35

Screen Interval (ft): 22.85-32.85

Approximate depth of pump inlet*(ft): ~~25~~ 27.85

Ferrous Iron (Required (Y) or N) 0.33 mg/L

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 5/20/19 1215

Purge End Date/Time: 5/20/19 1245

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1215

2ND DTW PRE-PURGE - 19.07

APTIM

Sample Collection Log

Location ID: 35BWW04				Sample No: 35BWW04-190520D						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/20/19	1220	100	.5	19.15	0.327	21.46	6.39	3.3	273	1.98
	1225	100	1.0	19.21	0.325	20.98	5.75	0.8	285	1.69
	1230	100	1.5	19.25	0.322	21.09	5.46	0.0	292	1.46
	1235	100	2.0	19.27	0.322	21.21	5.45	0.0	293	1.44
	1240	100	2.5	19.28	0.322	21.25	5.44	0.0	293	1.42
↓	1245	100	3.0	19.28	0.322	21.30	5.43	0.0	294	1.40

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00955304

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW05**

Sampler(s): Scott Beasinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW05-190521 0818

DATE/TIME: 5/21/19 /

Sample Interval: ~~20.47 20.72~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/21/19 0825

Depth to Water - Initial (DTWi) (ft) 20.47

Purge End Date/Time: 5/21/19 0855

Depth to Well Bottom (ft) ~~36~~ 37.85

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 28.60 - 38.60

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~35~~ 33.60

Pump Start Time: 0825

Ferrous Iron (Required Y or N) _____ mg/L

2ND DTW PRE-PURGE - 20.47

APTIM

Sample Collection Log

Location ID: 35BWW05				Sample No: 35BWW05-190521						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/19	0830	100	.5	20.55	0.348	22.73	5.63	201	269	1.31
	0835	100	1.0	20.61	0.327	22.03	5.19	155	220	0.98
	0840	100	1.5	20.65	0.322	22.00	5.13	141	210	0.91
	0845	100	2.0	20.68	0.321	21.98	5.12	140	209	0.90
	0850	100	2.5	20.70	0.321	21.96	5.12	140	208	0.89
↓	0855	100	3.0	20.72	0.321	21.94	5.12	139	207	0.88

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW07**

Sampler(s): Scott Bressinger

FIELD CONDITIONS CLEAR / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW07-190522

DATE/TIME: 5/22/19 / 1055

Sample Interval: ~~25-38~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/22/19 1105

Depth to Water - Initial (DTWi) (ft) 25.11

Purge End Date/Time: 5/22/19 1135

Depth to Well Bottom (ft) ~~25.6~~ 31.48

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 20.67 - 30.67

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~25~~ 26.50

Pump Start Time: 1105

Ferrous Iron (Required Y or N) _____ mg/L

2ND DTW PRE-PURGE - 25.11

APTIM

Sample Collection Log

Location ID: 35BWW07		Sample No: 35BWW07-190522								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	1110	100	0.5	25.19	0.644	22.64	6.15	11.5	288	0.93
	1115	100	1.0	25.26	0.631	21.69	5.83	6.7	291	0.31
	1120	100	1.5	25.30	0.631	21.45	5.83	2.1	272	0.09
	1125	100	2.0	25.33	0.632	21.37	5.83	0.8	270	0.09
	1130	100	2.5	25.36	0.632	21.29	5.83	0.0	269	0.08
↓	1135	100	3.0	25.38	0.632	21.21	5.83	0.0	268	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW08**

Sampler(s): Scott Beesinger

FIELD CONDITIONS OVERCAST

SAMPLING INFORMATION

Sample No: 35BWW08-190520 **DATE/TIME:** 5/20/19 / **Sample Interval:** ___ - ___

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/20/19 1120

Depth to Water - Initial (DTWi) (ft) 21.40

Purge End Date/Time: 5/20/19 1150

Depth to Well Bottom (ft) ~~35.08~~ 35.08

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 24.72 - 34.72

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~29.72~~ 29.72

Pump Start Time: 1120

Ferrous Iron (Required (Y) or N) 0.29 mg/L

2ND DTW PRE-PURGE - 21.40

APTIM

Sample Collection Log

Location ID: 35BWW08 Sample No: 35BWW08-190520

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/20/19	1125	100	.5	21.48	0.369	22.38	5.65	4.3	293	1.77
	1130	100	1.0	21.53	0.435	21.88	5.72	1.0	292	1.40
	1135	100	1.5	21.58	0.496	21.90	5.81	0.6	291	1.20
	1140	100	2.0	21.60	0.496	21.93	5.82	0.0	290	1.19
	1145	100	2.5	21.62	0.497	21.95	5.83	0.0	289	1.18
↓	1150	100	3.0	21.64	0.497	21.98	5.83	0.0	289	1.18

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW09**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 35BWW09-190521

DATE/TIME: 5/21/19 / 0730

Sample Interval: ~~22.82~~ 23.05

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/21/19 0740

Depth to Water - Initial (DTWi) (ft) 22.82

Purge End Date/Time: 5/21/19 0810

Depth to Well Bottom (ft) ~~36~~ 37.08

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 27.01 - 36.5

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~36~~ 31.76

Pump Start Time: 0740

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 22.82

APTIM

Sample Collection Log

Location ID: 35BWW09 Sample No: 35BWW09-190521

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/19	0745	100	5	22.89	0.635	21.52	6.56	4.9	289	1.04
	0750	100	1.0	22.95	0.637	21.01	5.90	1.5	295	0.41
	0755	100	1.5	22.99	0.637	20.97	5.62	0.4	295	0.06
	0800	100	2.0	23.02	0.638	20.93	5.61	0.0	295	0.06
	0805	100	2.5	23.04	0.638	20.91	5.60	0.0	296	0.05
	0810	100	3.0	23.05	0.638	20.88	5.60	0.0	296	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW10**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Overcast

SAMPLING INFORMATION

Sample No: 35BWW10-190520

DATE/TIME: 5/20/19 /

Sample Interval: ~~21.02 21.26~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/20/19 1315

Depth to Water - Initial (DTWi) (ft) 21.02

Purge End Date/Time: 5/20/19 1345

Depth to Well Bottom (ft) ~~33.5~~ 36.50

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 21.23 - 36.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25.615~~ 28.62

Pump Start Time: 1315

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE PURGE - 21.02

APTIM

Sample Collection Log

Location ID: 35BWW10		Sample No: 35BWW10-190520								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/20/19	1320	100	.5	21.10	0.340	24.35	5.89	209	284	1.03
	1325	100	1.0	21.16	0.343	23.77	5.58	195	284	0.75
	1330	100	1.5	21.20	0.343	23.68	5.50	185	284	0.58
	1335	100	2.0	21.23	0.344	23.60	5.49	184	284	0.57
	1340	100	2.5	21.25	0.344	23.55	5.49	183	283	0.56
	1345	100	3.0	21.26	0.344	23.47	5.48	182	283	0.56

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW11**

Sampler(s): Scott Bressinger

FIELD CONDITIONS

CLEAR/SUNNY

SAMPLING INFORMATION

Sample No: 35BWW11-1905 21

DATE/TIME: 5/21/19 / 0905

Sample Interval: ~~18.53~~ ~~18.76~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/21/19 0915

Depth to Water - Initial (DTWi) (ft) 18.53

Purge End Date/Time: 5/21/19 0945

Depth to Well Bottom (ft) ~~38~~ 37.70

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 27.41-36.91

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~30~~ 32.16

Pump Start Time: 0915

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW PRE-PURGE - 18.53

APTIM

Sample Collection Log

Location ID: 35BWW11		Sample No: 35BWW11-190512)								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/19	0920	100	.5	18.60	0.389	23.29	6.30	15.1	195	0.64
	0925	100	1.0	18.66	0.390	23.43	5.96	9.6	210	0.19
	0930	100	1.5	18.70	0.386	23.81	5.88	4.2	219	0.06
	0935	100	2.0	18.73	0.386	23.90	5.87	1.9	219	0.05
	0940	100	2.5	18.75	0.385	23.99	5.87	0.6	220	0.06
↓	0945	100	3.0	18.76	0.385	24.08	5.86	0.0	220	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW12**

Sampler(s): Scott Baessinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW12-190521

DATE/TIME: 5/21/19 / 0955

Sample Interval: ~~17.78 38.28~~ 18.42 - 38.28

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/21/19 1005

Depth to Water - Initial (DTWi) (ft) 17.78

Purge End Date/Time: 5/21/19 1035

Depth to Well Bottom (ft) ~~38.28~~ 38.28

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.42-37.65

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28.28~~ 30.29

Pump Start Time: 1005

Ferrous Iron (Required (Y) or N) 3.30 mg/L

2ND DTW PRE-PURGE - 17.78

APTIM

Sample Collection Log

Location ID: 35BWW12				Sample No: 35BWW12-190521						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/19	1010	100	.5	17.85	0.335	23.74	5.77	183	243	0.77
	1015	100	1.0	17.91	0.347	23.35	5.41	156	253	0.22
	1020	100	1.5	17.95	0.352	23.21	5.36	137	254	0.07
	1025	100	2.0	17.98	0.352	23.12	5.35	136	255	0.07
	1030	100	2.5	18.00	0.353	23.07	5.35	135	255	0.06
	1035	100	3.0	18.02	0.353	22.98	5.35	134	256	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW12**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW12-190521-FD

DATE/TIME: 5/21/19 / 0955

Sample Interval: ~~17.78 18.02~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/21/19 1005

Depth to Water - Initial (DTWi) (ft) 17.78

Purge End Date/Time: 5/21/19 1035

Depth to Well Bottom (ft) ~~38.5~~ 38.28

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.92-37.65

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27.85~~ 30.29

Pump Start Time: 1005

Ferrous Iron (Required (Y) or N) 3.30 mg/L

APTIM

Sample Collection Log

Location ID: 35BWW12		Sample No: 35BWW12-1905 21-FD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/19	1010	100	.5	17.85	0.335	23.74	5.77	183	243	0.77
	1015	100	1.0	17.91	0.347	23.35	5.41	156	253	0.22
	1020	100	1.5	17.95	0.352	23.21	5.36	137	254	0.07
	1025	100	2.0	17.98	0.352	23.12	5.35	136	255	0.07
	1030	100	2.5	18.00	0.353	23.07	5.35	135	255	0.06
↓	1035	100	3.0	18.02	0.353	27.48	5.35	134	256	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW13**

Sampler(s): Scott Baggingan

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Sample No: 35BWW13-190522

DATE/TIME: 5/22/19 / 1144

Sample Interval: ~~20.17 - 20.70~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/22/19 1155

Depth to Water - Initial (DTWi) (ft) 20.17

Purge End Date/Time: 5/22/19 1225

Depth to Well Bottom (ft) ~~35~~ 37.73

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.25-36.95

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~35~~ 29.60

Pump Start Time: 1155

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 20.17

APTIM

Sample Collection Log

Location ID: 35BWW13		Sample No: 35BWW13-1905 22								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	1200	100	.5	20.24	0.209	23.62	4.71	669	299	1.24
	1205	100	1.0	20.29	0.191	22.55	4.08	678	360	0.39
	1210	100	1.5	20.33	0.186	22.12	3.95	681	384	0.09
	1215	100	2.0	20.36	0.185	22.03	3.94	682	385	0.09
	1220	100	2.5	20.38	0.185	21.95	3.93	682	386	0.08
	1225	100	3.0	20.40	0.185	21.89	3.93	683	387	0.08

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00955322

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW14**

Sampler(s): Scott Buesinger

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Sample No: 35BWW14-190521

DATE/TIME: 5/21/19 / 1058

Sample Interval: ~~19.30~~ - ~~19.54~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 19.30

Depth to Well Bottom (ft) ~~36~~ 37.36

Screen Interval (ft): 27.71 - 37.21

Approximate depth of pump inlet*(ft): ~~36~~ 32.46

Ferrous Iron (Required (Y) or N) 0.40 mg/L

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 5/21/19 1110

Purge End Date/Time: 5/21/19 1140

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1110

2ND DTW PRE-PURGE - 19.30

APTIM

Sample Collection Log

Location ID: 35BWW14 Sample No: 35BWW14-190521

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/19	1115	100	.5	19.38	0.441	22.88	6.65	88.3	228	0.70
	1120	100	1.0	19.44	0.443	22.47	6.50	67.5	225	0.29
	1125	100	1.5	19.48	0.440	22.38	6.37	52.1	221	0.17
	1130	100	2.0	19.51	0.440	22.29	6.36	51.7	220	0.16
	1135	100	2.5	19.53	0.440	22.21	6.35	51.3	219	0.16
	1140	100	3.0	19.54	0.440	22.15	6.35	50.7	219	0.16

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW15**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

CLEAR / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW15-190522

DATE/TIME: 5/22/19 / 1233

Sample Interval: ~~20.35 - 50.18~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/22/19 1240

Depth to Water - Initial (DTWi) (ft) 20.35

Purge End Date/Time: 5/22/19 1310

Depth to Well Bottom (ft) ~~49~~ 50.18

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 19.54-49.24

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~32.50~~ 34.39

Pump Start Time: 1240

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 20.35

APTIM

Sample Collection Log

Location ID: 35BWW15				Sample No: 35BWW15-190522						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	1245	100	.5	20.42	0.414	22.05	5.64	19.3	336	0.77
	1250	100	1.0	20.47	0.437	21.80	5.68	14.5	330	0.30
	1255	100	1.5	20.51	0.456	21.76	5.71	13.9	325	0.10
	1300	100	2.0	20.53	0.456	21.71	5.72	13.4	324	0.09
	1305	100	2.5	20.55	0.457	21.68	5.72	12.9	324	0.09
	1310	100	3.0	20.56	0.457	21.65	5.73	12.5	323	0.09

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW16**

Sampler(s): Scott Beesinger

FIELD CONDITIONS clear/sunny

SAMPLING INFORMATION

Sample No: 35BWW16-190523

DATE/TIME: 5/23/19 / 0820

Sample Interval: ~~20.15 - 20.40~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/23/19 0830

Depth to Water - Initial (DTWi) (ft) 20.15

Purge End Date/Time: 5/23/19 0900

Depth to Well Bottom (ft) ~~33.5~~ 36.93

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 21.66 - 36.86

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28.15~~ 29.01

Pump Start Time: 0830

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW PRE-PURGE - 20.15

APTIM

Sample Collection Log

Location ID: 35BWW16 Sample No: 35BWW16-190523

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/23/19	0835	100	.5	20.22	0.294	22.25	5.30	183	352	0.78
	0840	100	1.0	20.29	0.296	21.60	5.26	171	347	0.28
	0845	100	1.5	20.35	0.296	21.40	5.26	166	346	0.07
	0850	100	2.0	20.38	0.296	21.35	5.26	165	345	0.07
	0855	100	2.5	20.40	0.296	21.31	5.26	164	344	0.06
	0900	100	3.0	20.40	0.296	21.27	5.26	164	343	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW17**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW17-190523

DATE/TIME: 5/23/19 / 0725

Sample Interval: ~~17.95 18.29~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow / Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/23/19 0735

Depth to Water - Initial (DTWi) (ft) 17.95

Purge End Date/Time: 5/23/19 0805

Depth to Well Bottom (ft) ~~38.5~~ 36.33

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 21.14 - 35.84

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25.85~~ 28.49

Pump Start Time: 0735

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW PRE-PURGE - 17.95

APTIM

Sample Collection Log

Location ID: 35BWW17 Sample No: 35BWW17-190523

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/23/19	0740	100	.5	18.03	0.077	22.52	4.43	758	347	1.06
	0745	100	1.0	18.09	0.079	21.68	4.20	717	365	0.42
	0750	100	1.5	18.14	0.080	21.31	4.10	689	384	0.24
	0755	100	2.0	18.17	0.080	21.20	4.09	688	385	0.23
	0800	100	2.5	18.19	0.080	21.11	4.09	688	385	0.22
↓	0805	100	3.0	18.20	0.080	21.02	4.08	687	386	0.22

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW17**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW17-1905 23-MS

DATE/TIME: 5/23/19 / 0725

Sample Interval: ~~17.5~~ ~~18.20~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: MS

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow / Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/23/19 0735

Depth to Water - Initial (DTWi) (ft) 17.95

Purge End Date/Time: 5/23/19 0805

Depth to Well Bottom (ft) ~~33.5~~ 36.33

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 21.14 - 35.84

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25.5~~ 28.49

Pump Start Time: 0735

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

Sample Collection Log

Location ID: 35BWW17				Sample No: 35BWW17-1905 23 -MS						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/23/19	0740	100	.5	18.03	0.077	22.52	4.43	758	347	1.06
	0745	100	1.0	18.09	0.079	21.68	4.20	717	365	0.42
	0750	100	1.5	18.14	0.080	21.31	4.10	689	384	0.24
	0755	100	2.0	18.17	0.080	21.20	4.09	688	385	0.23
	0800	100	2.5	18.19	0.080	21.11	4.09	688	385	0.22
	0805	100	3.0	18.20	0.080	21.02	4.08	687	386	0.22

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW17**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW17-190523-MSD **DATE/TIME:** 5/23/19 / 0725 **Sample Interval:** ~~17.95 18.20~~

Edited by W. Foss 4/20/20

Sampling Method: **Sample Purpose: MSD** **Sample Matrix: GW**

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/23/19 0735

Depth to Water - Initial (DTWi) (ft) 17.95

Purge End Date/Time: 5/23/19 0805

Depth to Well Bottom (ft) ~~38.0~~ 36.33

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 21.14 - 35.84

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25.86~~ 28.49

Pump Start Time: 0735

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

Sample Collection Log

Location ID: 35BWW17 Sample No: 35BWW17-190523-MSD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/23/19	0740	100	.5	18.03	0.077	22.52	4.43	758	347	1.06
	0745	100	1.0	18.09	0.079	21.68	4.20	717	365	0.42
	0750	100	1.5	18.14	0.080	21.31	4.10	689	384	0.24
	0755	100	2.0	18.17	0.080	21.20	4.09	688	385	0.23
	0800	100	2.5	18.19	0.080	21.11	4.09	688	385	0.22
	0805	100	3.0	18.20	0.080	21.02	4.08	687	386	0.22

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW18**

Sampler(s): Scott Brasinger

FIELD CONDITIONS OVER CAST

SAMPLING INFORMATION

Sample No: 35BWW18-190520 **DATE/TIME:** 5/20/19 / **Sample Interval:** ~~25.0-25.82~~

Edited by W. Foss 4/20/20

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/20/19 0835

Depth to Water - Initial (DTWi) (ft) 25.60

Purge End Date/Time: 5/20/19 0905

Depth to Well Bottom (ft) ~~35.5~~ 35.50

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 20.69 - 35.42

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25.95~~ 28.06

Pump Start Time: 0835

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW PRE-PURGE - 25.60

APTIM

Sample Collection Log

Location ID: 35BWW18 Sample No: 35BWW18-190520

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/20/19	0840	100	.5	25.68	1.07	21.45	6.06	74.2	256	0.76
	0845	100	1.0	25.73	1.01	21.13	5.86	59.8	260	0.19
	0850	100	1.5	25.77	0.990	21.08	5.79	46.2	261	0.06
	0855	100	2.0	25.79	0.988	21.02	5.77	45.7	262	0.06
	0900	100	2.5	25.81	0.988	20.99	5.77	45.3	263	0.05
↓	0905	100	3.0	25.82	0.988	20.95	5.77	44.9	263	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW19**

Sampler(s): Scott Beesinger

FIELD CONDITIONS OVERCAST

SAMPLING INFORMATION

Sample No: 35BWW19-190520

DATE/TIME: 5/20/19 / 0735

Sample Interval: ~~25.66 25.68~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/20/19 0745

Depth to Water - Initial (DTWi) (ft) 25.66

Purge End Date/Time: 5/20/19 0815

Depth to Well Bottom (ft) ~~33.98~~ 37.68

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 21.31 - 36.04

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28.15~~ 28.68

Pump Start Time: 0745

Ferrous Iron (Required for (Y) or N) _____ mg/L

2ND DTW PRE-PURGE - 25.66

APTIM

Sample Collection Log

Location ID: 35BWW19		Sample No: 35BWW19-1905_20								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/20/19	0750	100	.5	25.73	2.56	22.89	6.15	93.8	247	0.91
	0755	100	1.0	25.78	2.56	22.29	6.00	79.2	258	0.52
	0800	100	1.5	25.82	2.57	21.90	5.85	68.0	261	0.40
	0805	100	2.0	25.85	2.58	21.82	5.84	67.7	262	0.39
	0810	100	2.5	25.87	2.58	21.76	5.83	67.1	262	0.38
	0815	100	3.0	25.89	2.58	21.68	5.83	66.9	263	0.37

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW20**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR/SUNNY

SAMPLING INFORMATION

Sample No: 35BWW20-190522

DATE/TIME: 5/22/19 / 0730

Sample Interval: ~~21.95 33.21~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/22/19 0840

Depth to Water - Initial (DTWi) (ft) 21.95

Purge End Date/Time: 5/22/19 0810

Depth to Well Bottom (ft) ~~30.1~~ 33.00

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 17.70 - 32.46

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28.52~~ 25.08

Pump Start Time: 0740

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW PRE-PURGE - 21.95

APTIM

Sample Collection Log

Location ID: 35BWW20				Sample No: 35BWW20-190522						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	0745	100	.5	22.03	0.314	23.19	5.76	133	276	1.73
	0750	100	1.0	22.09	0.306	22.97	5.65	101	282	1.38
	0755	100	1.5	22.14	0.307	22.95	5.65	94.1	283	1.29
	0800	100	2.0	22.17	0.308	22.92	5.65	93.7	284	1.27
	0805	100	2.5	22.19	0.308	22.90	5.65	93.3	285	1.25
	0810	100	3.0	22.21	0.308	22.88	5.65	92.8	285	1.24

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW20**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW20-190522-FD

DATE/TIME: 5/22/19 / 0730

Sample Interval: ~~21.45 22.21~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.95

Depth to Well Bottom (ft) ~~30.4~~ 33.00

Screen Interval (ft): 17.70 - 32.46

Approximate depth of pump inlet*(ft): ~~28.52~~ 25.08

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 5/22/19 0740

Purge End Date/Time: 5/22/19 0810

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0740

APTIM

Sample Collection Log

Location ID: 35BWW20				Sample No: 35BWW20-1905~~22~~FD						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	0745	100	.5	22.03	0.314	23.19	5.76	133	276	1.73
	0750	100	1.0	22.09	0.306	22.97	5.65	101	282	1.38
	0755	100	1.5	22.14	0.307	22.95	5.65	94.1	283	1.29
	0800	100	2.0	22.17	0.308	22.92	5.65	93.7	284	1.27
	0805	100	2.5	22.19	0.308	22.90	5.65	93.3	285	1.25
	0810	100	3.0	22.21	0.308	22.88	5.65	92.8	285	1.24

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW23**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Cloudy

SAMPLING INFORMATION

Sample No: 35BWW23-190521

DATE/TIME: 5/21/19 1157

Sample Interval: ~~26.55 26.82~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Lowflow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/21/19 1210

Depth to Water - Initial (DTWi) (ft) 26.55

Purge End Date/Time: 5/21/19 1240

Depth to Well Bottom (ft) ~~33.67~~ 33.73

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 23.63 - 33.63

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25~~ 28.63

Pump Start Time: 1210

Ferrous Iron (Required (Y) or N) 0.19 mg/L

2ND DTW PRE-PURGE - 26.55

APTIM

Sample Collection Log

Location ID: 35BWW23 Sample No: 35BWW23-1905_21

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/19	1215	100	.5	26.63	0.503	24.77	5.90	19.0	253	1.22
	1220	100	1.0	26.69	0.512	24.36	5.32	29.4	284	0.24
	1225	100	1.5	26.74	0.515	24.29	5.25	23.9	291	0.05
	1230	100	2.0	26.77	0.516	24.18	5.24	23.2	292	0.06
	1235	100	2.5	26.80	0.516	24.09	5.24	22.7	292	0.05
↓	1240	100	3.0	26.82	0.516	23.98	5.24	22.1	293	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW24**

Sampler(s): Scott Beesingar

FIELD CONDITIONS CLEAR / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW24-190522

DATE/TIME: 5/22/19 / 0913

Sample Interval: ~~27.53~~ 27.77

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Lowflow / BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/22/19 0925

Depth to Water - Initial (DTWi) (ft) 27.53

Purge End Date/Time: 5/22/19 0955

Depth to Well Bottom (ft) ~~32.2~~ 32.83

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.92-32.42

Discharge Tube Diameter: 1/411

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~24.25~~ 28.50

Pump Start Time: 0925

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 27.53

APTIM

Sample Collection Log

Location ID: 35BWW24		Sample No: 35BWW24-190522								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	0930	100	.5	27.60	1.43	23.20	6.41	4.4	285	1.79
	0935	100	1.0	27.66	1.46	23.36	6.10	1.2	286	1.40
	0940	100	1.5	27.70	1.46	23.37	6.02	0.5	286	1.30
	0945	100	2.0	27.73	1.46	23.38	6.01	0.0	286	1.28
	0950	100	2.5	27.75	1.46	23.39	6.00	0.0	286	1.26
	0955	100	3.0	27.77	1.46	23.40	6.00	0.0	286	1.24

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW25**

Sampler(s): Scott Baesinger

FIELD CONDITIONS CLEAR/ SUNNY

SAMPLING INFORMATION

Sample No: 35BWW25-190522

DATE/TIME: 5/22/19 / 1004

Sample Interval ~~25.23 - 35.46~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) ~~25.23~~ 25.23

Depth to Well Bottom (ft) ~~30.2~~ 32.58

Screen Interval (ft): 22.91 - 32.41

Approximate depth of pump inlet*(ft): ~~24.75~~ 27.66

Purge Start Date/Time: 5/22/19 1015

Purge End Date/Time: 5/22/19 1045

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1015

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 25.23

APTIM

Sample Collection Log

Location ID: 35BWW25		Sample No: 35BWW25-190522								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	1020	100	.5	25.31	0.739	23.30	6.29	3.1	280	1.02
	1025	100	1.0	25.37	0.744	22.63	5.62	1.0	295	0.99
	1030	100	1.5	25.41	0.746	22.64	5.58	0.3	296	0.84
	1035	100	2.0	25.43	0.746	22.66	5.57	0.0	297	0.83
	1040	100	2.5	25.45	0.746	22.68	5.57	0.0	297	0.82
	1045	100	3.0	25.46	0.746	22.70	5.56	0.0	297	0.82

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW26**

Sampler(s): Scott Bussinger

FIELD CONDITIONS Overcast

SAMPLING INFORMATION

Sample No: 35BWW26-190520

DATE/TIME: 9/20/19 / 1000

Sample Interval: ~~25.31 25.57~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/20/19 1010

Depth to Water - Initial (DTWi) (ft) 25.31

Purge End Date/Time: 5/20/19 1040

Depth to Well Bottom (ft) ~~35.5~~ 38.06

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 28.16-37.66

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~30.98~~ 32.91

Pump Start Time: 1010

Ferrous Iron (Required Y or N): (Y) 0.40 mg/L

2ND DTW PRE-PURGE - 25.31

APTIM

Sample Collection Log

Location ID: 35BWW26 Sample No: 35BWW26-190520

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/20/19	1015	100	.5	25.39	0.280	22.16	5.66	11.9	296	1.40
	1020	100	1.0	25.46	0.287	22.15	5.25	3.0	299	1.01
	1025	100	1.5	25.50	0.289	22.18	5.07	0.8	305	0.72
	1030	100	2.0	25.53	0.290	22.20	5.06	0.0	305	0.71
	1035	100	2.5	25.55	0.290	22.22	5.06	0.0	306	0.70
	1040	100	3.0	25.57	0.290	22.25	5.06	0.0	306	0.69

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00955350

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW58**

Sampler(s): Scott Baesinger

FIELD CONDITIONS Clear/ Sunny

SAMPLING INFORMATION

Sample No: LHSMW58-190522

DATE/TIME: 5/22/19 / 0818

Sample Interval ~~20.22 20.45~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 20.22

Depth to Well Bottom (ft) ~~35~~ 35.23

Screen Interval (ft): 25.15 - 35.15

Approximate depth of pump inlet*(ft): ~~25~~ 30.15

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 5/22/19 0830

Purge End Date/Time: 5/22/19 0900

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0830

2ND DTW PRE-PURGE - 20.22

APTIM

Sample Collection Log

Location ID: LHSMW58 Sample No: LHSMW58-190522

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	0835	100	.5	20.30	0.234	22.17	6.33	3.7	283	4.13
	0840	100	1.0	20.35	0.235	22.08	5.63	1.1	295	3.59
	0845	100	1.5	20.39	0.235	22.05	5.42	0.4	300	3.31
	0850	100	2.0	20.42	0.235	22.01	5.41	0.0	301	3.29
	0855	100	2.5	20.44	0.235	21.99	5.40	0.0	302	3.27
	0900	100	3.0	20.45	0.235	21.96	5.39	0.0	302	3.25

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW58**

Sampler(s): Scott Bressinger

FIELD CONDITIONS

Clear / Sunny

SAMPLING INFORMATION

Sample No: LHSMW58-190522-MS

DATE/TIME: 5/22/19 / 0818

Sample Interval: ~~20.22 - 20.45~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: MS

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder pump

Casing ID (in.): 4

Purge Start Date/Time: 5/22/19 0830

Depth to Water - Initial (DTWi) (ft) 20.22

Purge End Date/Time: 5/22/19 0900

Depth to Well Bottom (ft) ~~20~~ 35.23

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 25.15-35.15

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~20~~ 30.15

Pump Start Time: 0830

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

Sample Collection Log

Location ID: LHSMW58		Sample No: LHSMW58-190522-MS								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	0835	100	.5	20.30	0.234	22.17	6.33	3.7	283	4.13
	0840	100	1.0	20.35	0.235	22.08	5.63	1.1	295	3.59
	0845	100	1.5	20.39	0.235	22.05	5.42	0.4	300	3.31
	0850	100	2.0	20.42	0.235	22.01	5.41	0.0	301	3.29
	0855	100	2.5	20.44	0.235	21.99	5.40	0.0	302	3.27
↓	0900	100	3.0	20.45	0.235	21.96	5.39	0.0	302	3.25

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW58**

Sampler(s): Scott Baesinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: LHSMW58-190522-MSD **DATE/TIME:** 5/22/19 / 0818 **Sample Interval:** ~~20.22-20.45~~

Edited by W. Foss 4/20/20

Sampling Method: **Sample Purpose: MSD** **Sample Matrix: GW**

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/22/19 0830

Depth to Water - Initial (DTWi) (ft) 20.22

Purge End Date/Time: 5/22/19 0900

Depth to Well Bottom (ft) ~~20~~ 35.23

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 25.15-35.15

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~20~~ 30.15

Pump Start Time: 0900

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

Sample Collection Log

Location ID: LHSMW58		Sample No: LHSMW58-190522-MSD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/19	0835	100	.5	20.30	0.234	22.17	6.33	3.7	283	4.13
	0840	100	1.0	20.35	0.235	22.08	5.63	1.1	295	3.59
	0845	100	1.5	20.34	0.235	22.05	5.42	0.4	300	3.31
	0850	100	2.0	20.42	0.235	22.01	5.41	0.0	301	3.29
	0855	100	2.5	20.44	0.235	21.99	5.40	0.0	302	3.27
↓	0900	100	3.0	20.45	0.235	21.96	5.39	0.0	302	3.25

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): Scott Baessinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW01-190805

DATE/TIME: 8/5/19 / 0928

Sample Interval: ~~11.43 12.12~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 11.93

Depth to Well Bottom (ft) ~~21.20~~

Screen Interval (ft): 11.21 - 21.21

Approximate depth of pump inlet*(ft): ~~21~~ 16.21

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 8/5/19 0935

Purge End Date/Time: 8/5/19 1005

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0935

2ND DEPTH TO WATER - 11.93

APTIM

Sample Collection Log

Location ID: 35BWW01				Sample No: 35BWW01-190805						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	0940	100	.5	12.00	0.160	23.77	6.85	38.9	263	1.22
	0945	100	1.0	12.05	0.125	23.31	5.58	30.3	284	0.40
	0950	100	1.5	12.09	0.114	23.25	5.42	28.1	290	0.16
	0955	100	2.0	12.12	0.113	23.21	5.41	27.4	291	0.15
	1000	100	2.5	12.11	0.113	23.17	5.40	26.8	291	0.16
↓	1005	100	3.0	12.12	0.113	23.14	5.40	26.3	292	0.15

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW01**

Project No: **501032**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR/SUNNY

SAMPLING INFORMATION

Sample No: 35BWW01-190805-FD

DATE/TIME: 8/5/19 / 0928

Sample Interval: ~~11.93 12.12~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/5/19 0935

Depth to Water - Initial (DTWi) (ft) 11.93

Purge End Date/Time: 8/5/19 1005

Depth to Well Bottom (ft) 21.20

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 11.21 - 21.21

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 16.21

Pump Start Time: 0935

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

Sample Collection Log

Location ID: 35BWW01 Sample No: 35BWW01-190805-FD

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	0940	100	.5	12.00	0.160	23.77	6.85	38.9	263	1.22
	0945	100	1.0	12.05	0.125	23.31	5.58	30.3	284	0.40
	0950	100	1.5	12.09	0.114	23.25	5.42	28.1	290	0.16
	0955	100	2.0	12.12	0.113	23.21	5.41	27.4	291	0.15
	1000	100	2.5	12.11	0.113	23.17	5.40	26.8	291	0.16
↓	1005	100	3.0	12.12	0.113	23.14	5.40	26.3	292	0.15

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW04**

Sampler(s): Scott Bessinger

FIELD CONDITIONS Clear/ Sunny

SAMPLING INFORMATION

Sample No: 35BWW04-190805 **DATE/TIME:** 8/5/19 / **Sample Interval:** ~~20.78~~ ~~20.78~~

Edited by W. Foss 4/20/20

Sampling Method: **Sample Purpose:** REG **Sample Matrix:** GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/5/19 1125

Depth to Water - Initial (DTWi) (ft) 20.78

Purge End Date/Time: 8/5/19 1200

Depth to Well Bottom (ft) ~~35~~ 33.30

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.85-32.85

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25~~ 27.85

Pump Start Time: 1125

Ferrous Iron (Required (Y) or N) 0.00 mg/L

2ND DEPTH TO WATER - 20.78

APTIM

Sample Collection Log

Location ID: 35BWW04				Sample No: 35BWW04-190805						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	1130	100	.5	20.85	0.328	24.60	6.50	1.9	267	1.13
	1135	100	1.0	20.90	0.330	22.51	6.10	0.8	266	0.59
	1140	100	1.5	20.93	0.329	21.98	5.98	0.0	262	0.40
	1145	100	2.0	20.95	0.328	21.71	5.94	0.0	262	0.39
	1150	100	2.5	20.97	0.327	21.64	5.94	0.0	262	0.38
	1155	100	3.0	20.98	0.327	21.53	5.93	0.0	262	0.37
↓	1200	100	3.5	20.98	0.327	21.45	5.93	0.0	262	0.37

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW05**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW05-190806

DATE/TIME: 8/6/19 / 0903

Sample Interval: ~~21.83 - 33.05~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/6/19 0910

Depth to Water - Initial (DTWi) (ft) 21.83

Purge End Date/Time: 8/6/19 0940

Depth to Well Bottom (ft) ~~38~~ ~~25~~ 38.60

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 28.60 - 38.60

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~38~~ 33.60

Pump Start Time: 0910

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND Depth to water - 21.83

APTIM

Sample Collection Log

Location ID: 35BWW05				Sample No: 35BWW05-190806						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/6/19	0915	100	.5	21.90	0.325	23.54	7.09	259	107	0.85
	0920	100	1.0	21.95	0.321	23.32	6.20	235	112	0.27
	0925	100	1.5	21.98	0.318	23.25	6.00	229	114	0.06
	0930	100	2.0	22.01	0.317	23.19	6.00	228	115	0.06
	0935	100	2.5	22.03	0.317	23.14	5.99	226	116	0.05
↓	0940	100	3.0	22.05	0.317	23.09	5.99	225	116	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW07**

Sampler(s): Scott Bassinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW07-190805

DATE/TIME: 8/5/19 / 1317

Sample Interval: ~~23.40 24.12~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.90

Depth to Well Bottom (ft) ~~28.95~~ 31.41

Screen Interval (ft): 20.67 - 30.67

Approximate depth of pump inlet*(ft): ~~28~~

Ferrous Iron (Required Y or N) _____ mg/L

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 8/5/19 1325

Purge End Date/Time: 8/5/19 1355

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Pump Start Time: 1325

2ND DEPTH TO WATER - 23.90

APTIM

Sample Collection Log

Location ID: 35BWW07 Sample No: 35BWW07-190805

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	1330	100	.5	23.97	0.668	24.25	6.85	21.1	65	0.85
	1335	100	1.0	24.08	0.667	23.17	6.88	9.3	48	0.24
	1340	100	1.5	24.06	0.660	22.40	6.89	4.2	49	0.12
	1345	100	2.0	24.09	0.659	22.29	6.89	2.0	50	0.12
	1350	100	2.5	24.11	0.659	22.12	6.89	0.9	51	0.11
	1355	100	3.0	24.12	0.659	22.05	6.89	0.0	51	0.11

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW08**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR/ SUNNY

SAMPLING INFORMATION

Sample No: 35BWW08-190805

DATE/TIME: 8/5/19 / 1016

Sample Interval: ~~20.50~~ ~~20.72~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 20.50

Depth to Well Bottom (ft) ~~33.5~~ 34.20

Screen Interval (ft): 24.72-34.72

Approximate depth of pump inlet*(ft): ~~33~~ 29.72

Ferrous Iron (Required (Y) or N) 0.00 mg/L

Purging Method/Equipment: Low flow/BLADDER Pump

Purge Start Date/Time: 8/5/19 1030

Purge End Date/Time: 8/5/19 1100

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Pump Start Time: 1030

2ND DEPTH TO WATER - 20.50

APTIM

Sample Collection Log

Location ID: 35BWW08 Sample No: 35BWW08-190805

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	1035	100	.5	20.58	0.390	25.31	6.90	27.7	223	2.17
	1040	100	1.0	20.64	0.384	24.36	7.43	20.3	212	1.89
	1045	100	1.5	20.66	0.390	24.39	7.55	20.1	212	1.71
	1050	100	2.0	20.69	0.391	24.45	7.56	19.7	212	1.69
	1055	100	2.5	20.71	0.391	24.52	7.56	19.4	212	1.67
↓	1100	100	3.0	20.72	0.391	24.59	7.57	19.1	212	1.65

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW09**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Sample No: 35BWW09-190805

DATE/TIME: 8/5/19 / 0844

Sample Interval: ~~23.95~~ 24.14

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/5/19 0850

Depth to Water - Initial (DTWi) (ft) 23.95

Purge End Date/Time: 8/5/19 0920

Depth to Well Bottom (ft) ~~35~~ 37.12

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 27.01 - 36.51

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~35~~ 31.76

Pump Start Time: 0850

Ferrous Iron (Required Y or N) _____ mg/L

2ND DEPTH TO WATER - ~~23~~ 23.95

APTIM

Sample Collection Log

Location ID: 35BWW09		Sample No: 35BWW09-190805								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	0855	100	.5	24.03	0.543	22.83	7.12	2.8	225	1.13
	0900	100	1.0	24.08	0.533	22.30	7.38	0.9	225	0.96
	0905	100	1.5	24.11	0.533	22.19	7.39	1.4	228	0.85
	0910	100	2.0	24.13	0.533	22.13	7.39	2.1	228	0.84
	0915	100	2.5	24.14	0.533	22.07	7.39	2.8	229	0.83
↓	0920	100	3.0	24.14	0.533	22.02	7.39	3.3	229	0.82

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW10**

Sampler(s): Scott Bressinger

FIELD CONDITIONS Clear | Sunny

SAMPLING INFORMATION

Sample No: 35BWW10-190806

DATE/TIME: 8/6/19 / 0815

Sample Interval: ~~22.68 23.92~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/6/19 0825

Depth to Water - Initial (DTWi) (ft) 22.68

Purge End Date/Time: 8/6/19 0855

Depth to Well Bottom (ft) ~~38.6~~ 36.48

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 21.23-36.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~26.15~~ 28.62

Pump Start Time: 0825

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 22.68

APTIM

Sample Collection Log

Location ID: 35BWW10				Sample No: 35BWW10-190806						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/6/19	0830	100	.5	22.75	0.290	22.83	6.98	247	232	2.14
	0835	100	1.0	22.81	0.291	21.85	7.19	228	229	1.79
	0840	100	1.5	22.85	0.293	21.93	7.23	219	228	1.61
	0845	100	2.0	22.88	0.293	21.99	7.24	218	227	1.59
	0850	100	2.5	22.90	0.293	22.03	7.25	217	227	1.58
↓	0855	100	3.0	22.92	0.293	22.07	7.26	216	227	1.57

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW11**

Sampler(s): Scott Bessinger

FIELD CONDITIONS CLEAR/SUNNY

SAMPLING INFORMATION

Sample No: 35BWW11-190807

DATE/TIME: 8/7/19 / 0718

Sample Interval: ~~19.66 19.66~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/7/19 0730

Depth to Water - Initial (DTWi) (ft) 19.66

Purge End Date/Time: 8/7/19 0800

Depth to Well Bottom (ft) ~~35~~ 37.65

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 27.41 - 36.91

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~30~~ 32.16

Pump Start Time: 0730

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - 19.66

APTIM

Sample Collection Log

Location ID: 35BWW11				Sample No: 35BWW11-190807						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/7/19	0735	100	.5	19.74	0.336	23.61	6.49	0.0	248	1.11
	0740	100	1.0	19.79	0.338	22.55	6.47	0.0	225	0.28
	0745	100	1.5	19.82	0.338	22.44	6.47	0.0	218	0.05
	0750	100	2.0	19.85	0.339	22.38	6.46	0.0	217	0.04
	0755	100	2.5	19.87	0.339	22.29	6.46	0.0	216	0.04
	0800	100	3.0	19.88	0.339	22.21	6.46	0.0	216	0.04

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW12**

Project No: **501032**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear/ Sunny

SAMPLING INFORMATION

Sample No: 35BWW12-1908~~05~~

DATE/TIME: 8/5/19 / 1214

Sample Interval: ~~19.54~~ ~~19.74~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/5/19 1225

Depth to Water - Initial (DTWi) (ft) 19.54

Purge End Date/Time: 8/5/19 1255

Depth to Well Bottom (ft) ~~38.5~~ 37.30

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.92 - 37.65

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~29.55~~ 30.29

Pump Start Time: 1225

Ferrous Iron (Required (Y) or N) 0.78 mg/L

2ND DEPTH TO WATER - 19.54

APTIM

Sample Collection Log

Location ID: 35BWW12 Sample No: 35BWW12-190805

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	1230	100	.5	19.60	0.283	25.77	6.55	102	238	0.98
	1235	100	1.0	19.66	0.294	24.90	6.46	85.1	218	0.40
	1240	100	1.5	19.70	0.295	24.40	6.36	82.0	207	0.24
	1245	100	2.0	19.73	0.296	24.35	6.35	81.7	206	0.23
	1250	100	2.5	19.72	0.296	24.29	6.35	81.2	205	0.23
	1255	100	3.0	19.74	0.296	24.24	6.35	80.8	205	0.22

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW12**

Project No: **501032**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW12-190805-FD

DATE/TIME: 8/5/19 / 1214

Sample Interval: ~~19.54 19.74~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/5/19 1225

Depth to Water - Initial (DTWi) (ft) 19.54

Purge End Date/Time: 8/5/19 1255

Depth to Well Bottom (ft) 37.30

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.92-37.65

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 30.29

Pump Start Time: 1225

Ferrous Iron (Required (Y) or N) 0.78 mg/L

APTIM

Sample Collection Log

Location ID: 35BWW12		Sample No: 35BWW12-190805-FD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	1230	100	.5	19.60	0.283	25.77	6.55	102	238	0.98
	1235	100	1.0	19.66	0.294	24.90	6.46	85.1	218	0.40
	1240	100	1.5	19.70	0.295	24.40	6.36	82.0	207	0.24
	1245	100	2.0	19.73	0.296	24.35	6.35	81.7	206	0.23
	1250	100	2.5	19.72	0.296	24.29	6.35	81.2	205	0.23
↓	1255	100	3.0	19.74	0.296	24.24	6.35	80.8	205	0.22

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW13**

Sampler(s): Scott Bassinger

FIELD CONDITIONS Clear/Sunny

SAMPLING INFORMATION

Sample No: 35BWW13-190806

DATE/TIME: 8/6/19 / 1236

Sample Interval: ~~22.02~~ ~~22.23~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 22.02

Depth to Well Bottom (ft) ~~35~~ 37.74

Screen Interval (ft): 22.25-36.95

Approximate depth of pump inlet*(ft): ~~27.45~~ 29.60

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 8/6/19 1240

Purge End Date/Time: 8/6/19 1310

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Pump Start Time: 1240

2ND DEPTH TO WATER - 22.02

APTIM

Sample Collection Log

Location ID: 35BWW13				Sample No: 35BWW13-1908 06						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/6/19	1245	100	.5	22.10	0.230	26.05	5.94	158	276	1.37
	1250	100	1.0	22.15	0.204	25.40	4.92	152	315	0.88
	1255	100	1.5	22.18	0.201	25.36	4.83	148	322	0.75
	1300	100	2.0	22.20	0.200	25.30	4.82	147	323	0.73
	1305	100	2.5	22.22	0.200	25.26	4.81	146	323	0.72
↓	1310	100	3.0	22.23	0.200	25.21	4.81	146	324	0.71

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW14**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear/ Sunny

SAMPLING INFORMATION

Sample No: 35BWW14-190806

DATE/TIME: 8/6/19 / 1040

Sample Interval: ~~20.57 20.83~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/6/19 1050

Depth to Water - Initial (DTWi) (ft) 20.57

Purge End Date/Time: 8/6/19 1125

Depth to Well Bottom (ft) ~~20~~ 37.27

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 27.71 - 37.21

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~30~~ 32.46

Pump Start Time: 1050

Ferrous Iron (Required Y or N) 0.45 mg/L

2ND DEPTH TO WATER - 20.57

APTIM

Sample Collection Log

Location ID: 35BWW14					Sample No: 35BWW14-190806					
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/6/19	1055	100	.5	20.65	0.430	25.76	6.60	40.3	173	0.90
	1100	100	1.0	20.71	0.429	24.83	6.75	39.7	170	0.41
	1105	100	1.5	20.75	0.430	24.43	6.81	39.2	169	0.21
	1110	100	2.0	20.78	0.430	23.66	6.84	38.9	160	0.06
	1115	100	2.5	20.80	0.430	23.57	6.85	38.4	159	0.05
	1120	100	3.0	20.82	0.430	23.46	6.85	37.8	158	0.05
	1125	100	3.5	20.83	0.430	23.39	6.85	37.1	158	0.05

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW15**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR/SUNNY

SAMPLING INFORMATION

Sample No: 35BWW15-190807

DATE/TIME: 8/7/19 / 1205

Sample Interval: ~~21.20~~ 21.41

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/7/19 1215

Depth to Water - Initial (DTWi) (ft) 21.20

Purge End Date/Time: 8/7/19 1245

Depth to Well Bottom (ft) ~~48~~ 50.15

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 19.54-49.24

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~32.85~~ 34.39

Pump Start Time: 1215

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 21.20

APTIM

Sample Collection Log

Location ID: 35BWW15				Sample No: 35BWW15-190807						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/7/19	1220	100	.5	21.28	0.354	26.75	6.10	203	285	0.88
	1225	100	1.0	21.33	0.376	25.26	6.59	165	262	0.44
	1230	100	1.5	21.37	0.387	24.89	6.68	155	221	0.34
	1235	100	2.0	21.40	0.387	24.80	6.69	154	220	0.33
	1240	100	2.5	21.41	0.388	24.75	6.69	153	219	0.33
	1245	100	3.0	21.41	0.388	24.68	6.69	152	218	0.32

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW16**

Sampler(s): Scott Bussinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW16-190807

DATE/TIME: 8/7/19 / 1028

Sample Interval: ~~20.86 - 21.03~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/7/19 1035

Depth to Water - Initial (DTWi) (ft) 20.86

Purge End Date/Time: 8/7/19 1105

Depth to Well Bottom (ft) ~~35.5~~ 36.90

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 21.66 - 36.86

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28.43~~ 29.01

Pump Start Time: 1035

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 20.86

APTIM

Sample Collection Log

Location ID: 35BWW16 Sample No: 35BWW16-190807

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/7/19	1040	100	.5	20.93	0.255	25.23	6.70	133	235	0.93
	1045	100	1.0	20.98	0.247	25.51	5.95	115	198	0.22
	1050	100	1.5	21.02	0.245	25.55	5.92	108	189	0.07
	1055	100	2.0	21.05	0.244	25.59	5.91	107	189	0.07
	1100	100	2.5	21.07	0.244	25.63	5.91	107	189	0.06
	1105	100	3.0	21.08	0.244	25.67	5.91	106	189	0.06

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW17**

Sampler(s): Scott Beasinger

FIELD CONDITIONS CLEAR / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW17-190807

DATE/TIME: 8/7/19 1114

Sample Interval: ~~14.63 29.84~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow / Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/7/19 1120

Depth to Water - Initial (DTWi) (ft) 14.63

Purge End Date/Time: 8/7/19 1155

Depth to Well Bottom (ft) ~~36.5~~ 36.25

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 21.14 - 35.84

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~26.5~~ 28.48

Pump Start Time: 1120

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - ~~26.5~~ 19.63

APTIM

Sample Collection Log

Location ID: 35BWW17				Sample No: 35BWW17-190807						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/7/19	1025	100	.5	19.70	0.066	26.39	5.37	288	267	2.01
	1030	100	1.0	19.75	0.061	24.95	5.10	260	301	1.55
	1135	100	1.5	19.79	0.060	24.29	5.03	241	336	1.39
	1140	100	2.0	19.81	0.060	24.10	4.92	238	348	1.30
	1145	100	2.5	19.83	0.060	24.01	4.91	237	349	1.28
	1150	100	3.0	19.84	0.060	24.93	4.91	236	349	1.26
↓	1155	100	3.5	19.84	0.060	23.82	4.90	235	350	1.25

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW18**

Sampler(s): Scott Beesinger

FIELD CONDITIONS Clear / Sunny

SAMPLING INFORMATION

Sample No: 35BWW18-190805

DATE/TIME: 8/5/19 / 0758

Sample Interval: ~~25.61 25.84~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/5/19 0805

Depth to Water - Initial (DTWi) (ft) 25.61

Purge End Date/Time: 8/5/19 0835

Depth to Well Bottom (ft) ~~35.5~~ 35.45

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 20.69 - 35.42

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25.135~~ 28.06

Pump Start Time: 0805

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - 25.61

APTIM

Sample Collection Log

Location ID: 35BWW18 Sample No: 35BWW18-190805

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	0810	100	.5	25.67	0.798	22.46	7.20	4.3	255	1.88
	0815	100	1.0	25.73	0.735	21.28	6.39	1.1	267	1.65
	0820	100	1.5	25.77	0.735	21.05	6.25	0.0	268	1.50
	0825	100	2.0	25.80	0.735	20.96	6.24	0.0	269	1.48
	0830	100	2.5	25.82	0.735	20.89	6.23	0.0	269	1.46
↓	0835	100	3.0	25.84	0.735	20.85	6.23	0.0	269	1.44

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW19**

Sampler(s): Scott BEESINGER

FIELD CONDITIONS CLEAR / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW19-190805

DATE/TIME: 8/5/19 / 0642

Sample Interval: ~~25.42 - 25.63~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 25.42

Depth to Well Bottom (ft) ~~38.98~~ 36.62

Screen Interval (ft): 21.31 - 36.04

Approximate depth of pump inlet*(ft): ~~26.145~~ 28.68

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low flow / Bladder Pump

Purge Start Date/Time: 8/5/19 0655

Purge End Date/Time: 8/5/19 0725

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0655

2ND DEPTH TO WATER - 25.42

APTIM

Sample Collection Log

Location ID: 35BWW19 Sample No: 35BWW19-190865

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/5/19	0700	100	.5	25.50	2.45	22.09	7.29	29.8	260	2.35
	0705	100	1.0	25.56	2.50	21.40	6.83	16.5	256	2.03
	0710	100	1.5	25.60	2.59	20.77	6.67	13.7	257	1.91
	0715	100	2.0	25.63	2.59	20.70	6.66	13.3	258	1.89
	0720	100	2.5	25.62	2.60	20.65	6.65	12.8	258	1.87
	0725	100	3.0	25.63	2.60	20.59	6.65	12.4	258	1.85

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW20**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW20-190806

DATE/TIME: 8/6/19 / 0725

Sample Interval: ~~23.67~~ - ~~32.95~~ 23.92

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Lowflow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/6/19 0735

Depth to Water - Initial (DTWi) (ft) 23.67

Purge End Date/Time: 8/6/19 0805

Depth to Well Bottom (ft) ~~30.4~~ 32.95

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 17.70 - 32.46

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~27.92~~ 25.08

Pump Start Time: 0735

Ferrous Iron (Required Y or (N) _____ mg/L

2ND Depth to WATER - 23.67

APTIM

Sample Collection Log

Location ID: 35BWW20 Sample No: 35BWW20-190806

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/6/19	0740	100	.5	23.75	0.150	23.45	6.03	388	274	4.23
	0745	100	1.0	23.81	0.160	22.85	6.07	361	271	4.02
	0750	100	1.5	23.85	0.174	22.64	6.17	324	267	3.80
	0755	100	2.0	23.88	0.174	22.53	6.18	323	266	3.77
	0800	100	2.5	23.90	0.175	22.45	6.19	322	265	3.75
	0805	100	3.0	23.92	0.175	22.40	6.20	321	264	3.72

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW20**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear/Sunny

SAMPLING INFORMATION

Sample No: 35BWW20-190806-FD

DATE/TIME: 8/6/19 / 0725

Sample Interval: ~~23.67 - 23.42~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: FD

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow/Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/6/19 0735

Depth to Water - Initial (DTWi) (ft) 23.67

Purge End Date/Time: 8/6/19 0805

Depth to Well Bottom (ft) ~~35.4~~ 32.95

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 17.70 - 32.46

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

Approximate depth of pump inlet*(ft): ~~28.52~~ 25.08

Pump Start Time: 0735

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

Sample Collection Log

Location ID: 35BWW20		Sample No: 35BWW20-190806FD								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/6/19	0740	100	.5	23.75	0.150	23.45	6.03	388	274	4.23
	0745	100	1.0	23.81	0.160	22.85	6.07	361	271	4.02
	0750	100	1.5	23.85	0.174	22.64	6.17	324	267	3.80
	0755	100	2.0	23.88	0.174	22.53	6.18	323	266	3.77
	0800	100	2.5	23.90	0.175	22.45	6.19	322	265	3.75
↓	0805	100	3.0	23.92	0.175	22.40	6.20	321	264	3.72

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW23**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

Clear/Sunny

SAMPLING INFORMATION

Sample No: 35BWW23-190806

DATE/TIME: 8/6/19 / 1140

Sample Interval: ~~24.49~~ ~~26.49~~ 26.73

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/6/19 1150

Depth to Water - Initial (DTWi) (ft) 26.49

Purge End Date/Time: 8/6/19 1220

Depth to Well Bottom (ft) ~~33.61~~ 33.66

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 23.63 - 33.63

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28~~ 28.63

Pump Start Time: 1150

Ferrous Iron (Required (Y) or N) 1.04 mg/L

2ND DEPTH TO WATER - 26.49

APTIM

Sample Collection Log

Location ID: 35BWW23				Sample No: 35BWW23-190806						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/6/19	1155	100	.5	26.56	0.469	26.59	6.96	20.0	186	1.57
	1200	100	1.0	26.62	0.476	25.08	6.67	20.1	206	1.29
	1205	100	1.5	26.66	0.476	24.89	6.64	19.7	225	1.18
	1210	100	2.0	26.69	0.476	24.77	6.63	19.2	226	1.16
	1215	100	2.5	26.71	0.476	24.73	6.63	18.6	227	1.14
	1220	100	3.0	26.73	0.476	24.69	6.63	18.1	228	1.13

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW24**

Sampler(s): Scott Beasingar

FIELD CONDITIONS

Clear/Sunny

SAMPLING INFORMATION

Sample No: 35BWW24-190807

DATE/TIME: 8/7/19 / 0856

Sample Interval: ~~27.45~~ - ~~27.69~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/7/19 0905

Depth to Water - Initial (DTWi) (ft) 27.45

Purge End Date/Time: 8/7/19 0935

Depth to Well Bottom (ft) ~~30.2~~ 32.75

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.92-32.92

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~24.75~~ 28.50

Pump Start Time: 0905

Ferrous Iron (Required Y or (N) _____ mg/L

2ND Depth to water -27.45

APTIM

Sample Collection Log

Location ID: 35BWW24				Sample No: 35BWW24-190807						
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/7/19	0910	100	.5	27.52	1.32	22.95	6.68	20.3	235	2.77
	0915	100	1.0	27.58	1.42	21.99	6.50	18.5	238	2.49
	0920	100	1.5	27.62	1.42	21.85	6.48	17.9	238	2.30
	0925	100	2.0	27.65	1.42	21.77	6.47	17.4	238	2.27
	0930	100	2.5	27.67	1.43	21.69	6.47	16.8	238	2.25
	0935	100	3.0	27.69	1.43	21.61	6.47	16.3	238	2.23

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW25**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR/SUNNY

SAMPLING INFORMATION

Sample No: 35BWW25-190807

DATE/TIME: 8/7/19 / 0948

Sample Interval: ~~25.28 25.52~~ Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample	Assoc. QC Samples	Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 25.28

Depth to Well Bottom (ft) ~~32.8~~ 32.52

Screen Interval (ft): 22.91-32.41

Approximate depth of pump inlet*(ft): ~~24.75~~ 27.66

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: Low flow/Bladder Pump

Purge Start Date/Time: 8/7/19 0950

Purge End Date/Time: 8/7/19 1020

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0950

2ND DEPTH TO WATER - 25.28

APTIM

Sample Collection Log

Location ID: 35BWW25		Sample No: 35BWW25-190807								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/7/19	0955	100	.5	25.35	0.770	23.21	6.64	6.9	237	1.29
	1000	100	1.0	25.40	0.749	22.17	6.43	2.1	245	1.00
	1005	100	1.5	25.44	0.749	22.10	6.35	0.8	250	0.88
	1010	100	2.0	25.47	0.749	22.05	6.35	0.0	251	0.87
	1015	100	2.5	25.49	0.749	21.99	6.34	0.0	252	0.86
↓	1020	100	3.0	25.50	0.749	21.94	6.34	0.0	253	0.85

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW26**

Sampler(s): Scott Beesinger

FIELD CONDITIONS

CLEAR / SUNNY

SAMPLING INFORMATION

Sample No: 35BWW26-190806

DATE/TIME: 8/6/19 / 0947

Sample Interval: ~~25.60~~ ~~25.83~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	Anions in Water by 9056	1 x 250 mL HDPE	Cool 4C
		ALSHT	Carbon Dioxide in Water by RSK175	3 x 40 mL Glass	Cool 4C
		ALSHT	Dissolved Gases in Water by RSK175	3 x 40 mL Glass	HCL<pH2
		ALSHT	TOC in Water by SM5310C	2 x 40 mL Amber	H2SO4
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 25.60

Depth to Well Bottom (ft) ~~35.5~~ 38.00

Screen Interval (ft): 28.16 - 37.88

Approximate depth of pump inlet*(ft): ~~30.05~~ 32.91

Ferrous Iron (Required Y or N) 0.19 mg/L

Purging Method/Equipment: Low flow / BLADDER Pump

Purge Start Date/Time: 8/6/19 0955

Purge End Date/Time: 8/6/19 1025

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 0955

2ND DEPTH TO WATER - 25.60

APTIM

Sample Collection Log

Location ID: 35BWW26 Sample No: 35BWW26-190806

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/6/19	1000	100	.5	25.67	0.266	23.53	6.04	5.0	178	0.86
	1005	100	1.0	25.73	0.265	22.94	5.97	1.9	191	0.46
	1010	100	1.5	25.77	0.264	22.77	5.95	0.8	200	0.32
	1015	100	2.0	25.80	0.264	22.70	5.95	0.0	201	0.31
	1020	100	2.5	25.82	0.264	22.63	5.95	0.0	202	0.31
	1025	100	3.0	25.83	0.264	22.55	5.95	0.0	203	0.30

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00955404

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW58**

Sampler(s): Scott Beesinger

FIELD CONDITIONS CLEAR / SUNNY

SAMPLING INFORMATION

Sample No: LHSMW58-190807

DATE/TIME: 8/7/19 / 0807

Sample Interval: ~~22 - 22.35~~

Edited by W. Foss 4/20/20

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Appearance of Sample

Assoc. QC Samples

Decontamination Procedures

Chain of Custody	COC Notes	Lab	Analyses	Container	Preserv
		ALSHT	VOCs in Water by 8260B	3 x 40 mL Glass	HCL<pH2

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow / BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/7/19 0815

Depth to Water - Initial (DTWi) (ft) 22.12

Purge End Date/Time: 8/7/19 0845

Depth to Well Bottom (ft) ~~39~~ 35.20

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 25.15 - 35.15

Discharge Tube Diameter: 1/4 11

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~36.4~~ 30.15

Pump Start Time: 0815

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - 22.12

APTIM

Sample Collection Log

Location ID: LHSMW58		Sample No: LHSMW58-190807								
Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/7/19	0820	100	.5	22.20	0.244	22.80	6.95	0.0	220	5.19
	0825	100	1.0	22.26	0.242	22.35	6.78	0.0	220	4.99
	0830	100	1.5	22.30	0.241	22.33	6.77	0.0	221	4.93
	0835	100	2.0	22.33	0.240	22.31	6.77	0.0	222	4.91
	0840	100	2.5	22.35	0.240	22.30	6.76	0.0	223	4.89
↓	0845	100	3.0	22.36	0.240	22.29	6.76	0.0	223	4.88

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

Appendix D

Laboratory Analytical Data Package

(Provided in separate PDF file on the Portal and CD)

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November 30, 2018

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

Work Order: **HS18110950**

Laboratory Results for: **LHAAP-37**

Dear Kim,

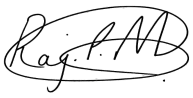
ALS Environmental received 11 sample(s) on Nov 17, 2018 for the analysis presented in the following report.

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: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Work Order: HS18110950

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18110950-01	37TB01-181115	Water		15-Nov-2018 15:30	17-Nov-2018 09:40	☐
HS18110950-02	35BWW01-181115	Groundwater		15-Nov-2018 16:33	17-Nov-2018 09:40	☐
HS18110950-03	35BWW25-181116	Groundwater		16-Nov-2018 08:25	17-Nov-2018 09:40	☐
HS18110950-04	35BWW24-181116	Groundwater		16-Nov-2018 09:30	17-Nov-2018 09:40	☐
HS18110950-05	35BWW16-181116	Groundwater		16-Nov-2018 10:45	17-Nov-2018 09:40	☐
HS18110950-06	35BWW15-181116	Groundwater		16-Nov-2018 11:55	17-Nov-2018 09:40	☐
HS18110950-07	35BWW15-181116 FD	Groundwater		16-Nov-2018 11:55	17-Nov-2018 09:40	☐
HS18110950-08	35BWW17-181116	Groundwater		16-Nov-2018 13:00	17-Nov-2018 09:40	☐
HS18110950-09	35BWW13-181116	Groundwater		16-Nov-2018 13:52	17-Nov-2018 09:40	☐
HS18110950-10	35BSW02-181116	Groundwater		16-Nov-2018 14:42	17-Nov-2018 09:40	☐
HS18110950-11	35BSW01-181116	Groundwater		16-Nov-2018 15:10	17-Nov-2018 09:40	☐

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-37
Work Order: HS18110950

GCMS Volatiles by Method SW8260

Batch ID: R328311

Sample ID: VSTD050

- cis-1,3-Dichloropropene exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: 35BWW24-181116 (HS18110950-04MS)

- 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.

Sample ID: 35BWW24-181116 (HS18110950-04MSD)

- 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.

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 37TB01-181115 Lab ID:HS18110950-01
Collection Date: 15-Nov-2018 15:30 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 11:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 11:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
2-Butanone	**1.8**	J	**0.50**	**1.0**	**2.0**	**ug/L**	1	29-Nov-2018 11:55
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 11:55
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 11:55
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 11:55
Acetone	**4.6**		**2.0**	**2.0**	**2.0**	**ug/L**	1	29-Nov-2018 11:55
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 11:55
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 37TB01-181115 Lab ID:HS18110950-01
Collection Date: 15-Nov-2018 15:30 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 11:55
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 11:55
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 11:55
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 11:55
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 11:55
Surr: 1,2-Dichloroethane-d4	*94.7*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 11:55*
Surr: 4-Bromofluorobenzene	*97.6*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 11:55*
Surr: Dibromofluoromethane	*89.2*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 11:55*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 11:55*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW01-181115 Lab ID:HS18110950-02
Collection Date: 15-Nov-2018 16:33 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 12:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 12:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 12:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 12:45
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	29-Nov-2018 12:45
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 12:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW01-181115 Lab ID:HS18110950-02
Collection Date: 15-Nov-2018 16:33 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 12:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 12:45
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 12:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:45
Surr: 1,2-Dichloroethane-d4	*94.1*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 12:45*
Surr: 4-Bromofluorobenzene	*96.7*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 12:45*
Surr: Dibromofluoromethane	*88.5*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 12:45*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 12:45*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Sample ID: 35BWW25-181116
Collection Date: 16-Nov-2018 08:25

ANALYTICAL REPORT
WorkOrder:HS18110950
Lab ID:HS18110950-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 13:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 13:10
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 13:10
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:10
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 13:10
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	29-Nov-2018 13:10
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 13:10
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW25-181116 Lab ID:HS18110950-03
Collection Date: 16-Nov-2018 08:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 13:10
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 13:10
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 13:10
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:10
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Trichloroethene	**19**		**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:10
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:10
Surr: 1,2-Dichloroethane-d4	*96.6*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 13:10*
Surr: 4-Bromofluorobenzene	*96.7*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 13:10*
Surr: Dibromofluoromethane	*90.2*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 13:10*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 13:10*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW24-181116 Lab ID:HS18110950-04
Collection Date: 16-Nov-2018 09:30 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,1,2-Trichlor-1,2,2-trifluoroethane	**4.3**		**0.50**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 12:20
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,1-Dichloroethene	**0.67**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 12:20
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 12:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 12:20
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 12:20
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:20
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 12:20
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	29-Nov-2018 12:20
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 12:20
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW24-181116 Lab ID:HS18110950-04
Collection Date: 16-Nov-2018 09:30 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 12:20
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 12:20
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 12:20
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 12:20
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Trichloroethene	**2.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 12:20
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 12:20
Surr: 1,2-Dichloroethane-d4	*96.5*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 12:20*
Surr: 4-Bromofluorobenzene	*96.9*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 12:20*
Surr: Dibromofluoromethane	*89.5*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 12:20*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 12:20*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW16-181116 Lab ID:HS18110950-05
Collection Date: 16-Nov-2018 10:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,1,2-Trichlor-1,2,2-trifluoroethane	**18**		**0.50**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:35
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,1-Dichloroethene	**1.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:35
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 13:35
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:35
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 13:35
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 13:35
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:35
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 13:35
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	29-Nov-2018 13:35
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 13:35
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW16-181116 Lab ID:HS18110950-05
Collection Date: 16-Nov-2018 10:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 13:35
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 13:35
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 13:35
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:35
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Tetrachloroethene	**15**		**0.30**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:35
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Trichloroethene	**6.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:35
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:35
Surr: 1,2-Dichloroethane-d4	*95.1*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 13:35*
Surr: 4-Bromofluorobenzene	*97.3*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 13:35*
Surr: Dibromofluoromethane	*86.7*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 13:35*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 13:35*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW15-181116 Lab ID:HS18110950-06
Collection Date: 16-Nov-2018 11:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,1,2-Trichlor-1,2,2-trifluoroethane	**3.4**		**0.50**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:59
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,1-Dichloroethene	**2.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:59
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 13:59
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:59
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 13:59
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 13:59
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:59
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 13:59
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	29-Nov-2018 13:59
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 13:59
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW15-181116 Lab ID:HS18110950-06
Collection Date: 16-Nov-2018 11:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
cis-1,2-Dichloroethene	**0.68**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:59
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 13:59
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 13:59
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 13:59
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 13:59
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Tetrachloroethene	**11**		**0.30**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:59
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Trichloroethene	**12**		**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:59
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 13:59
Vinyl chloride	**0.63**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 13:59
Surr: 1,2-Dichloroethane-d4	*94.9*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 13:59*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 13:59*
Surr: Dibromofluoromethane	*89.4*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 13:59*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 13:59*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW15-181116 FD Lab ID:HS18110950-07
Collection Date: 16-Nov-2018 11:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,1,2-Trichlor-1,2,2-trifluoroethane	**3.3**		**0.50**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 14:24
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,1-Dichloroethene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 14:24
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 14:24
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:24
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 14:24
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 14:24
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:24
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 14:24
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	29-Nov-2018 14:24
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 14:24
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW15-181116 FD Lab ID:HS18110950-07
Collection Date: 16-Nov-2018 11:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 14:24
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 14:24
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 14:24
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:24
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Tetrachloroethene	**10**		**0.30**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 14:24
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Trichloroethene	**12**		**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 14:24
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:24
Vinyl chloride	**0.63**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 14:24
Surr: 1,2-Dichloroethane-d4	*95.9*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 14:24*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 14:24*
Surr: Dibromofluoromethane	*89.8*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 14:24*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 14:24*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW17-181116 Lab ID:HS18110950-08
Collection Date: 16-Nov-2018 13:00 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,1,2-Trichlor-1,2,2-trifluoroethane	**6.6**		**0.50**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 14:49
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 14:49
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:49
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 14:49
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 14:49
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:49
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 14:49
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	29-Nov-2018 14:49
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 14:49
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW17-181116 Lab ID:HS18110950-08
Collection Date: 16-Nov-2018 13:00 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 14:49
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 14:49
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 14:49
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 14:49
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Tetrachloroethene	**5.4**		**0.30**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 14:49
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Trichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 14:49
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 14:49
Surr: 1,2-Dichloroethane-d4	*95.6*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 14:49*
Surr: 4-Bromofluorobenzene	*97.7*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 14:49*
Surr: Dibromofluoromethane	*88.9*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 14:49*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 14:49*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW13-181116 Lab ID:HS18110950-09
Collection Date: 16-Nov-2018 13:52 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,1,2-Trichlor-1,2,2-trifluoroethane	**0.66**	J	**0.50**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 15:14
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 15:14
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:14
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 15:14
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 15:14
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:14
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 15:14
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	29-Nov-2018 15:14
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 15:14
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BWW13-181116 Lab ID:HS18110950-09
Collection Date: 16-Nov-2018 13:52 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 15:14
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 15:14
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 15:14
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:14
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Tetrachloroethene	**1.1**		**0.30**	**0.50**	**1.0**	**ug/L**	1	29-Nov-2018 15:14
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:14
Surr: 1,2-Dichloroethane-d4	*95.8*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 15:14*
Surr: 4-Bromofluorobenzene	*97.3*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 15:14*
Surr: Dibromofluoromethane	*89.6*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 15:14*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 15:14*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BSW02-181116 Lab ID:HS18110950-10
Collection Date: 16-Nov-2018 14:42 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 15:39
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:39
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 15:39
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 15:39
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:39
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 15:39
Acetone	**2.2**		**2.0**	**2.0**	**2.0**	**ug/L**	1	29-Nov-2018 15:39
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 15:39
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BSW02-181116 Lab ID:HS18110950-10
Collection Date: 16-Nov-2018 14:42 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 15:39
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 15:39
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 15:39
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 15:39
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 15:39
Surr: 1,2-Dichloroethane-d4	*95.7*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 15:39*
Surr: 4-Bromofluorobenzene	*96.9*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 15:39*
Surr: Dibromofluoromethane	*90.0*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 15:39*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 15:39*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BSW01-181116 Lab ID:HS18110950-11
Collection Date: 16-Nov-2018 15:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 16:04
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 16:04
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 16:04
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	29-Nov-2018 16:04
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 16:04
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	29-Nov-2018 16:04
Acetone	**3.3**		**2.0**	**2.0**	**2.0**	**ug/L**	1	29-Nov-2018 16:04
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	29-Nov-2018 16:04
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18110950
Sample ID: 35BSW01-181116 Lab ID:HS18110950-11
Collection Date: 16-Nov-2018 15:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	29-Nov-2018 16:04
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	29-Nov-2018 16:04
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	29-Nov-2018 16:04
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	29-Nov-2018 16:04
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	29-Nov-2018 16:04
Surr: 1,2-Dichloroethane-d4	*96.2*			**0**	*70-126*	*%REC*	*1*	*29-Nov-2018 16:04*
Surr: 4-Bromofluorobenzene	*97.7*			**0**	*81-113*	*%REC*	*1*	*29-Nov-2018 16:04*
Surr: Dibromofluoromethane	*91.0*			**0**	*77-123*	*%REC*	*1*	*29-Nov-2018 16:04*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*29-Nov-2018 16:04*

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

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R328311	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS18110950-02	35BWW01-181115	15 Nov 2018 16:33			29 Nov 2018 12:45	1
HS18110950-03	35BWW25-181116	16 Nov 2018 08:25			29 Nov 2018 13:10	1
HS18110950-04	35BWW24-181116	16 Nov 2018 09:30			29 Nov 2018 12:20	1
HS18110950-05	35BWW16-181116	16 Nov 2018 10:45			29 Nov 2018 13:35	1
HS18110950-06	35BWW15-181116	16 Nov 2018 11:55			29 Nov 2018 13:59	1
HS18110950-07	35BWW15-181116 FD	16 Nov 2018 11:55			29 Nov 2018 14:24	1
HS18110950-08	35BWW17-181116	16 Nov 2018 13:00			29 Nov 2018 14:49	1
HS18110950-09	35BWW13-181116	16 Nov 2018 13:52			29 Nov 2018 15:14	1
HS18110950-10	35BSW02-181116	16 Nov 2018 14:42			29 Nov 2018 15:39	1
HS18110950-11	35BSW01-181116	16 Nov 2018 15:10			29 Nov 2018 16:04	1
Batch ID R328311	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS18110950-01	37TB01-181115	15 Nov 2018 15:30			29 Nov 2018 11:55	1

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181129** Units: **ug/L** Analysis Date: **29-Nov-2018 11:30**
Client ID: Run ID: **VOA9_328311** SeqNo: **4841399** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181129** Units: **ug/L** Analysis Date: **29-Nov-2018 11:30**
Client ID: Run ID: **VOA9_328311** SeqNo: **4841399** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.01*	*1.0*	*50*	*0*	*94.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.35*	*1.0*	*50*	*0*	*96.7*	*82 - 115*				
Surr: Dibromofluoromethane	*44.66*	*1.0*	*50*	*0*	*89.3*	*73 - 126*				

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181129** Units: **ug/L** Analysis Date: **29-Nov-2018 11:30**
Client ID: Run ID: **VOA9_328311** SeqNo: **4841399** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.91*	*1.0*	*50*	*0*	*106*	*81 - 120*				

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181129** Units: **ug/L** Analysis Date: **29-Nov-2018 10:41**
Client ID: Run ID: **VOA9_328311** SeqNo: **4841398** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.03	1.0	20	0	110	77 - 118				
1,1,1-Trichloroethane	18.04	1.0	20	0	90.2	70 - 130				
1,1,2,2-Tetrachloroethane	22.89	1.0	20	0	114	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	16.12	1.0	20	0	80.6	70 - 130				
1,1,2-Trichloroethane	22.44	1.0	20	0	112	77 - 113				
1,1-Dichloroethane	20.49	1.0	20	0	102	71 - 122				
1,1-Dichloroethene	18.66	1.0	20	0	93.3	70 - 130				
1,1-Dichloropropene	19.88	1.0	20	0	99.4	78 - 118				
1,2,3-Trichlorobenzene	21.92	1.0	20	0	110	70 - 130				
1,2,3-Trichloropropane	23.09	1.0	20	0	115	70 - 127				
1,2,4-Trichlorobenzene	21.11	1.0	20	0	106	77 - 126				
1,2,4-Trimethylbenzene	21.74	1.0	20	0	109	73 - 121				
1,2-Dibromo-3-chloropropane	21.17	1.0	20	0	106	70 - 130				
1,2-Dibromoethane	22.63	1.0	20	0	113	76 - 123				
1,2-Dichlorobenzene	21.01	1.0	20	0	105	77 - 113				
1,2-Dichloroethane	21.25	1.0	20	0	106	70 - 124				
1,2-Dichloropropane	22.97	1.0	20	0	115	72 - 119				
1,3,5-Trimethylbenzene	21.23	1.0	20	0	106	75 - 118				
1,3-Dichlorobenzene	21.06	1.0	20	0	105	78 - 118				
1,3-Dichloropropane	22.81	1.0	20	0	114	75 - 116				
1,4-Dichlorobenzene	22.33	1.0	20	0	112	79 - 113				
2,2-Dichloropropane	19.24	1.0	20	0	96.2	70 - 130				
2-Butanone	45.01	2.0	40	0	113	70 - 130				
2-Chlorotoluene	21.73	1.0	20	0	109	70 - 128				
2-Hexanone	50.36	2.0	40	0	126	70 - 130				
4-Chlorotoluene	21.83	1.0	20	0	109	74 - 126				
4-Isopropyltoluene	20.41	1.0	20	0	102	74 - 126				
4-Methyl-2-pentanone	49.27	2.0	40	0	123	70 - 130				
Acetone	48.51	2.0	40	0	121	70 - 130				
Benzene	22.05	1.0	20	0	110	74 - 120				
Bromobenzene	21.36	1.0	20	0	107	78 - 113				
Bromochloromethane	21.91	1.0	20	0	110	76 - 124				
Bromodichloromethane	21.41	1.0	20	0	107	74 - 122				
Bromoform	19.62	1.0	20	0	98.1	73 - 128				

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181129** Units: **ug/L** Analysis Date: **29-Nov-2018 10:41**
Client ID: Run ID: **VOA9_328311** SeqNo: **4841398** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	24.36	1.0	20	0	122	70 - 130				
Carbon disulfide	40.42	2.0	40	0	101	70 - 130				
Carbon tetrachloride	18.49	1.0	20	0	92.4	71 - 125				
Chlorobenzene	21.65	1.0	20	0	108	76 - 113				
Chloroethane	21.07	1.0	20	0	105	70 - 130				
Chloroform	19.96	1.0	20	0	99.8	71 - 121				
Chloromethane	24.85	1.0	20	0	124	70 - 129				
cis-1,2-Dichloroethene	20.52	1.0	20	0	103	75 - 122				
cis-1,3-Dichloropropene	23.1	1.0	20	0	116	73 - 127				
Dibromochloromethane	21.93	1.0	20	0	110	77 - 122				
Dibromomethane	21.77	1.0	20	0	109	78 - 121				
Dichlorodifluoromethane	17.64	1.0	20	0	88.2	70 - 130				
Ethylbenzene	21.19	1.0	20	0	106	77 - 117				
Hexachlorobutadiene	21.37	1.0	20	0	107	70 - 130				
Isopropylbenzene	20.37	1.0	20	0	102	73 - 127				
m,p-Xylene	42.64	2.0	40	0	107	77 - 122				
Methylene chloride	21.86	2.0	20	0	109	70 - 127				
Naphthalene	23.73	1.0	20	0	119	70 - 130				
n-Butylbenzene	20.86	1.0	20	0	104	72 - 130				
n-Propylbenzene	20.8	1.0	20	0	104	73 - 124				
o-Xylene	22.27	1.0	20	0	111	75 - 119				
sec-Butylbenzene	19.7	1.0	20	0	98.5	73 - 128				
Styrene	23.4	1.0	20	0	117	72 - 126				
tert-Butylbenzene	19.98	1.0	20	0	99.9	73 - 124				
Tetrachloroethene	18.88	1.0	20	0	94.4	76 - 119				
Toluene	21.72	1.0	20	0	109	77 - 118				
trans-1,2-Dichloroethene	20.17	1.0	20	0	101	72 - 127				
trans-1,3-Dichloropropene	20.41	1.0	20	0	102	77 - 119				
Trichloroethene	20.2	1.0	20	0	101	77 - 121				
Trichlorofluoromethane	17	1.0	20	0	85.0	70 - 130				
Vinyl chloride	21.43	1.0	20	0	107	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.84*	*1.0*	*50*	*0*	*89.7*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*51.29*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*44.81*	*1.0*	*50*	*0*	*89.6*	*73 - 126*				

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181129** Units: **ug/L** Analysis Date: **29-Nov-2018 10:41**
Client ID: Run ID: **VOA9_328311** SeqNo: **4841398** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.21*	*1.0*	*50*	*0*	*106*	*81 - 120*				

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18110950-04MS** Units: **ug/L** Analysis Date: **29-Nov-2018 16:28**
Client ID: **35BWW24-181116** Run ID: **VOA9_328311** SeqNo: **4842698** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	23.53	1.0	20	0	118	70 - 120				
1,1,1-Trichloroethane	22.45	1.0	20	0	112	70 - 130				
1,1,2,2-Tetrachloroethane	24.38	1.0	20	0	122	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	25.99	1.0	20	4.276	109	70 - 130				
1,1,2-Trichloroethane	24.1	1.0	20	0	120	70 - 117				S
1,1-Dichloroethane	22.99	1.0	20	0	115	70 - 127				
1,1-Dichloroethene	23.74	1.0	20	0.6684	115	70 - 130				
1,1-Dichloropropene	25.51	1.0	20	0	128	70 - 129				
1,2,3-Trichlorobenzene	23.16	1.0	20	0	116	70 - 130				
1,2,3-Trichloropropane	23.31	1.0	20	0	117	70 - 130				
1,2,4-Trichlorobenzene	22.47	1.0	20	0	112	70 - 125				
1,2,4-Trimethylbenzene	24.61	1.0	20	0	123	70 - 125				
1,2-Dibromo-3-chloropropane	21.83	1.0	20	0	109	70 - 130				
1,2-Dibromoethane	24.06	1.0	20	0	120	70 - 124				
1,2-Dichlorobenzene	22.6	1.0	20	0	113	70 - 115				
1,2-Dichloroethane	23.29	1.0	20	0	116	70 - 127				
1,2-Dichloropropane	25.36	1.0	20	0	127	70 - 122				S
1,3,5-Trimethylbenzene	24.74	1.0	20	0	124	70 - 126				
1,3-Dichlorobenzene	22.61	1.0	20	0	113	70 - 119				
1,3-Dichloropropane	24.35	1.0	20	0	122	70 - 121				S
1,4-Dichlorobenzene	24.07	1.0	20	0	120	70 - 114				S
2,2-Dichloropropane	21.86	1.0	20	0	109	70 - 130				
2-Butanone	47.09	2.0	40	0	118	70 - 130				
2-Chlorotoluene	24.36	1.0	20	0	122	70 - 130				
2-Hexanone	53.8	2.0	40	0	135	70 - 130				S
4-Chlorotoluene	24.38	1.0	20	0	122	70 - 130				
4-Isopropyltoluene	25.48	1.0	20	0	127	70 - 130				
4-Methyl-2-pentanone	52.01	2.0	40	0	130	70 - 130				S
Acetone	48.45	2.0	40	0	121	70 - 130				
Benzene	25.23	1.0	20	0	126	70 - 127				
Bromobenzene	22.99	1.0	20	0	115	70 - 115				
Bromochloromethane	24.41	1.0	20	0	122	70 - 127				
Bromodichloromethane	23.25	1.0	20	0	116	70 - 124				
Bromoform	20.96	1.0	20	0	105	70 - 129				

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18110950-04MS** Units: **ug/L** Analysis Date: **29-Nov-2018 16:28**
Client ID: **35BWW24-181116** Run ID: **VOA9_328311** SeqNo: **4842698** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	26.32	1.0	20	0	132	70 - 130				S
Carbon disulfide	44.05	2.0	40	0	110	70 - 130				
Carbon tetrachloride	24.2	1.0	20	0	121	70 - 130				
Chlorobenzene	23.79	1.0	20	0	119	70 - 114				S
Chloroethane	23.38	1.0	20	0	117	70 - 130				
Chloroform	22.21	1.0	20	0	111	70 - 125				
Chloromethane	23.25	1.0	20	0	116	70 - 130				
cis-1,2-Dichloroethene	22.93	1.0	20	0	115	70 - 128				
cis-1,3-Dichloropropene	24.06	1.0	20	0	120	70 - 125				
Dibromochloromethane	23.61	1.0	20	0	118	70 - 124				
Dibromomethane	23.79	1.0	20	0	119	70 - 124				
Dichlorodifluoromethane	15.95	1.0	20	0	79.8	70 - 130				
Ethylbenzene	24.57	1.0	20	0	123	70 - 124				
Hexachlorobutadiene	24.74	1.0	20	0	124	70 - 130				
Isopropylbenzene	25.31	1.0	20	0	127	70 - 130				
m,p-Xylene	49.81	2.0	40	0	125	70 - 130				
Methylene chloride	24.27	2.0	20	0	121	70 - 128				
Naphthalene	25.06	1.0	20	0	125	70 - 130				
n-Butylbenzene	25.56	1.0	20	0	128	70 - 130				
n-Propylbenzene	25.46	1.0	20	0	127	70 - 130				
o-Xylene	24.94	1.0	20	0	125	70 - 124				S
sec-Butylbenzene	25.6	1.0	20	0	128	70 - 130				
Styrene	25.31	1.0	20	0	127	70 - 130				
tert-Butylbenzene	25.29	1.0	20	0	126	70 - 130				
Tetrachloroethene	23.9	1.0	20	0	119	70 - 130				
Toluene	24.68	1.0	20	0	123	70 - 123				S
trans-1,2-Dichloroethene	22.8	1.0	20	0	114	70 - 130				
trans-1,3-Dichloropropene	21.47	1.0	20	0	107	70 - 121				
Trichloroethene	26.86	1.0	20	2.869	120	70 - 129				
Trichlorofluoromethane	22	1.0	20	0	110	70 - 130				
Vinyl chloride	23.98	1.0	20	0	120	70 - 130				
Surr: 1,2-Dichloroethane-d4	*45.86*	*1.0*	*50*	*0*	*91.7*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.34*	*1.0*	*50*	*0*	*103*	*81 - 113*				
Surr: Dibromofluoromethane	*45.36*	*1.0*	*50*	*0*	*90.7*	*77 - 123*				

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument:** VOA9 **Method:** SW8260

MS Sample ID: **HS18110950-04MS** Units: **ug/L** Analysis Date: **29-Nov-2018 16:28**
Client ID: **35BWW24-181116** Run ID: **VOA9_328311** SeqNo: **4842698** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.34*	*1.0*	*50*	*0*	*107*	*82 - 127*				

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18110950-04MSD** Units: **ug/L** Analysis Date: **29-Nov-2018 16:53**
Client ID: **35BWW24-181116** Run ID: **VOA9_328311** SeqNo: **4842699** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	23.31	1.0	20	0	117	70 - 120	23.53	0.937	20	
1,1,1-Trichloroethane	22.05	1.0	20	0	110	70 - 130	22.45	1.78	20	
1,1,2,2-Tetrachloroethane	24.83	1.0	20	0	124	70 - 123	24.38	1.81	20	S
1,1,2-Trichlor-1,2,2-trifluoroethane	25.41	1.0	20	4.276	106	70 - 130	25.99	2.25	20	
1,1,2-Trichloroethane	23.97	1.0	20	0	120	70 - 117	24.1	0.535	20	S
1,1-Dichloroethane	22.6	1.0	20	0	113	70 - 127	22.99	1.72	20	
1,1-Dichloroethene	23.15	1.0	20	0.6684	112	70 - 130	23.74	2.48	20	
1,1-Dichloropropene	24.67	1.0	20	0	123	70 - 129	25.51	3.35	20	
1,2,3-Trichlorobenzene	23.75	1.0	20	0	119	70 - 130	23.16	2.5	20	
1,2,3-Trichloropropane	24.93	1.0	20	0	125	70 - 130	23.31	6.71	20	
1,2,4-Trichlorobenzene	22.71	1.0	20	0	114	70 - 125	22.47	1.09	20	
1,2,4-Trimethylbenzene	25.06	1.0	20	0	125	70 - 125	24.61	1.8	20	S
1,2-Dibromo-3-chloropropane	22.79	1.0	20	0	114	70 - 130	21.83	4.29	20	
1,2-Dibromoethane	24.02	1.0	20	0	120	70 - 124	24.06	0.152	20	
1,2-Dichlorobenzene	22.74	1.0	20	0	114	70 - 115	22.6	0.616	20	
1,2-Dichloroethane	23.13	1.0	20	0	116	70 - 127	23.29	0.693	20	
1,2-Dichloropropane	24.78	1.0	20	0	124	70 - 122	25.36	2.34	20	S
1,3,5-Trimethylbenzene	24.98	1.0	20	0	125	70 - 126	24.74	0.929	20	
1,3-Dichlorobenzene	22.94	1.0	20	0	115	70 - 119	22.61	1.47	20	
1,3-Dichloropropane	24.16	1.0	20	0	121	70 - 121	24.35	0.789	20	
1,4-Dichlorobenzene	24.32	1.0	20	0	122	70 - 114	24.07	1.05	20	S
2,2-Dichloropropane	21.73	1.0	20	0	109	70 - 130	21.86	0.606	20	
2-Butanone	48.75	2.0	40	0	122	70 - 130	47.09	3.47	20	
2-Chlorotoluene	24.62	1.0	20	0	123	70 - 130	24.36	1.08	20	
2-Hexanone	55.66	2.0	40	0	139	70 - 130	53.8	3.4	20	S
4-Chlorotoluene	24.67	1.0	20	0	123	70 - 130	24.38	1.17	20	
4-Isopropyltoluene	25.72	1.0	20	0	129	70 - 130	25.48	0.929	20	
4-Methyl-2-pentanone	53.66	2.0	40	0	134	70 - 130	52.01	3.12	20	S
Acetone	49.32	2.0	40	0	123	70 - 130	48.45	1.78	20	
Benzene	24.79	1.0	20	0	124	70 - 127	25.23	1.75	20	
Bromobenzene	23.34	1.0	20	0	117	70 - 115	22.99	1.55	20	S
Bromochloromethane	23.27	1.0	20	0	116	70 - 127	24.41	4.77	20	
Bromodichloromethane	22.95	1.0	20	0	115	70 - 124	23.25	1.31	20	
Bromoform	20.59	1.0	20	0	103	70 - 129	20.96	1.78	20	

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18110950-04MSD** Units: **ug/L** Analysis Date: **29-Nov-2018 16:53**
Client ID: **35BWW24-181116** Run ID: **VOA9_328311** SeqNo: **4842699** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	24.62	1.0	20	0	123	70 - 130	26.32	6.66	20	
Carbon disulfide	43.4	2.0	40	0	109	70 - 130	44.05	1.49	20	
Carbon tetrachloride	24.35	1.0	20	0	122	70 - 130	24.2	0.617	20	
Chlorobenzene	23.37	1.0	20	0	117	70 - 114	23.79	1.75	20	S
Chloroethane	22.63	1.0	20	0	113	70 - 130	23.38	3.26	20	
Chloroform	21.57	1.0	20	0	108	70 - 125	22.21	2.88	20	
Chloromethane	22.31	1.0	20	0	112	70 - 130	23.25	4.15	20	
cis-1,2-Dichloroethene	22.46	1.0	20	0	112	70 - 128	22.93	2.05	20	
cis-1,3-Dichloropropene	24.16	1.0	20	0	121	70 - 125	24.06	0.395	20	
Dibromochloromethane	23.34	1.0	20	0	117	70 - 124	23.61	1.12	20	
Dibromomethane	23.74	1.0	20	0	119	70 - 124	23.79	0.203	20	
Dichlorodifluoromethane	15.55	1.0	20	0	77.7	70 - 130	15.95	2.58	20	
Ethylbenzene	24.12	1.0	20	0	121	70 - 124	24.57	1.83	20	
Hexachlorobutadiene	25.8	1.0	20	0	129	70 - 130	24.74	4.19	20	
Isopropylbenzene	24.93	1.0	20	0	125	70 - 130	25.31	1.53	20	
m,p-Xylene	48.59	2.0	40	0	121	70 - 130	49.81	2.48	20	
Methylene chloride	23.54	2.0	20	0	118	70 - 128	24.27	3.08	20	
Naphthalene	26.16	1.0	20	0	131	70 - 130	25.06	4.27	20	S
n-Butylbenzene	25.76	1.0	20	0	129	70 - 130	25.56	0.804	20	
n-Propylbenzene	25.63	1.0	20	0	128	70 - 130	25.46	0.633	20	
o-Xylene	24.45	1.0	20	0	122	70 - 124	24.94	2.01	20	
sec-Butylbenzene	25.82	1.0	20	0	129	70 - 130	25.6	0.856	20	
Styrene	24.87	1.0	20	0	124	70 - 130	25.31	1.74	20	
tert-Butylbenzene	25.37	1.0	20	0	127	70 - 130	25.29	0.296	20	
Tetrachloroethene	23.9	1.0	20	0	119	70 - 130	23.9	0.0149	20	
Toluene	24.45	1.0	20	0	122	70 - 123	24.68	0.91	20	
trans-1,2-Dichloroethene	22.32	1.0	20	0	112	70 - 130	22.8	2.14	20	
trans-1,3-Dichloropropene	21.55	1.0	20	0	108	70 - 121	21.47	0.383	20	
Trichloroethene	26.25	1.0	20	2.869	117	70 - 129	26.86	2.28	20	
Trichlorofluoromethane	21.79	1.0	20	0	109	70 - 130	22	0.974	20	
Vinyl chloride	23.22	1.0	20	0	116	70 - 130	23.98	3.24	20	
Surr: 1,2-Dichloroethane-d4	*45.56*	*1.0*	*50*	*0*	*91.1*	*70 - 126*	*45.86*	*0.644*	*20*	
Surr: 4-Bromofluorobenzene	*50.84*	*1.0*	*50*	*0*	*102*	*81 - 113*	*51.34*	*0.978*	*20*	
Surr: Dibromofluoromethane	*45.06*	*1.0*	*50*	*0*	*90.1*	*77 - 123*	*45.36*	*0.665*	*20*	

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18110950

QC BATCH REPORT

Batch ID: R328311 **Instrument:** VOA9 **Method:** SW8260

MSD Sample ID: **HS18110950-04MSD** Units: **ug/L** Analysis Date: **29-Nov-2018 16:53**
Client ID: **35BWW24-181116** Run ID: **VOA9_328311** SeqNo: **4842699** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.02*	*1.0*	*50*	*0*	*106*	*82 - 127*	*53.34*	*0.606*	*20*	

The following samples were analyzed in this batch:

HS18110950-01	HS18110950-02	HS18110950-03	HS18110950-04
HS18110950-05	HS18110950-06	HS18110950-07	HS18110950-08
HS18110950-09	HS18110950-10	HS18110950-11	

ALS Houston, US Date: 30-Nov-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: **HS18110950**

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
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

ALS Houston, US Date: 30-Nov-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18110950
Date/Time Received: **17-Nov-2018 09:40**
Received by: **PMG**

Checklist completed by: *Raegen Giga* 19-Nov-2018
eSignature | Date

Reviewed by: _____
eSignature | Date

Matrices: **GW**
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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	1.0c/1.3c uc/c	IR 25	
Cooler(s)/Kit(s):	43589		
Date/Time sample(s) sent to storage:	11/17/2018 13:30		
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 1

COC ID: 37-NOV2018-GW-ALSHT-181116 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	Sonia West						
	LHAAP-37			Email	Sonia.West@alsglobal.com			Email Report To	karen.napier@aptim.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Karen Napier		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company	FED EX		

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS: VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	Antimony & Thallium, total, in Water by 6020A
37TB01-181115	FIELDQC	n/a	n/a	ft	LIQ	11/15/2018	1530	2	2				
35BWW01-181115	35BWW01	14.15	15.1	ft	GW	11/15/2018	1633	3	3				
35BWW25-181116	35BWW25	26.92	27.6	ft	GW	11/16/2018	825	3	3				
35BWW24-181116	35BWW24	29.41	30.18	ft	GW	11/16/2018	930	3	3				
35BWW24-181116-MS	35BWW24	29.41	30.18	ft	GW	11/16/2018	930	3	3				
35BWW24-181116-MSD	35BWW24	29.41	30.18	ft	GW	11/16/2018	930	3	3				
35BWW16-181116	35BWW16	23.09	23.3	ft	GW	11/16/2018	1045	3	3				
35BWW15-181116	35BWW15	23.23	23.65	ft	GW	11/16/2018	1155	3	3				
35BWW15-181116-FD	35BWW15	23.23	23.65	ft	GW	11/16/2018	1155	3	3				
35BWW17-181116	35BWW17	22.33	22.63	ft	GW	11/16/2018	1300	3	3				
35BWW13-181116	35BWW13	25.08	25.18	ft	GW	11/16/2018	1352	3	3				
35BSW02-181116	35BSW02				SW	11/16/2018	1442	3	3				
35BSW01-181116	35BSW01				SW	11/16/2018	1510	3	3				

HS18110950

Aptim Environmental & Infrastucture, Inc.

LHAAP-37

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane. Anions should include chloride, nitrate, nitrite, and sulfate.	11-Nov/1650		11/17/18 09:40	

GIC: 43389 ICE: 43.5 CIF: 0.5

CUSTODY SEAL

DATE: 11/19/19

Signature:

LHAAP

CUSTODY SEAL

DATE: 11/19/19

Signature:

LHAAP

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 03, 2018

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

Work Order: **HS18111182**

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

Dear Susan,

ALS Environmental received 12 sample(s) on Nov 20, 2018 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: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Work Order: HS18111182

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18111182-01	37TB02-181118	Water		18-Nov-2018 09:10	20-Nov-2018 09:20	☐
HS18111182-02	35BWW20-181118	Groundwater		18-Nov-2018 10:25	20-Nov-2018 09:20	☐
HS18111182-03	LHSMW58-111118	Groundwater		18-Nov-2018 11:10	20-Nov-2018 09:20	☐
HS18111182-04	LHSMW58-181118-FD	Groundwater		18-Nov-2018 11:10	20-Nov-2018 09:20	☐
HS18111182-05	35BWW06-181118	Groundwater		18-Nov-2018 12:03	20-Nov-2018 09:20	☐
HS18111182-06	35BWW05-181118	Groundwater		18-Nov-2018 12:47	20-Nov-2018 09:20	☐
HS18111182-07	35BWW10-181118	Groundwater		18-Nov-2018 13:45	20-Nov-2018 09:20	☐
HS18111182-08	35BWW11-181118	Groundwater		18-Nov-2018 14:40	20-Nov-2018 09:20	☐
HS18111182-09	35BWW07-181118	Groundwater		18-Nov-2018 15:53	20-Nov-2018 09:20	☐
HS18111182-10	35BWW09-181119	Groundwater		19-Nov-2018 13:15	20-Nov-2018 09:20	☐
HS18111182-11	35BWW19-181119	Groundwater		19-Nov-2018 14:10	20-Nov-2018 09:20	☐
HS18111182-12	35BWW18-181119	Groundwater		19-Nov-2018 14:55	20-Nov-2018 09:20	☐

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Work Order: HS18111182

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R328398

Sample ID: VSTD050

- 2_Hexanone exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: 35BWW06-181118 (HS18111182-05MS)

- MS and/or MSD recovered outside control limits for multiple compounds

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS18111182
Sample ID: 37TB02-181118 Lab ID:HS18111182-01
Collection Date: 18-Nov-2018 09:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 11:54
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 11:54
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 11:54
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 11:54
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 11:54
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 11:54
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 11:54
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 11:54
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 37TB02-181118
Collection Date: 18-Nov-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 11:54
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 11:54
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 11:54
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 11:54
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 11:54
Surr: 1,2-Dichloroethane-d4	*92.8*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 11:54*
Surr: 4-Bromofluorobenzene	*97.9*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 11:54*
Surr: Dibromofluoromethane	*88.2*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 11:54*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 11:54*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW20-181118
Collection Date: 18-Nov-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,1,2-Trichlor-1,2,2-trifluoroethane	**4.6**		**0.50**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 12:19
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 12:19
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:19
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 12:19
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 12:19
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:19
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 12:19
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 12:19
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 12:19
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW20-181118
Collection Date: 18-Nov-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 12:19
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 12:19
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 12:19
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:19
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Tetrachloroethene	**34**		**0.30**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 12:19
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Trichloroethene	**6.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 12:19
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:19
Surr: 1,2-Dichloroethane-d4	*93.3*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 12:19*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 12:19*
Surr: Dibromofluoromethane	*87.0*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 12:19*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 12:19*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: LHSMW58-111118
Collection Date: 18-Nov-2018 11:10

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,1,2-Trichlor-1,2,2-trifluoroethane	**1.2**		**0.50**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 12:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 12:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 12:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 12:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 12:44
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 12:44
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 12:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS18111182
Sample ID: LHSMW58-111118 Lab ID:HS18111182-03
Collection Date: 18-Nov-2018 11:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 12:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 12:44
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 12:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 12:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Tetrachloroethene	**26**		**0.30**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 12:44
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Trichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 12:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 12:44
Surr: 1,2-Dichloroethane-d4	*94.0*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 12:44*
Surr: 4-Bromofluorobenzene	*96.7*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 12:44*
Surr: Dibromofluoromethane	*87.8*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 12:44*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 12:44*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: LHSMW58-181118-FD
Collection Date: 18-Nov-2018 11:10

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,1,2-Trichlor-1,2,2-trifluoroethane	**1.2**		**0.50**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 13:09
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 13:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 13:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 13:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 13:09
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 13:09
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 13:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: LHSMW58-181118-FD
Collection Date: 18-Nov-2018 11:10

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 13:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 13:09
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 13:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Tetrachloroethene	**25**		**0.30**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 13:09
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Trichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 13:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:09
Surr: 1,2-Dichloroethane-d4	*94.9*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 13:09*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 13:09*
Surr: Dibromofluoromethane	*88.9*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 13:09*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 13:09*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW06-181118
Collection Date: 18-Nov-2018 12:03

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 13:34
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:34
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 13:34
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 13:34
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:34
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 13:34
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 13:34
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 13:34
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW06-181118
Collection Date: 18-Nov-2018 12:03

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 13:34
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 13:34
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 13:34
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:34
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:34
Surr: 1,2-Dichloroethane-d4	*95.2*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 13:34*
Surr: 4-Bromofluorobenzene	*97.3*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 13:34*
Surr: Dibromofluoromethane	*90.0*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 13:34*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 13:34*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW05-181118
Collection Date: 18-Nov-2018 12:47

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 13:59
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:59
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 13:59
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 13:59
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:59
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 13:59
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 13:59
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 13:59
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW05-181118
Collection Date: 18-Nov-2018 12:47

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 13:59
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 13:59
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 13:59
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 13:59
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Tetrachloroethene	**2.7**		**0.30**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 13:59
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Trichloroethene	**12**		**0.20**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 13:59
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 13:59
Surr: 1,2-Dichloroethane-d4	*93.5*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 13:59*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 13:59*
Surr: Dibromofluoromethane	*89.0*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 13:59*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 13:59*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW10-181118
Collection Date: 18-Nov-2018 13:45

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,1,2-Trichlor-1,2,2-trifluoroethane	**8.0**		**0.50**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 16:28
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 16:28
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:28
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 16:28
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 16:28
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:28
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 16:28
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 16:28
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 16:28
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW10-181118
Collection Date: 18-Nov-2018 13:45

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 16:28
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 16:28
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 16:28
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:28
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Tetrachloroethene	**45**		**0.30**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 16:28
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Trichloroethene	**53**		**0.20**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 16:28
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:28
Surr: 1,2-Dichloroethane-d4	*95.8*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 16:28*
Surr: 4-Bromofluorobenzene	*97.9*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 16:28*
Surr: Dibromofluoromethane	*90.8*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 16:28*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 16:28*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW11-181118
Collection Date: 18-Nov-2018 14:40

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 14:24
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:24
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 14:24
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 14:24
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:24
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 14:24
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 14:24
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 14:24
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW11-181118
Collection Date: 18-Nov-2018 14:40

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 14:24
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 14:24
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 14:24
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:24
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:24
Surr: 1,2-Dichloroethane-d4	*94.7*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 14:24*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 14:24*
Surr: Dibromofluoromethane	*85.0*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 14:24*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 14:24*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW07-181118
Collection Date: 18-Nov-2018 15:53

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 14:48
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:48
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 14:48
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 14:48
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:48
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 14:48
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 14:48
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 14:48
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW07-181118
Collection Date: 18-Nov-2018 15:53

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 14:48
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 14:48
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 14:48
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 14:48
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 14:48
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 14:48*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 14:48*
Surr: Dibromofluoromethane	*88.9*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 14:48*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 14:48*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW09-181119
Collection Date: 19-Nov-2018 13:15

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,1-Dichloroethene	**0.78**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 16:53
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 16:53
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:53
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 16:53
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 16:53
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:53
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 16:53
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 16:53
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 16:53
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW09-181119
Collection Date: 19-Nov-2018 13:15

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
cis-1,2-Dichloroethene	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 16:53
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 16:53
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 16:53
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 16:53
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 16:53
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Trichloroethene	**580**		**5.0**	**12**	**25**	**ug/L**	25	30-Nov-2018 18:08
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 16:53
Vinyl chloride	**0.60**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	30-Nov-2018 16:53
Surr: 1,2-Dichloroethane-d4	*95.5*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 16:53*
Surr: 1,2-Dichloroethane-d4	*94.6*			**0**	*70-126*	*%REC*	*25*	*30-Nov-2018 18:08*
Surr: 4-Bromofluorobenzene	*97.7*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 16:53*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*81-113*	*%REC*	*25*	*30-Nov-2018 18:08*
Surr: Dibromofluoromethane	*90.0*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 16:53*
Surr: Dibromofluoromethane	*89.5*			**0**	*77-123*	*%REC*	*25*	*30-Nov-2018 18:08*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 16:53*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*25*	*30-Nov-2018 18:08*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW19-181119
Collection Date: 19-Nov-2018 14:10

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 15:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 15:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 15:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 15:13
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 15:13
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 15:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW19-181119
Collection Date: 19-Nov-2018 14:10

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 15:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 15:13
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 15:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:13
Surr: 1,2-Dichloroethane-d4	*95.9*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 15:13*
Surr: 4-Bromofluorobenzene	*97.1*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 15:13*
Surr: Dibromofluoromethane	*89.8*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 15:13*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 15:13*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW18-181119
Collection Date: 19-Nov-2018 14:55

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 15:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 15:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-Nov-2018 15:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-Nov-2018 15:38
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	30-Nov-2018 15:38
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-Nov-2018 15:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW18-181119
Collection Date: 19-Nov-2018 14:55

ANALYTICAL REPORT
WorkOrder:HS18111182
Lab ID:HS18111182-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-Nov-2018 15:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-Nov-2018 15:38
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	30-Nov-2018 15:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	30-Nov-2018 15:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	30-Nov-2018 15:38
Surr: 1,2-Dichloroethane-d4	*95.3*			**0**	*70-126*	*%REC*	*1*	*30-Nov-2018 15:38*
Surr: 4-Bromofluorobenzene	*96.6*			**0**	*81-113*	*%REC*	*1*	*30-Nov-2018 15:38*
Surr: Dibromofluoromethane	*89.2*			**0**	*77-123*	*%REC*	*1*	*30-Nov-2018 15:38*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*30-Nov-2018 15:38*

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

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R328398	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Groundwater	
HS18111182-02	35BWW20-181118	18 Nov 2018 10:25			30 Nov 2018 12:19	1
HS18111182-03	LHSMW58-111118	18 Nov 2018 11:10			30 Nov 2018 12:44	1
HS18111182-04	LHSMW58-181118-FD	18 Nov 2018 11:10			30 Nov 2018 13:09	1
HS18111182-05	35BWW06-181118	18 Nov 2018 12:03			30 Nov 2018 13:34	1
HS18111182-06	35BWW05-181118	18 Nov 2018 12:47			30 Nov 2018 13:59	1
HS18111182-07	35BWW10-181118	18 Nov 2018 13:45			30 Nov 2018 16:28	1
HS18111182-08	35BWW11-181118	18 Nov 2018 14:40			30 Nov 2018 14:24	1
HS18111182-09	35BWW07-181118	18 Nov 2018 15:53			30 Nov 2018 14:48	1
HS18111182-10	35BWW09-181119	19 Nov 2018 13:15			30 Nov 2018 18:08	25
HS18111182-10	35BWW09-181119	19 Nov 2018 13:15			30 Nov 2018 16:53	1
HS18111182-11	35BWW19-181119	19 Nov 2018 14:10			30 Nov 2018 15:13	1
HS18111182-12	35BWW18-181119	19 Nov 2018 14:55			30 Nov 2018 15:38	1
Batch ID R328398	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS18111182-01	37TB02-181118	18 Nov 2018 09:10			30 Nov 2018 11:54	1

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181130** Units: **ug/L** Analysis Date: **30-Nov-2018 11:29**
Client ID: Run ID: **VOA9_328398** SeqNo: **4843429** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181130** Units: **ug/L** Analysis Date: **30-Nov-2018 11:29**
Client ID: Run ID: **VOA9_328398** SeqNo: **4843429** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.86*	*1.0*	*50*	*0*	*91.7*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.96*	*1.0*	*50*	*0*	*97.9*	*82 - 115*				
Surr: Dibromofluoromethane	*43.44*	*1.0*	*50*	*0*	*86.9*	*73 - 126*				

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181130** Units: **ug/L** Analysis Date: **30-Nov-2018 11:29**
Client ID: Run ID: **VOA9_328398** SeqNo: **4843429** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.96*	*1.0*	*50*	*0*	*106*	*81 - 120*				

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181130** Units: **ug/L** Analysis Date: **30-Nov-2018 10:40**
Client ID: Run ID: **VOA9_328398** SeqNo: **4843428** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.84	1.0	20	0	104	77 - 118				
1,1,1-Trichloroethane	18.6	1.0	20	0	93.0	70 - 130				
1,1,2,2-Tetrachloroethane	21.67	1.0	20	0	108	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	19.13	1.0	20	0	95.6	70 - 130				
1,1,2-Trichloroethane	21.09	1.0	20	0	105	77 - 113				
1,1-Dichloroethane	19.32	1.0	20	0	96.6	71 - 122				
1,1-Dichloroethene	19.05	1.0	20	0	95.3	70 - 130				
1,1-Dichloropropene	21.15	1.0	20	0	106	78 - 118				
1,2,3-Trichlorobenzene	20.82	1.0	20	0	104	70 - 130				
1,2,3-Trichloropropane	21.68	1.0	20	0	108	70 - 127				
1,2,4-Trichlorobenzene	20.48	1.0	20	0	102	77 - 126				
1,2,4-Trimethylbenzene	20.95	1.0	20	0	105	73 - 121				
1,2-Dibromo-3-chloropropane	20.49	1.0	20	0	102	70 - 130				
1,2-Dibromoethane	21.8	1.0	20	0	109	76 - 123				
1,2-Dichlorobenzene	19.96	1.0	20	0	99.8	77 - 113				
1,2-Dichloroethane	20.37	1.0	20	0	102	70 - 124				
1,2-Dichloropropane	21.94	1.0	20	0	110	72 - 119				
1,3,5-Trimethylbenzene	20.6	1.0	20	0	103	75 - 118				
1,3-Dichlorobenzene	19.88	1.0	20	0	99.4	78 - 118				
1,3-Dichloropropane	21.5	1.0	20	0	107	75 - 116				
1,4-Dichlorobenzene	21.24	1.0	20	0	106	79 - 113				
2,2-Dichloropropane	19.71	1.0	20	0	98.6	70 - 130				
2-Butanone	43.19	2.0	40	0	108	70 - 130				
2-Chlorotoluene	20.49	1.0	20	0	102	70 - 128				
2-Hexanone	48.8	2.0	40	0	122	70 - 130				
4-Chlorotoluene	20.71	1.0	20	0	104	74 - 126				
4-Isopropyltoluene	21.12	1.0	20	0	106	74 - 126				
4-Methyl-2-pentanone	47.9	2.0	40	0	120	70 - 130				
Acetone	46.59	2.0	40	0	116	70 - 130				
Benzene	21.15	1.0	20	0	106	74 - 120				
Bromobenzene	20.2	1.0	20	0	101	78 - 113				
Bromochloromethane	20.83	1.0	20	0	104	76 - 124				
Bromodichloromethane	20.57	1.0	20	0	103	74 - 122				
Bromoform	19.26	1.0	20	0	96.3	73 - 128				

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181130** Units: **ug/L** Analysis Date: **30-Nov-2018 10:40**
Client ID: Run ID: **VOA9_328398** SeqNo: **4843428** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	23.11	1.0	20	0	116	70 - 130				
Carbon disulfide	40.75	2.0	40	0	102	70 - 130				
Carbon tetrachloride	20.2	1.0	20	0	101	71 - 125				
Chlorobenzene	20.21	1.0	20	0	101	76 - 113				
Chloroethane	20.88	1.0	20	0	104	70 - 130				
Chloroform	18.7	1.0	20	0	93.5	71 - 121				
Chloromethane	23.11	1.0	20	0	116	70 - 129				
cis-1,2-Dichloroethene	19.6	1.0	20	0	98.0	75 - 122				
cis-1,3-Dichloropropene	22.13	1.0	20	0	111	73 - 127				
Dibromochloromethane	21.01	1.0	20	0	105	77 - 122				
Dibromomethane	20.64	1.0	20	0	103	78 - 121				
Dichlorodifluoromethane	19.14	1.0	20	0	95.7	70 - 130				
Ethylbenzene	20.53	1.0	20	0	103	77 - 117				
Hexachlorobutadiene	22.87	1.0	20	0	114	70 - 130				
Isopropylbenzene	20.97	1.0	20	0	105	73 - 127				
m,p-Xylene	41.74	2.0	40	0	104	77 - 122				
Methylene chloride	20.56	2.0	20	0	103	70 - 127				
Naphthalene	22.41	1.0	20	0	112	70 - 130				
n-Butylbenzene	21.58	1.0	20	0	108	72 - 130				
n-Propylbenzene	21.01	1.0	20	0	105	73 - 124				
o-Xylene	21.17	1.0	20	0	106	75 - 119				
sec-Butylbenzene	20.75	1.0	20	0	104	73 - 128				
Styrene	21.82	1.0	20	0	109	72 - 126				
tert-Butylbenzene	20.52	1.0	20	0	103	73 - 124				
Tetrachloroethene	19.81	1.0	20	0	99.0	76 - 119				
Toluene	20.99	1.0	20	0	105	77 - 118				
trans-1,2-Dichloroethene	19.38	1.0	20	0	96.9	72 - 127				
trans-1,3-Dichloropropene	19.99	1.0	20	0	99.9	77 - 119				
Trichloroethene	20.04	1.0	20	0	100	77 - 121				
Trichlorofluoromethane	18.79	1.0	20	0	93.9	70 - 130				
Vinyl chloride	21.31	1.0	20	0	107	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.08*	*1.0*	*50*	*0*	*88.2*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*51.48*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*44.11*	*1.0*	*50*	*0*	*88.2*	*73 - 126*				

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181130** Units: **ug/L** Analysis Date: **30-Nov-2018 10:40**
Client ID: Run ID: **VOA9_328398** SeqNo: **4843428** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.99*	*1.0*	*50*	*0*	*106*	*81 - 120*				

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18111182-05MS** Units: **ug/L** Analysis Date: **30-Nov-2018 17:18**
Client ID: **35BWW06-181118** Run ID: **VOA9_328398** SeqNo: **4844335** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	23.06	1.0	20	0	115	70 - 120				
1,1,1-Trichloroethane	21.74	1.0	20	0	109	70 - 130				
1,1,2,2-Tetrachloroethane	24.11	1.0	20	0	121	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	21.54	1.0	20	0	108	70 - 130				
1,1,2-Trichloroethane	23.37	1.0	20	0	117	70 - 117				
1,1-Dichloroethane	22.54	1.0	20	0	113	70 - 127				
1,1-Dichloroethene	22.37	1.0	20	0	112	70 - 130				
1,1-Dichloropropene	24.09	1.0	20	0	120	70 - 129				
1,2,3-Trichlorobenzene	22.93	1.0	20	0	115	70 - 130				
1,2,3-Trichloropropane	22.8	1.0	20	0	114	70 - 130				
1,2,4-Trichlorobenzene	22.24	1.0	20	0	111	70 - 125				
1,2,4-Trimethylbenzene	24.47	1.0	20	0	122	70 - 125				
1,2-Dibromo-3-chloropropane	21.81	1.0	20	0	109	70 - 130				
1,2-Dibromoethane	23.73	1.0	20	0	119	70 - 124				
1,2-Dichlorobenzene	22.1	1.0	20	0	110	70 - 115				
1,2-Dichloroethane	22.43	1.0	20	0	112	70 - 127				
1,2-Dichloropropane	24.51	1.0	20	0	123	70 - 122				S
1,3,5-Trimethylbenzene	24.26	1.0	20	0	121	70 - 126				
1,3-Dichlorobenzene	22.44	1.0	20	0	112	70 - 119				
1,3-Dichloropropane	23.71	1.0	20	0	119	70 - 121				
1,4-Dichlorobenzene	23.74	1.0	20	0	119	70 - 114				S
2,2-Dichloropropane	19.27	1.0	20	0	96.4	70 - 130				
2-Butanone	47.54	2.0	40	0	119	70 - 130				
2-Chlorotoluene	23.79	1.0	20	0	119	70 - 130				
2-Hexanone	53.43	2.0	40	0	134	70 - 130				S
4-Chlorotoluene	23.82	1.0	20	0	119	70 - 130				
4-Isopropyltoluene	25.2	1.0	20	0	126	70 - 130				
4-Methyl-2-pentanone	51.7	2.0	40	0	129	70 - 130				
Acetone	48.12	2.0	40	0	120	70 - 130				
Benzene	24.09	1.0	20	0	120	70 - 127				
Bromobenzene	22.73	1.0	20	0	114	70 - 115				
Bromochloromethane	23.15	1.0	20	0	116	70 - 127				
Bromodichloromethane	22.2	1.0	20	0	111	70 - 124				
Bromoform	20.63	1.0	20	0	103	70 - 129				

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18111182-05MS** Units: **ug/L** Analysis Date: **30-Nov-2018 17:18**
Client ID: **35BWW06-181118** Run ID: **VOA9_328398** SeqNo: **4844335** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	21.87	1.0	20	0	109	70 - 130				
Carbon disulfide	44.34	2.0	40	0	111	70 - 130				
Carbon tetrachloride	23.19	1.0	20	0	116	70 - 130				
Chlorobenzene	23.15	1.0	20	0	116	70 - 114				S
Chloroethane	22.22	1.0	20	0	111	70 - 130				
Chloroform	21.53	1.0	20	0	108	70 - 125				
Chloromethane	22.13	1.0	20	0	111	70 - 130				
cis-1,2-Dichloroethene	22.05	1.0	20	0	110	70 - 128				
cis-1,3-Dichloropropene	22.81	1.0	20	0	114	70 - 125				
Dibromochloromethane	23.03	1.0	20	0	115	70 - 124				
Dibromomethane	22.78	1.0	20	0	114	70 - 124				
Dichlorodifluoromethane	15.09	1.0	20	0	75.4	70 - 130				
Ethylbenzene	23.82	1.0	20	0	119	70 - 124				
Hexachlorobutadiene	24.96	1.0	20	0	125	70 - 130				
Isopropylbenzene	24.7	1.0	20	0	124	70 - 130				
m,p-Xylene	48.16	2.0	40	0	120	70 - 130				
Methylene chloride	23.22	2.0	20	0	116	70 - 128				
Naphthalene	24.83	1.0	20	0	124	70 - 130				
n-Butylbenzene	25.62	1.0	20	0	128	70 - 130				
n-Propylbenzene	24.92	1.0	20	0	125	70 - 130				
o-Xylene	24.14	1.0	20	0	121	70 - 124				
sec-Butylbenzene	25.17	1.0	20	0	126	70 - 130				
Styrene	24.71	1.0	20	0	124	70 - 130				
tert-Butylbenzene	24.41	1.0	20	0	122	70 - 130				
Tetrachloroethene	23.67	1.0	20	0	118	70 - 130				
Toluene	24.06	1.0	20	0	120	70 - 123				
trans-1,2-Dichloroethene	22.62	1.0	20	0	113	70 - 130				
trans-1,3-Dichloropropene	20.35	1.0	20	0	102	70 - 121				
Trichloroethene	24.98	1.0	20	0	125	70 - 129				
Trichlorofluoromethane	21.48	1.0	20	0	107	70 - 130				
Vinyl chloride	23.03	1.0	20	0	115	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.55*	*1.0*	*50*	*0*	*93.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.06*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*45.47*	*1.0*	*50*	*0*	*90.9*	*77 - 123*				

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: **R328398** **Instrument:** **VOA9** **Method:** **SW8260**

MS Sample ID: **HS18111182-05MS** Units: **ug/L** Analysis Date: **30-Nov-2018 17:18**
Client ID: **35BWW06-181118** Run ID: **VOA9_328398** SeqNo: **4844335** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.26*	*1.0*	*50*	*0*	*107*	*82 - 127*				

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18111182-05MSD** Units: **ug/L** Analysis Date: **30-Nov-2018 17:43**
Client ID: **35BWW06-181118** Run ID: **VOA9_328398** SeqNo: **4844336** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.66	1.0	20	0	113	70 - 120	23.06	1.74	20	
1,1,1-Trichloroethane	21.14	1.0	20	0	106	70 - 130	21.74	2.79	20	
1,1,2,2-Tetrachloroethane	24	1.0	20	0	120	70 - 123	24.11	0.486	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	21.55	1.0	20	0	108	70 - 130	21.54	0.0153	20	
1,1,2-Trichloroethane	22.94	1.0	20	0	115	70 - 117	23.37	1.86	20	
1,1-Dichloroethane	21.62	1.0	20	0	108	70 - 127	22.54	4.19	20	
1,1-Dichloroethene	21.48	1.0	20	0	107	70 - 130	22.37	4.08	20	
1,1-Dichloropropene	23.68	1.0	20	0	118	70 - 129	24.09	1.69	20	
1,2,3-Trichlorobenzene	23.06	1.0	20	0	115	70 - 130	22.93	0.564	20	
1,2,3-Trichloropropane	22.72	1.0	20	0	114	70 - 130	22.8	0.383	20	
1,2,4-Trichlorobenzene	22.02	1.0	20	0	110	70 - 125	22.24	1.01	20	
1,2,4-Trimethylbenzene	23.89	1.0	20	0	119	70 - 125	24.47	2.37	20	
1,2-Dibromo-3-chloropropane	22.03	1.0	20	0	110	70 - 130	21.81	0.977	20	
1,2-Dibromoethane	23.11	1.0	20	0	116	70 - 124	23.73	2.65	20	
1,2-Dichlorobenzene	22.01	1.0	20	0	110	70 - 115	22.1	0.383	20	
1,2-Dichloroethane	22.18	1.0	20	0	111	70 - 127	22.43	1.14	20	
1,2-Dichloropropane	24.1	1.0	20	0	120	70 - 122	24.51	1.67	20	
1,3,5-Trimethylbenzene	23.85	1.0	20	0	119	70 - 126	24.26	1.71	20	
1,3-Dichlorobenzene	22.05	1.0	20	0	110	70 - 119	22.44	1.76	20	
1,3-Dichloropropane	23.26	1.0	20	0	116	70 - 121	23.71	1.89	20	
1,4-Dichlorobenzene	23.08	1.0	20	0	115	70 - 114	23.74	2.83	20	S
2,2-Dichloropropane	18.67	1.0	20	0	93.3	70 - 130	19.27	3.18	20	
2-Butanone	48.24	2.0	40	0	121	70 - 130	47.54	1.46	20	
2-Chlorotoluene	22.98	1.0	20	0	115	70 - 130	23.79	3.46	20	
2-Hexanone	54.14	2.0	40	0	135	70 - 130	53.43	1.32	20	S
4-Chlorotoluene	23.62	1.0	20	0	118	70 - 130	23.82	0.837	20	
4-Isopropyltoluene	24.64	1.0	20	0	123	70 - 130	25.2	2.21	20	
4-Methyl-2-pentanone	51.89	2.0	40	0	130	70 - 130	51.7	0.364	20	
Acetone	48.22	2.0	40	0	121	70 - 130	48.12	0.211	20	
Benzene	23.59	1.0	20	0	118	70 - 127	24.09	2.11	20	
Bromobenzene	22.12	1.0	20	0	111	70 - 115	22.73	2.73	20	
Bromochloromethane	22.7	1.0	20	0	114	70 - 127	23.15	1.94	20	
Bromodichloromethane	21.81	1.0	20	0	109	70 - 124	22.2	1.77	20	
Bromoform	20.24	1.0	20	0	101	70 - 129	20.63	1.9	20	

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18111182-05MSD** Units: **ug/L** Analysis Date: **30-Nov-2018 17:43**
Client ID: **35BWW06-181118** Run ID: **VOA9_328398** SeqNo: **4844336** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	17.7	1.0	20	0	88.5	70 - 130	21.87	21.1	20	R
Carbon disulfide	42.86	2.0	40	0	107	70 - 130	44.34	3.4	20	
Carbon tetrachloride	22.74	1.0	20	0	114	70 - 130	23.19	1.96	20	
Chlorobenzene	22.41	1.0	20	0	112	70 - 114	23.15	3.25	20	
Chloroethane	20.26	1.0	20	0	101	70 - 130	22.22	9.21	20	
Chloroform	20.71	1.0	20	0	104	70 - 125	21.53	3.87	20	
Chloromethane	21.17	1.0	20	0	106	70 - 130	22.13	4.39	20	
cis-1,2-Dichloroethene	21.26	1.0	20	0	106	70 - 128	22.05	3.61	20	
cis-1,3-Dichloropropene	22.54	1.0	20	0	113	70 - 125	22.81	1.17	20	
Dibromochloromethane	22.17	1.0	20	0	111	70 - 124	23.03	3.81	20	
Dibromomethane	22.85	1.0	20	0	114	70 - 124	22.78	0.306	20	
Dichlorodifluoromethane	14.82	1.0	20	0	74.1	70 - 130	15.09	1.78	20	
Ethylbenzene	23.23	1.0	20	0	116	70 - 124	23.82	2.49	20	
Hexachlorobutadiene	24.81	1.0	20	0	124	70 - 130	24.96	0.615	20	
Isopropylbenzene	23.82	1.0	20	0	119	70 - 130	24.7	3.64	20	
m,p-Xylene	46.77	2.0	40	0	117	70 - 130	48.16	2.93	20	
Methylene chloride	22.52	2.0	20	0	113	70 - 128	23.22	3.06	20	
Naphthalene	25.08	1.0	20	0	125	70 - 130	24.83	0.996	20	
n-Butylbenzene	25.08	1.0	20	0	125	70 - 130	25.62	2.11	20	
n-Propylbenzene	24.42	1.0	20	0	122	70 - 130	24.92	2.02	20	
o-Xylene	23.56	1.0	20	0	118	70 - 124	24.14	2.41	20	
sec-Butylbenzene	24.69	1.0	20	0	123	70 - 130	25.17	1.93	20	
Styrene	23.89	1.0	20	0	119	70 - 130	24.71	3.35	20	
tert-Butylbenzene	23.94	1.0	20	0	120	70 - 130	24.41	1.92	20	
Tetrachloroethene	23.07	1.0	20	0	115	70 - 130	23.67	2.55	20	
Toluene	23.36	1.0	20	0	117	70 - 123	24.06	2.96	20	
trans-1,2-Dichloroethene	21.49	1.0	20	0	107	70 - 130	22.62	5.14	20	
trans-1,3-Dichloropropene	20.31	1.0	20	0	102	70 - 121	20.35	0.209	20	
Trichloroethene	23.04	1.0	20	0	115	70 - 129	24.98	8.08	20	
Trichlorofluoromethane	20.38	1.0	20	0	102	70 - 130	21.48	5.24	20	
Vinyl chloride	21.98	1.0	20	0	110	70 - 130	23.03	4.63	20	
Surr: 1,2-Dichloroethane-d4	*46.04*	*1.0*	*50*	*0*	*92.1*	*70 - 126*	*46.55*	*1.1*	*20*	
Surr: 4-Bromofluorobenzene	*51.64*	*1.0*	*50*	*0*	*103*	*81 - 113*	*51.06*	*1.14*	*20*	
Surr: Dibromofluoromethane	*44.64*	*1.0*	*50*	*0*	*89.3*	*77 - 123*	*45.47*	*1.84*	*20*	

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS18111182

QC BATCH REPORT

Batch ID: R328398 **Instrument:** VOA9 **Method:** SW8260

MSD Sample ID: **HS18111182-05MSD** Units: **ug/L** Analysis Date: **30-Nov-2018 17:43**
Client ID: **35BWW06-181118** Run ID: **VOA9_328398** SeqNo: **4844336** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.85*	*1.0*	*50*	*0*	*106*	*82 - 127*	*53.26*	*0.775*	*20*	

The following samples were analyzed in this batch:

HS18111182-01	HS18111182-02	HS18111182-03	HS18111182-04
HS18111182-05	HS18111182-06	HS18111182-07	HS18111182-08
HS18111182-09	HS18111182-10	HS18111182-11	HS18111182-12

ALS Houston, US Date: 03-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: **HS18111182**

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

ALS Houston, US Date: 03-Dec-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

ALS Houston, US Date: 03-Dec-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18111182
Date/Time Received: **20-Nov-2018 09:20**
Received by: **RPG**

Checklist completed by: *Paresh M. Giga* eSignature — 21-Nov-2018 Date
Reviewed by: *RJ Modashia* eSignature — 27-Nov-2018 Date

Matrices: **Groundwater/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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	1.7c/2.1c U/c	IR11	
Cooler(s)/Kit(s):	24812		
Date/Time sample(s) sent to storage:	11/20/18 20:00		
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:

00955493

APTIM

Page 1 of 1

COC ID: 37-NOV2018-GW-ALSHT-181119 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	Sonia West						
	LHAAP-37			Email	Sonia.West@alsglobal.com			Email Report To	karen.napier@aptim.com		
Address	1203-B East Grand Avenue			Address	10450 Stanciff Rd., Suite 210			Mail Reports To	Karen Napier		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company	FED EX		

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS: VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	Antimony & Thallium, total, in Water by 6020A
37TB02-181118	FIELDQC	n/a	n/a	ft	LIQ	11/18/2018	910	2	2				
35BWW20-181118	35BWW20	25.58	25.93	ft	GW	11/18/2018	1025	3	3				
LHSMW58-181118	LHSMW58	24.13	24.24	ft	GW	11/18/2018	1110	3	3				
LHSMW58-181118-FD	LHSMW58	24.13	24.24	ft	GW	11/18/2018	1110	3	3				
35BWW06-181118	35BWW06	24.34	25.51	ft	GW	11/18/2018	1203	3	3				
35BWW05-181118	35BWW05	23.59	23.73	ft	GW	11/18/2018	1247	3	3				
35BWW10-181118	35BWW10	24.34	24.34	ft	GW	11/18/2018	1345	3	3				
35BWW11-181118	35BWW11	22.77	23.38	ft	GW	11/18/2018	1440	3	3				
35BWW07-181118	35BWW07	27.45	29.28	ft	GW	11/18/2018	1553	3	3				
35BWW09-181119	35BWW09	25.73	25.8	ft	GW	11/19/2018	1315	3	3				
35BWW19-181119	35BWW19	27.21	27.52	ft	GW	11/19/2018	1410	3	3				
35BWW18181119	35BWW18	27.39	27.79	ft	GW	11/19/2018	1455	3	3				

HS18111182

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane. Anions should include chloride, nitrate, nitrite, and sulfate.	[illegible] APTIM 11/19/2018		R Cisa ALSHS cooler # 24512 IR # 11 CF +0.4c Temp - 1.7c	11/20/18 09:20

00955494

CUSTODY SEAL SM 11/20/18
DATE: 11-19-18
Signature:
24812 LHA AP

24812 NOV 20 2018

CUSTODY SEAL SM 11/20/18
DATE: 11-19-18
Signature:
24812 LHAAP

10 CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP - 37 - BO 61933 - RJ
RMA:

24812

FedEx Express

FedEx
TRK# 4380 9534 1106
0221

TUE - 20 NOV 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

ALS
10450 Stanclif Rd., Suite 210
Houston, Texa: 77099
Tel. +1 281 5305656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 11-19-18 Time: 1110
Name:
Company:

Seal Broken By: SM
Date: 11/20/18

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 19, 2018

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

Work Order: **HS18111135**

Laboratory Results for: **Longhorn Army Ammunition Plant LHAAP-37**

Dear Susan,

ALS Environmental received 8 sample(s) on Nov 21, 2018 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: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Work Order: HS18111135

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18111135-01	37TB03-181120	Liquid		20-Nov-2018 09:00	21-Nov-2018 09:22	☐
HS18111135-02	35BWW23-181120	Liquid		20-Nov-2018 09:55	21-Nov-2018 09:22	☐
HS18111135-03	35BWW14-181120	Liquid		20-Nov-2018 10:53	21-Nov-2018 09:22	☐
HS18111135-04	35BWW26-181120	Liquid		20-Nov-2018 11:56	21-Nov-2018 09:22	☐
HS18111135-05	35BWW08-181120	Liquid		20-Nov-2018 12:58	21-Nov-2018 09:22	☐
HS18111135-06	35BWW04-181120	Liquid		20-Nov-2018 14:10	21-Nov-2018 09:22	☐
HS18111135-07	35BWW04-181120-FD	Liquid		20-Nov-2018 14:10	21-Nov-2018 09:22	☐
HS18111135-08	35BWW12-181120	Liquid		20-Nov-2018 15:10	21-Nov-2018 09:22	☐

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant LHAAP-37
Work Order:

Work Order Comments

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

GC Semivolatiles by Method RSK-175

Batch ID: R328229

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

GCMS Volatiles by Method SW8260

Batch ID: R328450

Sample ID: 35BWW08-181120(HS18111135-05MSD

• 1,4-Dichlorobenzene and Dichlorodifluoromethane recovered above the control limit

WetChemistry by Method SW9056

Batch ID: R328903,R328977

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Sample ID: 37TB03-181120
Collection Date: 20-Nov-2018 09:00

ANALYTICAL REPORT
WorkOrder:HS18111135
Lab ID:HS18111135-01
Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 12:48
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 12:48
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 12:48
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	02-Dec-2018 12:48
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 12:48
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	02-Dec-2018 12:48
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	02-Dec-2018 12:48
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	02-Dec-2018 12:48
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 37TB03-181120 Lab ID:HS18111135-01
Collection Date: 20-Nov-2018 09:00 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 12:48
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 12:48
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	02-Dec-2018 12:48
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 12:48
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 12:48
Surr: 1,2-Dichloroethane-d4	*91.9*			**0**	*70-126*	*%REC*	*1*	*02-Dec-2018 12:48*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*81-113*	*%REC*	*1*	*02-Dec-2018 12:48*
Surr: Dibromofluoromethane	*87.5*			**0**	*77-123*	*%REC*	*1*	*02-Dec-2018 12:48*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*02-Dec-2018 12:48*

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW23-181120 Lab ID:HS18111135-02
Collection Date: 20-Nov-2018 09:55 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 13:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 13:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	02-Dec-2018 13:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	02-Dec-2018 13:38
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	02-Dec-2018 13:38
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	02-Dec-2018 13:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW23-181120 Lab ID:HS18111135-02
Collection Date: 20-Nov-2018 09:55 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 13:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 13:38
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	02-Dec-2018 13:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:38
Surr: 1,2-Dichloroethane-d4	*93.0*			**0**	*70-126*	*%REC*	*1*	*02-Dec-2018 13:38*
Surr: 4-Bromofluorobenzene	*96.7*			**0**	*81-113*	*%REC*	*1*	*02-Dec-2018 13:38*
Surr: Dibromofluoromethane	*88.0*			**0**	*77-123*	*%REC*	*1*	*02-Dec-2018 13:38*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*02-Dec-2018 13:38*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000859**	J	**0.000144**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 12:30
Ethene	**0.00170**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 12:30
Methane	**0.00265**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	28-Nov-2018 12:30
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**54.5**		**0.200**	**0.500**	**0.500**	**mg/L**	1	21-Nov-2018 21:49
Nitrogen, Nitrate (As N)	**0.0810**	J	**0.0300**	**0.500**	**0.100**	**mg/L**	1	21-Nov-2018 21:49
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	21-Nov-2018 21:49
Sulfate	**99.7**		**1.00**	**2.50**	**2.50**	**mg/L**	5	10-Dec-2018 16:27

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Sample ID: 35BWW23-181120
Collection Date: 20-Nov-2018 09:55

ANALYTICAL REPORT
WorkOrder:HS18111135
Lab ID:HS18111135-02
Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	19-Dec-2018 08:48

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW14-181120 Lab ID:HS18111135-03
Collection Date: 20-Nov-2018 10:53 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,1,2-Trichlor-1,2,2-trifluoroethane	**17**		**0.50**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 14:03
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,1-Dichloroethane	**0.41**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 14:03
1,1-Dichloroethene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 14:03
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 14:03
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:03
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 14:03
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	02-Dec-2018 14:03
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:03
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	02-Dec-2018 14:03
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	02-Dec-2018 14:03
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	02-Dec-2018 14:03
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW14-181120 Lab ID:HS18111135-03
Collection Date: 20-Nov-2018 10:53 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
cis-1,2-Dichloroethene	**0.91**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 14:03
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 14:03
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 14:03
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	02-Dec-2018 14:03
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:03
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Tetrachloroethene	**37**		**0.30**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 14:03
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Trichloroethene	**9.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 14:03
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:03
Surr: 1,2-Dichloroethane-d4	*92.9*			**0**	*70-126*	*%REC*	*1*	*02-Dec-2018 14:03*
Surr: 4-Bromofluorobenzene	*98.0*			**0**	*81-113*	*%REC*	*1*	*02-Dec-2018 14:03*
Surr: Dibromofluoromethane	*88.2*			**0**	*77-123*	*%REC*	*1*	*02-Dec-2018 14:03*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*02-Dec-2018 14:03*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	0.00100	U	0.000144	0.00100	0.00100	mg/L	1	28-Nov-2018 12:41
Ethene	**0.00131**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 12:41
Methane	**0.00148**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	28-Nov-2018 12:41
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**8.74**		**0.200**	**0.500**	**0.500**	**mg/L**	1	21-Nov-2018 22:11
Nitrogen, Nitrate (As N)	**0.451**		**0.0300**	**0.500**	**0.100**	**mg/L**	1	21-Nov-2018 22:11
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	21-Nov-2018 22:11
Sulfate	**46.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	21-Nov-2018 22:11

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Sample ID: 35BWW14-181120
Collection Date: 20-Nov-2018 10:53

ANALYTICAL REPORT
WorkOrder:HS18111135
Lab ID:HS18111135-03
Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	19-Dec-2018 08:48

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW26-181120 Lab ID:HS18111135-04
Collection Date: 20-Nov-2018 11:56 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 14:27
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:27
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 14:27
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	02-Dec-2018 14:27
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:27
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	02-Dec-2018 14:27
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	02-Dec-2018 14:27
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	02-Dec-2018 14:27
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW26-181120 Lab ID:HS18111135-04
Collection Date: 20-Nov-2018 11:56 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 14:27
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 14:27
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	02-Dec-2018 14:27
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:27
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:27
Surr: 1,2-Dichloroethane-d4	*93.2*			**0**	*70-126*	*%REC*	*1*	*02-Dec-2018 14:27*
Surr: 4-Bromofluorobenzene	*97.7*			**0**	*81-113*	*%REC*	*1*	*02-Dec-2018 14:27*
Surr: Dibromofluoromethane	*88.8*			**0**	*77-123*	*%REC*	*1*	*02-Dec-2018 14:27*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*02-Dec-2018 14:27*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	0.00100	U	0.000144	0.00100	0.00100	mg/L	1	28-Nov-2018 13:03
Ethene	**0.00235**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 13:03
Methane	**0.00216**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	28-Nov-2018 13:03
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**30.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	21-Nov-2018 22:32
Nitrogen, Nitrate (As N)	**0.0860**	J	**0.0300**	**0.500**	**0.100**	**mg/L**	1	21-Nov-2018 22:32
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	21-Nov-2018 22:32
Sulfate	**27.1**		**0.200**	**0.500**	**0.500**	**mg/L**	1	21-Nov-2018 22:32

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Sample ID: 35BWW26-181120
Collection Date: 20-Nov-2018 11:56

ANALYTICAL REPORT
WorkOrder:HS18111135
Lab ID:HS18111135-04
Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	19-Dec-2018 08:48

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Sample ID: 35BWW08-181120
Collection Date: 20-Nov-2018 12:58

ANALYTICAL REPORT
WorkOrder:HS18111135
Lab ID:HS18111135-05
Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 13:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 13:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	02-Dec-2018 13:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	02-Dec-2018 13:13
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	02-Dec-2018 13:13
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	02-Dec-2018 13:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW08-181120 Lab ID:HS18111135-05
Collection Date: 20-Nov-2018 12:58 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 13:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 13:13
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	02-Dec-2018 13:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 13:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 13:13
Surr: 1,2-Dichloroethane-d4	*92.6*			**0**	*70-126*	*%REC*	*1*	*02-Dec-2018 13:13*
Surr: 4-Bromofluorobenzene	*98.2*			**0**	*81-113*	*%REC*	*1*	*02-Dec-2018 13:13*
Surr: Dibromofluoromethane	*88.0*			**0**	*77-123*	*%REC*	*1*	*02-Dec-2018 13:13*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*02-Dec-2018 13:13*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	0.00100	U	0.000144	0.00100	0.00100	mg/L	1	28-Nov-2018 13:36
Ethene	**0.00231**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 13:36
Methane	**0.00182**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	28-Nov-2018 13:36
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**9.14**		**0.200**	**0.500**	**0.500**	**mg/L**	1	21-Nov-2018 22:54
Nitrogen, Nitrate (As N)	**0.169**		**0.0300**	**0.500**	**0.100**	**mg/L**	1	21-Nov-2018 22:54
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	21-Nov-2018 22:54
Sulfate	**36.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	21-Nov-2018 22:54

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Sample ID: 35BWW08-181120
Collection Date: 20-Nov-2018 12:58

ANALYTICAL REPORT
WorkOrder:HS18111135
Lab ID:HS18111135-05
Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	19-Dec-2018 08:48

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW04-181120 Lab ID:HS18111135-06
Collection Date: 20-Nov-2018 14:10 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 14:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 14:52
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	02-Dec-2018 14:52
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:52
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	02-Dec-2018 14:52
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	02-Dec-2018 14:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	02-Dec-2018 14:52
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW04-181120 Lab ID:HS18111135-06
Collection Date: 20-Nov-2018 14:10 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 14:52
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 14:52
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	02-Dec-2018 14:52
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 14:52
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Tetrachloroethene	**6.3**		**0.30**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 14:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Trichloroethene	**0.95**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 14:52
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 14:52
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*70-126*	*%REC*	*1*	*02-Dec-2018 14:52*
Surr: 4-Bromofluorobenzene	*95.9*			**0**	*81-113*	*%REC*	*1*	*02-Dec-2018 14:52*
Surr: Dibromofluoromethane	*90.0*			**0**	*77-123*	*%REC*	*1*	*02-Dec-2018 14:52*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*02-Dec-2018 14:52*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000238**	J	**0.000144**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 14:14
Ethene	**0.000524**	J	**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 14:14
Methane	**0.00223**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	28-Nov-2018 14:14
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**3.65**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-Nov-2018 00:21
Nitrogen, Nitrate (As N)	**0.100**		**0.0300**	**0.500**	**0.100**	**mg/L**	1	22-Nov-2018 00:21
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	22-Nov-2018 00:21
Sulfate	**25.1**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-Nov-2018 00:21

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Sample ID: 35BWW04-181120
Collection Date: 20-Nov-2018 14:10

ANALYTICAL REPORT
WorkOrder:HS18111135
Lab ID:HS18111135-06
Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	19-Dec-2018 08:48

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW04-181120-FD Lab ID:HS18111135-07
Collection Date: 20-Nov-2018 14:10 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 15:17
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:17
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 15:17
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	02-Dec-2018 15:17
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:17
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	02-Dec-2018 15:17
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	02-Dec-2018 15:17
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	02-Dec-2018 15:17
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW04-181120-FD Lab ID:HS18111135-07
Collection Date: 20-Nov-2018 14:10 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 15:17
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 15:17
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	02-Dec-2018 15:17
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:17
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Tetrachloroethene	**5.3**		**0.30**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 15:17
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Trichloroethene	**0.73**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 15:17
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:17
Surr: 1,2-Dichloroethane-d4	*93.2*			**0**	*70-126*	*%REC*	*1*	*02-Dec-2018 15:17*
Surr: 4-Bromofluorobenzene	*97.4*			**0**	*81-113*	*%REC*	*1*	*02-Dec-2018 15:17*
Surr: Dibromofluoromethane	*89.6*			**0**	*77-123*	*%REC*	*1*	*02-Dec-2018 15:17*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*02-Dec-2018 15:17*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	**0.000574**	J	**0.000144**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 14:42
Ethene	**0.000959**	J	**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 14:42
Methane	**0.00182**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	28-Nov-2018 14:42
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**3.66**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-Nov-2018 00:43
Nitrogen, Nitrate (As N)	**0.101**		**0.0300**	**0.500**	**0.100**	**mg/L**	1	22-Nov-2018 00:43
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	22-Nov-2018 00:43
Sulfate	**25.5**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-Nov-2018 00:43

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Sample ID: 35BWW04-181120-FD
Collection Date: 20-Nov-2018 14:10

ANALYTICAL REPORT
WorkOrder:HS18111135
Lab ID:HS18111135-07
Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	19-Dec-2018 08:48

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW12-181120 Lab ID:HS18111135-08
Collection Date: 20-Nov-2018 15:10 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,1,2-Trichlor-1,2,2-trifluoroethane	**0.58**	J	**0.50**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 15:42
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,2-Dibromo-3-chloropropane	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 15:42
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:42
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 15:42
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	02-Dec-2018 15:42
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:42
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	02-Dec-2018 15:42
Acetone	2.0	U	2.0	2.0	2.0	ug/L	1	02-Dec-2018 15:42
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	02-Dec-2018 15:42
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP-37 WorkOrder:HS18111135
Sample ID: 35BWW12-181120 Lab ID:HS18111135-08
Collection Date: 20-Nov-2018 15:10 Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	02-Dec-2018 15:42
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	02-Dec-2018 15:42
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	02-Dec-2018 15:42
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	02-Dec-2018 15:42
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Tetrachloroethene	**8.7**		**0.30**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 15:42
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Trichloroethene	**0.92**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	02-Dec-2018 15:42
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	02-Dec-2018 15:42
Surr: 1,2-Dichloroethane-d4	*94.0*			**0**	*70-126*	*%REC*	*1*	*02-Dec-2018 15:42*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*81-113*	*%REC*	*1*	*02-Dec-2018 15:42*
Surr: Dibromofluoromethane	*89.3*			**0**	*77-123*	*%REC*	*1*	*02-Dec-2018 15:42*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*02-Dec-2018 15:42*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: PVL
Ethane	0.00100	U	0.000144	0.00100	0.00100	mg/L	1	28-Nov-2018 14:54
Ethene	**0.00200**		**0.000234**	**0.00100**	**0.00100**	**mg/L**	1	28-Nov-2018 14:54
Methane	**0.00170**		**0.000107**	**0.000500**	**0.000500**	**mg/L**	1	28-Nov-2018 14:54
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**8.19**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-Nov-2018 01:04
Nitrogen, Nitrate (As N)	**0.0760**	J	**0.0300**	**0.500**	**0.100**	**mg/L**	1	22-Nov-2018 01:04
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	22-Nov-2018 01:04
Sulfate	**43.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-Nov-2018 01:04

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
Sample ID: 35BWW12-181120
Collection Date: 20-Nov-2018 15:10

ANALYTICAL REPORT
WorkOrder:HS18111135
Lab ID:HS18111135-08
Matrix:Liquid

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Dec-2018 16:04
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	19-Dec-2018 08:48

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

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R328229	**Test Name :** DISSOLVED GASES BY RSK-175			**Matrix:** Liquid		
HS18111135-02	35BWW23-181120	20 Nov 2018 09:55			28 Nov 2018 12:30	1
HS18111135-03	35BWW14-181120	20 Nov 2018 10:53			28 Nov 2018 12:41	1
HS18111135-04	35BWW26-181120	20 Nov 2018 11:56			28 Nov 2018 13:03	1
HS18111135-05	35BWW08-181120	20 Nov 2018 12:58			28 Nov 2018 13:36	1
HS18111135-06	35BWW04-181120	20 Nov 2018 14:10			28 Nov 2018 14:14	1
HS18111135-07	35BWW04-181120-FD	20 Nov 2018 14:10			28 Nov 2018 14:42	1
HS18111135-08	35BWW12-181120	20 Nov 2018 15:10			28 Nov 2018 14:54	1
Batch ID R328450	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Liquid		
HS18111135-01	37TB03-181120	20 Nov 2018 09:00			02 Dec 2018 12:48	1
HS18111135-02	35BWW23-181120	20 Nov 2018 09:55			02 Dec 2018 13:38	1
HS18111135-03	35BWW14-181120	20 Nov 2018 10:53			02 Dec 2018 14:03	1
HS18111135-04	35BWW26-181120	20 Nov 2018 11:56			02 Dec 2018 14:27	1
HS18111135-05	35BWW08-181120	20 Nov 2018 12:58			02 Dec 2018 13:13	1
HS18111135-06	35BWW04-181120	20 Nov 2018 14:10			02 Dec 2018 14:52	1
HS18111135-07	35BWW04-181120-FD	20 Nov 2018 14:10			02 Dec 2018 15:17	1
HS18111135-08	35BWW12-181120	20 Nov 2018 15:10			02 Dec 2018 15:42	1
Batch ID R328903	**Test Name :** ANIONS BY SW9056A			**Matrix:** Liquid		
HS18111135-02	35BWW23-181120	20 Nov 2018 09:55			21 Nov 2018 21:49	1
HS18111135-03	35BWW14-181120	20 Nov 2018 10:53			21 Nov 2018 22:11	1
HS18111135-04	35BWW26-181120	20 Nov 2018 11:56			21 Nov 2018 22:32	1
HS18111135-05	35BWW08-181120	20 Nov 2018 12:58			21 Nov 2018 22:54	1
HS18111135-06	35BWW04-181120	20 Nov 2018 14:10			22 Nov 2018 00:21	1
HS18111135-07	35BWW04-181120-FD	20 Nov 2018 14:10			22 Nov 2018 00:43	1
HS18111135-08	35BWW12-181120	20 Nov 2018 15:10			22 Nov 2018 01:04	1
Batch ID R328977	**Test Name :** ANIONS BY SW9056A			**Matrix:** Liquid		
HS18111135-02	35BWW23-181120	20 Nov 2018 09:55			10 Dec 2018 16:27	5
Batch ID R329395	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS			**Matrix:** Liquid		
HS18111135-02	35BWW23-181120	20 Nov 2018 09:55			17 Dec 2018 16:04	1
HS18111135-03	35BWW14-181120	20 Nov 2018 10:53			17 Dec 2018 16:04	1
HS18111135-04	35BWW26-181120	20 Nov 2018 11:56			17 Dec 2018 16:04	1
HS18111135-05	35BWW08-181120	20 Nov 2018 12:58			17 Dec 2018 16:04	1
HS18111135-06	35BWW04-181120	20 Nov 2018 14:10			17 Dec 2018 16:04	1
HS18111135-07	35BWW04-181120-FD	20 Nov 2018 14:10			17 Dec 2018 16:04	1
HS18111135-08	35BWW12-181120	20 Nov 2018 15:10			17 Dec 2018 16:04	1

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R329531	**Test Name :** SUBCONTRACTED ANALYSIS			**Matrix:** Liquid		
HS18111135-02	35BWW23-181120	20 Nov 2018 09:55			19 Dec 2018 08:48	1
HS18111135-03	35BWW14-181120	20 Nov 2018 10:53			19 Dec 2018 08:48	1
HS18111135-04	35BWW26-181120	20 Nov 2018 11:56			19 Dec 2018 08:48	1
HS18111135-05	35BWW08-181120	20 Nov 2018 12:58			19 Dec 2018 08:48	1
HS18111135-06	35BWW04-181120	20 Nov 2018 14:10			19 Dec 2018 08:48	1
HS18111135-07	35BWW04-181120-FD	20 Nov 2018 14:10			19 Dec 2018 08:48	1
HS18111135-08	35BWW12-181120	20 Nov 2018 15:10			19 Dec 2018 08:48	1

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328229 **Instrument: FID-4** **Method: RSK-175**

MBLK Sample ID: **MBLK-181128** Units: **mg/L** Analysis Date: **28-Nov-2018 11:51**
Client ID: Run ID: **FID-4_328229** SeqNo: **4839433** PrepDate: DF: **1**

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

LCS Sample ID: **LCS-181128** Units: **mg/L** Analysis Date: **28-Nov-2018 11:23**
Client ID: Run ID: **FID-4_328229** SeqNo: **4839431** 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	0.0160	0.00100	0.0168	0	95.1	75 - 125				
Methane	0.00866	0.000500	0.009647	0	89.8	75 - 125				

LCSD Sample ID: **LCSD-181128** Units: **mg/L** Analysis Date: **28-Nov-2018 11:35**
Client ID: Run ID: **FID-4_328229** SeqNo: **4839432** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0155	0.00100	0.01804	0	85.8	75 - 125	0.01533	0.902	30	
Ethene	0.0155	0.00100	0.0168	0	92.2	75 - 125	0.01597	3.13	30	
Methane	0.00870	0.000500	0.009647	0	90.1	75 - 125	0.008662	0.402	30	

MS Sample ID: **HS18111135-05MS** Units: **mg/L** Analysis Date: **28-Nov-2018 13:51**
Client ID: **35BWW08-181120** Run ID: **FID-4_328229** SeqNo: **4839438** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0218	0.00100	0.01804	0	121	75 - 125				
Ethene	0.0198	0.00100	0.0168	0.002313	104	75 - 125				
Methane	0.0102	0.000500	0.009647	0.001816	86.9	75 - 125				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328229 **Instrument:** FID-4 **Method:** RSK-175

MSD Sample ID: **HS18111135-05MSD** Units: **mg/L** Analysis Date: **28-Nov-2018 14:03**
Client ID: **35BWW08-181120** Run ID: **FID-4_328229** SeqNo: **4839442** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.0225	0.00100	0.01804	0	125	75 - 125	0.02184	3.06	30	
Ethene	0.0216	0.00100	0.0168	0.002313	115	75 - 125	0.01981	8.74	30	
Methane	0.0103	0.000500	0.009647	0.001816	87.9	75 - 125	0.01020	0.981	30	

The following samples were analyzed in this batch: HS18111135-02 HS18111135-03 HS18111135-04 HS18111135-05 HS18111135-06 HS18111135-07 HS18111135-08

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181202** Units: **ug/L** Analysis Date: **02-Dec-2018 12:24**
Client ID: Run ID: **VOA9_328450** SeqNo: **4844711** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181202** Units: **ug/L** Analysis Date: **02-Dec-2018 12:24**
Client ID: Run ID: **VOA9_328450** SeqNo: **4844711** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.64*	*1.0*	*50*	*0*	*91.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.92*	*1.0*	*50*	*0*	*97.8*	*82 - 115*				
Surr: Dibromofluoromethane	*43.08*	*1.0*	*50*	*0*	*86.2*	*73 - 126*				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

MBLK Sample ID: **VBLKW-181202** Units: **ug/L** Analysis Date: **02-Dec-2018 12:24**
Client ID: Run ID: **VOA9_328450** SeqNo: **4844711** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.67*	*1.0*	*50*	*0*	*105*	*81 - 120*				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181202** Units: **ug/L** Analysis Date: **02-Dec-2018 11:34**
Client ID: Run ID: **VOA9_328450** SeqNo: **4844710** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.59	1.0	20	0	108	77 - 118				
1,1,1-Trichloroethane	19.18	1.0	20	0	95.9	70 - 130				
1,1,2,2-Tetrachloroethane	21.01	1.0	20	0	105	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	19.39	1.0	20	0	97.0	70 - 130				
1,1,2-Trichloroethane	20.97	1.0	20	0	105	77 - 113				
1,1-Dichloroethane	19.48	1.0	20	0	97.4	71 - 122				
1,1-Dichloroethene	19.09	1.0	20	0	95.5	70 - 130				
1,1-Dichloropropene	20.92	1.0	20	0	105	78 - 118				
1,2,3-Trichlorobenzene	21.62	1.0	20	0	108	70 - 130				
1,2,3-Trichloropropane	21.47	1.0	20	0	107	70 - 127				
1,2,4-Trichlorobenzene	21.04	1.0	20	0	105	77 - 126				
1,2,4-Trimethylbenzene	21.94	1.0	20	0	110	73 - 121				
1,2-Dibromo-3-chloropropane	20.01	1.0	20	0	100	70 - 130				
1,2-Dibromoethane	21.5	1.0	20	0	107	76 - 123				
1,2-Dichlorobenzene	20.49	1.0	20	0	102	77 - 113				
1,2-Dichloroethane	20.1	1.0	20	0	100	70 - 124				
1,2-Dichloropropane	21.78	1.0	20	0	109	72 - 119				
1,3,5-Trimethylbenzene	21.74	1.0	20	0	109	75 - 118				
1,3-Dichlorobenzene	20.61	1.0	20	0	103	78 - 118				
1,3-Dichloropropane	21.03	1.0	20	0	105	75 - 116				
1,4-Dichlorobenzene	21.8	1.0	20	0	109	79 - 113				
2,2-Dichloropropane	20.22	1.0	20	0	101	70 - 130				
2-Butanone	41.36	2.0	40	0	103	70 - 130				
2-Chlorotoluene	21.33	1.0	20	0	107	70 - 128				
2-Hexanone	46.41	2.0	40	0	116	70 - 130				
4-Chlorotoluene	21.5	1.0	20	0	108	74 - 126				
4-Isopropyltoluene	22.72	1.0	20	0	114	74 - 126				
4-Methyl-2-pentanone	45.74	2.0	40	0	114	70 - 130				
Acetone	43.78	2.0	40	0	109	70 - 130				
Benzene	21.28	1.0	20	0	106	74 - 120				
Bromobenzene	20.45	1.0	20	0	102	78 - 113				
Bromochloromethane	20.47	1.0	20	0	102	76 - 124				
Bromodichloromethane	20.34	1.0	20	0	102	74 - 122				
Bromoform	19.31	1.0	20	0	96.6	73 - 128				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181202** Units: **ug/L** Analysis Date: **02-Dec-2018 11:34**
Client ID: Run ID: **VOA9_328450** SeqNo: **4844710** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	22.38	1.0	20	0	112	70 - 130				
Carbon disulfide	40.47	2.0	40	0	101	70 - 130				
Carbon tetrachloride	20.56	1.0	20	0	103	71 - 125				
Chlorobenzene	20.6	1.0	20	0	103	76 - 113				
Chloroethane	19.99	1.0	20	0	100.0	70 - 130				
Chloroform	18.75	1.0	20	0	93.7	71 - 121				
Chloromethane	22.59	1.0	20	0	113	70 - 129				
cis-1,2-Dichloroethene	19.57	1.0	20	0	97.8	75 - 122				
cis-1,3-Dichloropropene	22.36	1.0	20	0	112	73 - 127				
Dibromochloromethane	21.45	1.0	20	0	107	77 - 122				
Dibromomethane	20.6	1.0	20	0	103	78 - 121				
Dichlorodifluoromethane	18.65	1.0	20	0	93.2	70 - 130				
Ethylbenzene	21.33	1.0	20	0	107	77 - 117				
Hexachlorobutadiene	24.49	1.0	20	0	122	70 - 130				
Isopropylbenzene	21.9	1.0	20	0	109	73 - 127				
m,p-Xylene	43.31	2.0	40	0	108	77 - 122				
Methylene chloride	20.68	2.0	20	0	103	70 - 127				
Naphthalene	22.6	1.0	20	0	113	70 - 130				
n-Butylbenzene	22.97	1.0	20	0	115	72 - 130				
n-Propylbenzene	21.93	1.0	20	0	110	73 - 124				
o-Xylene	21.72	1.0	20	0	109	75 - 119				
sec-Butylbenzene	22.09	1.0	20	0	110	73 - 128				
Styrene	22.38	1.0	20	0	112	72 - 126				
tert-Butylbenzene	21.88	1.0	20	0	109	73 - 124				
Tetrachloroethene	21.08	1.0	20	0	105	76 - 119				
Toluene	21.25	1.0	20	0	106	77 - 118				
trans-1,2-Dichloroethene	19.63	1.0	20	0	98.1	72 - 127				
trans-1,3-Dichloropropene	20.04	1.0	20	0	100	77 - 119				
Trichloroethene	20.81	1.0	20	0	104	77 - 121				
Trichlorofluoromethane	18.68	1.0	20	0	93.4	70 - 130				
Vinyl chloride	21.02	1.0	20	0	105	70 - 130				
Surr: 1,2-Dichloroethane-d4	*43.01*	*1.0*	*50*	*0*	*86.0*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.98*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*43.65*	*1.0*	*50*	*0*	*87.3*	*73 - 126*				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

LCS Sample ID: **VLCSW-181202** Units: **ug/L** Analysis Date: **02-Dec-2018 11:34**
Client ID: Run ID: **VOA9_328450** SeqNo: **4844710** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.3*	*1.0*	*50*	*0*	*105*	*81 - 120*				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18111135-05MS** Units: **ug/L** Analysis Date: **02-Dec-2018 16:07**
Client ID: **35BWW08-181120** Run ID: **VOA9_328450** SeqNo: **4844720** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.27	1.0	20	0	111	70 - 120				
1,1,1-Trichloroethane	21.15	1.0	20	0	106	70 - 130				
1,1,2,2-Tetrachloroethane	22.38	1.0	20	0	112	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	20.66	1.0	20	0	103	70 - 130				
1,1,2-Trichloroethane	22.73	1.0	20	0	114	70 - 117				
1,1-Dichloroethane	21.79	1.0	20	0	109	70 - 127				
1,1-Dichloroethene	21.94	1.0	20	0	110	70 - 130				
1,1-Dichloropropene	23.75	1.0	20	0	119	70 - 129				
1,2,3-Trichlorobenzene	21.64	1.0	20	0	108	70 - 130				
1,2,3-Trichloropropane	22.13	1.0	20	0	111	70 - 130				
1,2,4-Trichlorobenzene	21.12	1.0	20	0	106	70 - 125				
1,2,4-Trimethylbenzene	23.18	1.0	20	0	116	70 - 125				
1,2-Dibromo-3-chloropropane	19.56	1.0	20	0	97.8	70 - 130				
1,2-Dibromoethane	22.54	1.0	20	0	113	70 - 124				
1,2-Dichlorobenzene	21.39	1.0	20	0	107	70 - 115				
1,2-Dichloroethane	21.71	1.0	20	0	109	70 - 127				
1,2-Dichloropropane	23.56	1.0	20	0	118	70 - 122				
1,3,5-Trimethylbenzene	23.34	1.0	20	0	117	70 - 126				
1,3-Dichlorobenzene	21.57	1.0	20	0	108	70 - 119				
1,3-Dichloropropane	22.69	1.0	20	0	113	70 - 121				
1,4-Dichlorobenzene	22.65	1.0	20	0	113	70 - 114				
2,2-Dichloropropane	19.27	1.0	20	0	96.3	70 - 130				
2-Butanone	42.39	2.0	40	0	106	70 - 130				
2-Chlorotoluene	22.73	1.0	20	0	114	70 - 130				
2-Hexanone	46.73	2.0	40	0	117	70 - 130				
4-Chlorotoluene	22.99	1.0	20	0	115	70 - 130				
4-Isopropyltoluene	23.85	1.0	20	0	119	70 - 130				
4-Methyl-2-pentanone	46.47	2.0	40	0	116	70 - 130				
Acetone	44.46	2.0	40	0	111	70 - 130				
Benzene	23.61	1.0	20	0	118	70 - 127				
Bromobenzene	21.88	1.0	20	0	109	70 - 115				
Bromochloromethane	22.74	1.0	20	0	114	70 - 127				
Bromodichloromethane	21.74	1.0	20	0	109	70 - 124				
Bromoform	19.72	1.0	20	0	98.6	70 - 129				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

MS Sample ID: **HS18111135-05MS** Units: **ug/L** Analysis Date: **02-Dec-2018 16:07**
Client ID: **35BWW08-181120** Run ID: **VOA9_328450** SeqNo: **4844720** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	24.76	1.0	20	0	124	70 - 130				
Carbon disulfide	41.4	2.0	40	0	103	70 - 130				
Carbon tetrachloride	22.99	1.0	20	0	115	70 - 130				
Chlorobenzene	22.4	1.0	20	0	112	70 - 114				
Chloroethane	21.69	1.0	20	0	108	70 - 130				
Chloroform	20.9	1.0	20	0	105	70 - 125				
Chloromethane	20.78	1.0	20	0	104	70 - 130				
cis-1,2-Dichloroethene	21.4	1.0	20	0	107	70 - 128				
cis-1,3-Dichloropropene	22.41	1.0	20	0	112	70 - 125				
Dibromochloromethane	22.38	1.0	20	0	112	70 - 124				
Dibromomethane	22.28	1.0	20	0	111	70 - 124				
Dichlorodifluoromethane	14.13	1.0	20	0	70.6	70 - 130				
Ethylbenzene	23.22	1.0	20	0	116	70 - 124				
Hexachlorobutadiene	23.86	1.0	20	0	119	70 - 130				
Isopropylbenzene	23.95	1.0	20	0	120	70 - 130				
m,p-Xylene	46.74	2.0	40	0	117	70 - 130				
Methylene chloride	22.53	2.0	20	0	113	70 - 128				
Naphthalene	22.99	1.0	20	0	115	70 - 130				
n-Butylbenzene	23.94	1.0	20	0	120	70 - 130				
n-Propylbenzene	23.76	1.0	20	0	119	70 - 130				
o-Xylene	23.64	1.0	20	0	118	70 - 124				
sec-Butylbenzene	23.98	1.0	20	0	120	70 - 130				
Styrene	23.71	1.0	20	0	119	70 - 130				
tert-Butylbenzene	23.66	1.0	20	0	118	70 - 130				
Tetrachloroethene	23.16	1.0	20	0	116	70 - 130				
Toluene	23.39	1.0	20	0	117	70 - 123				
trans-1,2-Dichloroethene	21.87	1.0	20	0	109	70 - 130				
trans-1,3-Dichloropropene	20.2	1.0	20	0	101	70 - 121				
Trichloroethene	22.94	1.0	20	0	115	70 - 129				
Trichlorofluoromethane	20.49	1.0	20	0	102	70 - 130				
Vinyl chloride	22.2	1.0	20	0	111	70 - 130				
Surr: 1,2-Dichloroethane-d4	*45.82*	*1.0*	*50*	*0*	*91.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.07*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*45.28*	*1.0*	*50*	*0*	*90.6*	*77 - 123*				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument:** VOA9 **Method:** SW8260

MS Sample ID: **HS18111135-05MS** Units: **ug/L** Analysis Date: **02-Dec-2018 16:07**
Client ID: **35BWW08-181120** Run ID: **VOA9_328450** SeqNo: **4844720** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.91*	*1.0*	*50*	*0*	*106*	*82 - 127*				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18111135-05MSD** Units: **ug/L** Analysis Date: **02-Dec-2018 16:31**
Client ID: **35BWW08-181120** Run ID: **VOA9_328450** SeqNo: **4844721** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.34	1.0	20	0	112	70 - 120	22.27	0.303	20	
1,1,1-Trichloroethane	20.85	1.0	20	0	104	70 - 130	21.15	1.43	20	
1,1,2,2-Tetrachloroethane	23.16	1.0	20	0	116	70 - 123	22.38	3.41	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	20.16	1.0	20	0	101	70 - 130	20.66	2.43	20	
1,1,2-Trichloroethane	22.44	1.0	20	0	112	70 - 117	22.73	1.3	20	
1,1-Dichloroethane	21.28	1.0	20	0	106	70 - 127	21.79	2.39	20	
1,1-Dichloroethene	21.3	1.0	20	0	106	70 - 130	21.94	2.96	20	
1,1-Dichloropropene	22.82	1.0	20	0	114	70 - 129	23.75	4	20	
1,2,3-Trichlorobenzene	22.25	1.0	20	0	111	70 - 130	21.64	2.77	20	
1,2,3-Trichloropropane	22.81	1.0	20	0	114	70 - 130	22.13	2.99	20	
1,2,4-Trichlorobenzene	21.79	1.0	20	0	109	70 - 125	21.12	3.11	20	
1,2,4-Trimethylbenzene	23.55	1.0	20	0	118	70 - 125	23.18	1.58	20	
1,2-Dibromo-3-chloropropane	20.69	1.0	20	0	103	70 - 130	19.56	5.58	20	
1,2-Dibromoethane	22.79	1.0	20	0	114	70 - 124	22.54	1.07	20	
1,2-Dichlorobenzene	21.9	1.0	20	0	110	70 - 115	21.39	2.35	20	
1,2-Dichloroethane	21.53	1.0	20	0	108	70 - 127	21.71	0.826	20	
1,2-Dichloropropane	23.27	1.0	20	0	116	70 - 122	23.56	1.25	20	
1,3,5-Trimethylbenzene	23.59	1.0	20	0	118	70 - 126	23.34	1.08	20	
1,3-Dichlorobenzene	21.97	1.0	20	0	110	70 - 119	21.57	1.85	20	
1,3-Dichloropropane	22.58	1.0	20	0	113	70 - 121	22.69	0.473	20	
1,4-Dichlorobenzene	23.01	1.0	20	0	115	70 - 114	22.65	1.55	20	S
2,2-Dichloropropane	19.26	1.0	20	0	96.3	70 - 130	19.27	0.0201	20	
2-Butanone	44.02	2.0	40	0	110	70 - 130	42.39	3.79	20	
2-Chlorotoluene	22.92	1.0	20	0	115	70 - 130	22.73	0.849	20	
2-Hexanone	47.61	2.0	40	0	119	70 - 130	46.73	1.87	20	
4-Chlorotoluene	23.22	1.0	20	0	116	70 - 130	22.99	1.02	20	
4-Isopropyltoluene	24.25	1.0	20	0	121	70 - 130	23.85	1.7	20	
4-Methyl-2-pentanone	47.27	2.0	40	0	118	70 - 130	46.47	1.69	20	
Acetone	44.92	2.0	40	0	112	70 - 130	44.46	1.03	20	
Benzene	23.25	1.0	20	0	116	70 - 127	23.61	1.56	20	
Bromobenzene	22	1.0	20	0	110	70 - 115	21.88	0.548	20	
Bromochloromethane	22.53	1.0	20	0	113	70 - 127	22.74	0.928	20	
Bromodichloromethane	21.51	1.0	20	0	108	70 - 124	21.74	1.08	20	
Bromoform	19.91	1.0	20	0	99.6	70 - 129	19.72	0.968	20	

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument: VOA9** **Method: SW8260**

MSD Sample ID: **HS18111135-05MSD** Units: **ug/L** Analysis Date: **02-Dec-2018 16:31**
Client ID: **35BWW08-181120** Run ID: **VOA9_328450** SeqNo: **4844721** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	23.42	1.0	20	0	117	70 - 130	24.76	5.57	20	
Carbon disulfide	40.53	2.0	40	0	101	70 - 130	41.4	2.12	20	
Carbon tetrachloride	22.53	1.0	20	0	113	70 - 130	22.99	2.02	20	
Chlorobenzene	22.06	1.0	20	0	110	70 - 114	22.4	1.53	20	
Chloroethane	20.81	1.0	20	0	104	70 - 130	21.69	4.16	20	
Chloroform	20.45	1.0	20	0	102	70 - 125	20.9	2.19	20	
Chloromethane	21.03	1.0	20	0	105	70 - 130	20.78	1.19	20	
cis-1,2-Dichloroethene	21.02	1.0	20	0	105	70 - 128	21.4	1.82	20	
cis-1,3-Dichloropropene	22.35	1.0	20	0	112	70 - 125	22.41	0.31	20	
Dibromochloromethane	22.16	1.0	20	0	111	70 - 124	22.38	0.982	20	
Dibromomethane	22.04	1.0	20	0	110	70 - 124	22.28	1.1	20	
Dichlorodifluoromethane	13.65	1.0	20	0	68.2	70 - 130	14.13	3.48	20	S
Ethylbenzene	23.01	1.0	20	0	115	70 - 124	23.22	0.9	20	
Hexachlorobutadiene	24.63	1.0	20	0	123	70 - 130	23.86	3.2	20	
Isopropylbenzene	23.36	1.0	20	0	117	70 - 130	23.95	2.45	20	
m,p-Xylene	45.91	2.0	40	0	115	70 - 130	46.74	1.78	20	
Methylene chloride	22.15	2.0	20	0	111	70 - 128	22.53	1.7	20	
Naphthalene	23.83	1.0	20	0	119	70 - 130	22.99	3.6	20	
n-Butylbenzene	24.54	1.0	20	0	123	70 - 130	23.94	2.49	20	
n-Propylbenzene	24.02	1.0	20	0	120	70 - 130	23.76	1.09	20	
o-Xylene	22.99	1.0	20	0	115	70 - 124	23.64	2.8	20	
sec-Butylbenzene	23.98	1.0	20	0	120	70 - 130	23.98	0.0229	20	
Styrene	23.6	1.0	20	0	118	70 - 130	23.71	0.487	20	
tert-Butylbenzene	23.84	1.0	20	0	119	70 - 130	23.66	0.733	20	
Tetrachloroethene	22.47	1.0	20	0	112	70 - 130	23.16	3.02	20	
Toluene	22.95	1.0	20	0	115	70 - 123	23.39	1.9	20	
trans-1,2-Dichloroethene	21.35	1.0	20	0	107	70 - 130	21.87	2.41	20	
trans-1,3-Dichloropropene	20.16	1.0	20	0	101	70 - 121	20.2	0.219	20	
Trichloroethene	22.37	1.0	20	0	112	70 - 129	22.94	2.52	20	
Trichlorofluoromethane	20.23	1.0	20	0	101	70 - 130	20.49	1.31	20	
Vinyl chloride	21.58	1.0	20	0	108	70 - 130	22.2	2.82	20	
Surr: 1,2-Dichloroethane-d4	*45.35*	*1.0*	*50*	*0*	*90.7*	*70 - 126*	*45.82*	*1.03*	*20*	
Surr: 4-Bromofluorobenzene	*50.89*	*1.0*	*50*	*0*	*102*	*81 - 113*	*51.07*	*0.359*	*20*	
Surr: Dibromofluoromethane	*45.05*	*1.0*	*50*	*0*	*90.1*	*77 - 123*	*45.28*	*0.511*	*20*	

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328450 **Instrument:** VOA9 **Method:** SW8260

MSD Sample ID: **HS18111135-05MSD** Units: **ug/L** Analysis Date: **02-Dec-2018 16:31**
Client ID: **35BWW08-181120** Run ID: **VOA9_328450** SeqNo: **4844721** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.98*	*1.0*	*50*	*0*	*106*	*82 - 127*	*52.91*	*0.13*	*20*	

The following samples were analyzed in this batch:

HS18111135-01	HS18111135-02	HS18111135-03	HS18111135-04
HS18111135-05	HS18111135-06	HS18111135-07	HS18111135-08

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328903 **Instrument: ICS3K2** **Method: SW9056**

MBLK Sample ID: **WBLKW1-112118** Units: **mg/L** Analysis Date: **21-Nov-2018 18:12**
Client ID: Run ID: **ICS3K2_328903** SeqNo: **4856587** PrepDate: DF: **1**

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

LCS Sample ID: **WLCSW1-112118** Units: **mg/L** Analysis Date: **21-Nov-2018 18:34**
Client ID: Run ID: **ICS3K2_328903** SeqNo: **4856588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.16	0.500	20	0	95.8	80 - 120				
Nitrogen, Nitrate (As N)	3.79	0.100	4	0	94.8	80 - 120				
Nitrogen, Nitrite (As N)	4.24	0.100	4	0	106	80 - 120				
Sulfate	18.34	0.500	20	0	91.7	80 - 120				

LCSD Sample ID: **WLCSDW1-112118** Units: **mg/L** Analysis Date: **21-Nov-2018 18:55**
Client ID: Run ID: **ICS3K2_328903** SeqNo: **4856589** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.33	0.500	20	0	96.6	80 - 120	19.16	0.878	20	
Nitrogen, Nitrate (As N)	3.763	0.100	4	0	94.1	80 - 120	3.79	0.715	20	
Nitrogen, Nitrite (As N)	4.297	0.100	4	0	107	80 - 120	4.24	1.34	20	
Sulfate	18.4	0.500	20	0	92.0	80 - 120	18.34	0.343	20	

MS Sample ID: **HS18111135-05MS** Units: **mg/L** Analysis Date: **21-Nov-2018 23:16**
Client ID: **35BWW08-181120** Run ID: **ICS3K2_328903** SeqNo: **4856596** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.74	0.500	10	9.137	96.1	80 - 120				
Nitrogen, Nitrate (As N)	1.976	0.100	2	0.169	90.4	80 - 120				
Nitrogen, Nitrite (As N)	2.159	0.100	2	0	108	80 - 120				
Sulfate	46.13	0.500	10	36.2	99.3	80 - 120				

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328903 **Instrument: ICS3K2** **Method: SW9056**

MSD Sample ID: **HS18111135-05MSD** Units: **mg/L** Analysis Date: **21-Nov-2018 23:38**
Client ID: **35BWW08-181120** Run ID: **ICS3K2_328903** SeqNo: **4856597** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.26	0.500	10	9.137	101	80 - 120	18.74	2.7	20	
Nitrogen, Nitrate (As N)	2.003	0.100	2	0.169	91.7	80 - 120	1.976	1.36	20	
Nitrogen, Nitrite (As N)	2.2	0.100	2	0	110	80 - 120	2.159	1.88	20	
Sulfate	46.42	0.500	10	36.2	102	80 - 120	46.13	0.631	20	

The following samples were analyzed in this batch: HS18111135-02 HS18111135-03 HS18111135-04 HS18111135-05 HS18111135-06 HS18111135-07 HS18111135-08

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: HS18111135

QC BATCH REPORT

Batch ID: R328977 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-121018** Units: **mg/L** Analysis Date: **10-Dec-2018 15:43**
Client ID: Run ID: **ICS2100_328977** SeqNo: **4858432** 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								U

LCS Sample ID: **WLCSW1-121018** Units: **mg/L** Analysis Date: **10-Dec-2018 15:58**
Client ID: Run ID: **ICS2100_328977** SeqNo: **4858433** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	20.55	0.500	20	0	103	80 - 120				

LCSD Sample ID: **WLCSDW1-121018** Units: **mg/L** Analysis Date: **10-Dec-2018 16:12**
Client ID: Run ID: **ICS2100_328977** SeqNo: **4858434** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.82	0.500	20	0	99.1	80 - 120	20.55	3.65	20	

MS Sample ID: **HS18121458-02MS** Units: **mg/L** Analysis Date: **10-Dec-2018 17:11**
Client ID: Run ID: **ICS2100_328977** SeqNo: **4858437** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	475.1	25.0	500	6.96	93.6	80 - 120				

MSD Sample ID: **HS18121458-02MSD** Units: **mg/L** Analysis Date: **10-Dec-2018 17:25**
Client ID: Run ID: **ICS2100_328977** SeqNo: **4858438** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	483.1	25.0	500	6.96	95.2	80 - 120	475.1	1.68	20	

The following samples were analyzed in this batch: HS18111135-02

ALS Houston, US Date: 19-Dec-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP-37
WorkOrder: **HS18111135**

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
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

ALS Houston, US Date: 19-Dec-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18111135
Date/Time Received: **21-Nov-2018 09:22**
Received by: **NDR**

Checklist completed by: *Jared R. Makan* eSignature 21-Nov-2018 Date
Reviewed by: *RJ Modashia* eSignature 21-Nov-2018 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	3.5c/3.9c UC/C	IR11	
Cooler(s)/Kit(s):	Blue		
Date/Time sample(s) sent to storage:	11/21/2018 14:20		
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: Sample ID differs: COC = 35BWW12-181119, Sx = 35BWW12-181120. Logged in per COC.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of 1

COC ID: 37-NOV2018-GW-ALSMT-181120 TURNAROUND TIME: normal RUSH:

PROJECT/CLIENT INFO				LABORATORY				INVOICING			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@Aptim.com		
Project Number	501032			Lab Contact	Sonia West						
	LHAAP-37			Email	Sonia.West@alsglobal.com			Email Report To	karen.napier@aptim.com		
Address	1203-B East Grand Avenue			Address	10450 Stanliff Rd., Suite 210			Mail Reports To	Karen Napier		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company	FED EX		

SAMPLE DETAILS — ANALYSIS REQUIRED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	
37TB03-181120	FIELDQC	n/a	n/a	ft	LIQ	11/20/2018	900	2	2				
35BWW23-181120	35BWW23	28.48	29.18	ft	GW	11/20/2018	955	9	3	3	1	2	
35BWW14-181120	35BWW14	22.83	22.96	ft	GW	11/20/2018	1053	9	3	3	1	2	
LHSMW26-181120	35BWW26	27.48	28.31	ft	GW	11/20/2018	1156	9	3	3	1	2	
35BWW08-181120	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	9	3	3	1	2	
35BWW08-181120-MS	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	9	3	3	1	2	
35BWW08-181120-MSD	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	9	3	3	1	2	
35BWW04-181120	35BWW04	23.02	23.8	ft	GW	11/20/2018	1410	9	3	3	1	2	
35BWW04-181120-FD	35BWW04	23.02	23.8	ft	GW	11/20/2018	1410	9	3	3	1	2	
35BWW12-181119 20	35BWW12	21.86	21.93	ft	GW	11/20/2018	1510	9	3	3	1	2	

Sample / 35BWW26-181120 (Named wrong on COC)
↳ 35BWW12-181119

Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant LHAAP-37
HS18111135

REVISED
12-7-18

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane.

Anions should include chloride, nitrate, nitrite, and sulfate.

RELINQUISHED BY/AFFILIATION — DATE/TIME: 11/20/18 1600 — ACCEPTED BY/AFFILIATION — DATE/TIME

APTIM

COC ID: 37-NOV2018-MI-1-181120 TURNAROUND TIME: normal RUSH:

PROJECT/SITE INFO				LABORATORY				QUOTE TO			
Facility Name	Longhorn AAP			Lab Name	Microbial Insights, Inc.			Email Invoice To	FedInvoices@Aptim.com		
Project Number	501032			Lab Contact	Customer Service						
Site	LHAAP-37			Email				Email Report To	Kim.Napier@Aptim.com		
Address	1203-B East Grand Avenue			Address	10515 Research Drive			Mail Reports To	Kim Napier		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Knoxville	State	TN	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	37932	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	865.573.8188						
Project Manager	Praveen Srivastav							Shipping Company	UPS		

SAMPLE DETAILS									ANALYSIS REQUESTED										
Sample ID/Number	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	DHC IN Water (mi-dhc)										
35BWW23-181120	35BWW23	28.48	29.18	ft	GW	11/20/2018	955	1	1										
35BWW14-181120	35BWW14	22.83	22.96	ft	GW	11/20/2018	1053	1	1										
LHSMW26-181120	35BWW26	27.48	28.31	ft	GW	11/20/2018	1156	1	1										
35BWW08-181120	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	1	1										
35BWW04-181120	35BWW04	23.02	23.8	ft	GW	11/20/2018	1410	1	1										
35BWW12-181(19)20	35BWW12	21.86	21.93	ft	GW	11/20/2018	1510	1	1										
35BWW26 - 181120																			
35BWW12 - 181120																			
* 2 Circled Sampled named incorrect on COC.																			

REVISED 12-7-18

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	[illegible] APTIM	11-20-18 1600		

APTIM

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COC ID: 37-NOV2018-GW-ALSHT-181120 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	Sonia West						
	LHAAP-37			Email	Sonia.West@alsglobal.com			Email Report To	karen.napier@aptim.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Karen Napier		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company	FED EX		

SAMPLE DETAILS									ANALYSIS REQUESTED				
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0 & TCN SM4500-CN E	TOC in Water by E415.1	
37TB03-181120	FIELDQC	n/a	n/a	ft	LIQ	11/20/2018	900	2	2				
35BWW23-181120	35BWW23	28.48	29.18	ft	GW	11/20/2018	955	9	3	3	1	2	
35BWW14-181120	35BWW14	22.83	22.96	ft	GW	11/20/2018	1053	9	3	3	1	2	
LHSMW26-181120	35BWW26	27.48	28.31	ft	GW	11/20/2018	1156	9	3	3	1	2	
35BWW08-181120	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	9	3	3	1	2	
35BWW08-181120-MS	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	9	3	3	1	2	
35BWW08-181120-MSD	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	9	3	3	1	2	
35BWW04-181120	35BWW04	23.02	23.8	ft	GW	11/20/2018	1410	9	3	3	1	2	
35BWW04-181120-FD	35BWW04	23.02	23.8	ft	GW	11/20/2018	1410	9	3	3	1	2	
35BWW12-181119	35BWW12	21.86	21.93	ft	GW	11/20/2018	1510	9	3	3	1	2	

REVISED
RPM 11/28/18

HS18111135

Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant LHAAP-37

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane.	[signature] APTIM	11-20-18 1630	ND	11/21/18 09:22
Anions should include chloride, nitrate, nitrite, and sulfate.				

Texas 811 5.5

00955546

APTIM

Page 1 of 1

COC ID: 37-NOV2018-GW-ALSHT-181120 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	Sonia West		
	LHAAP-37	Email	Sonia.West@alsglobal.com	Email Report To	karen.napier@aptim.com
Address	1203-B East Grand Avenue	Address	10450 Stancliff Rd., Suite 210	Mail Reports To	Karen Napier
	PMB 202			Address	2410 Cherahala Blvd.
City	Marshall; State TX	City	Houston; State TX	City	Knoxville; State TN
Postal Code	75670; Country USA	Postal Code	77099; Country USA	Postal Code	37932; Country USA
Phone Number	713.243.7264	Phone Number	281.575.2132 or 281.530.5656		
Project Manager	Praveen Srivastav			Shipping Company	FED EX

SAMPLE DETAILS / ANALYSIS REQUESTED

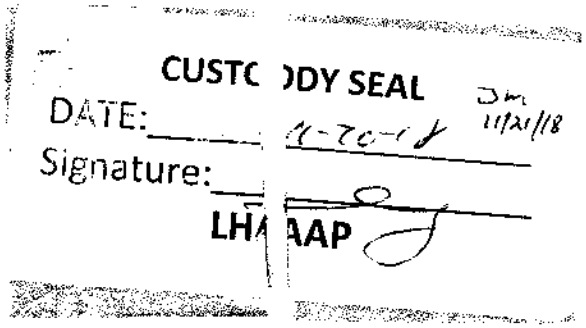
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1
37TB03-181120	FIELDQC	n/a	n/a	ft	LIQ	11/20/2018	900	2	2			
35BWW23-181120	35BWW23	28.48	29.18	ft	GW	11/20/2018	955	9	3	3	1	2
35BWW14-181120	35BWW14	22.83	22.96	ft	GW	11/20/2018	1053	9	3	3	1	2
LHSMW26-181120	35BWW26	27.48	28.31	ft	GW	11/20/2018	1156	9	3	3	1	2
35BWW08-181120	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	9	3	3	1	2
35BWW08-181120-MS	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	9	3	3	1	2
35BWW08-181120-MSD	35BWW08	24.54	24.7	ft	GW	11/20/2018	1258	9	3	3	1	2
35BWW04-181120	35BWW04	23.02	23.8	ft	GW	11/20/2018	1410	9	3	3	1	2
35BWW04-181120-FD	35BWW04	23.02	23.8	ft	GW	11/20/2018	1410	9	3	3	1	2
35BWW12-181119	35BWW12	21.86	21.93	ft	GW	11/20/2018	1510	9	3	3	1	2

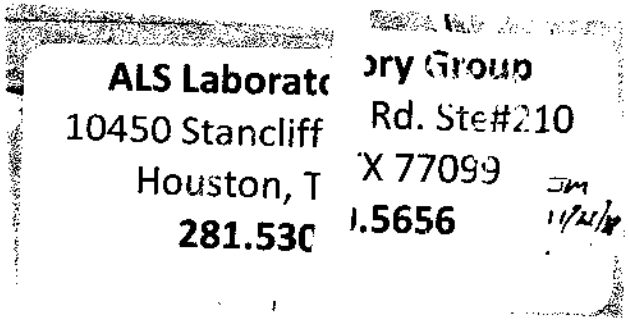
HS18111135
Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant LHAAP-37

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane.	[signature] APTIM	11-20-18 / 1600	ND	11/21/18 09:22
Anions should include chloride, nitrate, nitrite, and sulfate.				

Blue ice. Temp w/c 3.5 / #411 C/F +0.4


FedEx
TRK# 0221 4380 9534 1091
WED - 21 NOV 10:30A
PRIORITY OVERNIGHT
77099
TX-US
IAH
AB SGRA


CUSTODY SEAL
DATE: 11-20-18 JM 11/21/18
Signature:
LHA AAP


ALS Laborat ory Group
10450 Stancliff Rd. Ste#210
Houston, T X 77099
281.530 .5656
JM 11/21/18

ALS Environmental
ALS Group USA, Corp
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www.alsglobal.com

December 17, 2018 **Analytical Report for Service Request No:** K1811464

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

RE: ALS Houston DOD TOC / HS18111135

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory November 27, 2018
For your reference, these analyses have been assigned our service request number **K1811464.**

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

ALS Environmental
ALS Group USA, Corp
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Table of Contents

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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ALS Environmental

Client: ALS Environmental - US
Project: ALS Houston DOD TOC
Sample Matrix: Water

Service Request: K1811464
Date Received: 11/27/2018

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Seven water samples were received for analysis at ALS Environmental on 11/27/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry:

Method SM 5310 C, 12/12/2018:The Relative Percent Difference (RPD) criterion for the replicate analysis of Total Organic Carbon in samples 35BWW14-181120, 35B44-26-181120, 35BWW08-181120 and 35BWW12-181119 were not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Approved by Noe D. Diaz Date 12/17/2018

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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H18111464

10450 Stancliff Rd, Ste 210
Houston, TX 77099
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F: +1 281 530 5887
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Subcontract Chain of Custody

COC ID: 10277

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:	HS18111135
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18111135-02**	**35BWW23-181120**	**Liquid**	**20 Nov 2018 09:55**
	TOC Analysis with DOD Level IV			07 Dec 2018
2.	**HS18111135-03**	**35BWW14-181120**	**Liquid**	**20 Nov 2018 10:53**
	TOC Analysis with DOD Level IV			07 Dec 2018
3.	**HS18111135-04**	**35BWW26-181120**	**Liquid**	**20 Nov 2018 11:56**
	TOC Analysis with DOD Level IV			07 Dec 2018
4.	**HS18111135-05**	**35BWW08-181120**	**Liquid**	**20 Nov 2018 12:58**
	TOC Analysis with DOD Level IV			07 Dec 2018
5.	**HS18111135-06**	**35BWW04-181120**	**Liquid**	**20 Nov 2018 14:10**
	TOC Analysis with DOD Level IV			07 Dec 2018
6.	**HS18111135-07**	**35BWW04-181120-FD**	**Liquid**	**20 Nov 2018 14:10**
	TOC Analysis with DOD Level IV			07 Dec 2018
7.	**HS18111135-08**	**35BWW12-181119**	**Liquid**	**20 Nov 2018 15:10**
	TOC Analysis with DOD Level IV			07 Dec 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
HS18111135-05 - Designated MS/MSD

Received
11/27/18 0940

K1811464

Subcontract Chain of Custody

COC ID: 10277

QC Level: DOD IV (DoD Data Package)

Relinquished By:	R Cisco	Date/Time:	11/26/18 1800
Received By:	[signature]	Date/Time:	11-27-18 0940
Cooler ID(s):		Temperature(s):	

PC KL

Cooler Receipt and Preservation Form

Client ALS- Houston Service Request K18 11464

Received: 11-27-18 Opened: 11-27-18 By: JSP Unloaded: 11-27-18 By: JSP

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 Top Sides
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.1	0.0	1.9	2.0	+0.1	393	10277	4330 9534 9405	

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 -05 Has (6) Containers While The Rest Have (2) Containers

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:**	K1811464
Project:	ALS Houston DOD TOC/HS18111135	**Date Collected:**	11/20/18
Sample Matrix:	Water	**Date Received:**	11/27/18
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
35BWW23-181120	K1811464-001	**1.00**	0.50	0.20	0.07	1	12/11/18 23:23	
35BWW14-181120	K1811464-002	**0.89**	0.50	0.20	0.07	1	12/11/18 23:55	
35BWW26-181120	K1811464-003	**0.94**	0.50	0.20	0.07	1	12/12/18 00:26	
35BWW08-181120	K1811464-004	**0.87**	0.50	0.20	0.07	1	12/11/18 22:18	
35BWW04-181120	K1811464-005	**2.31**	0.50	0.20	0.07	1	12/12/18 00:58	
35BWW04-181120-FD	K1811464-006	**2.23**	0.50	0.20	0.07	1	12/12/18 01:30	
35BWW12-181119	K1811464-007	**0.89**	0.50	0.20	0.07	1	12/12/18 02:01	
Method Blank	K1811464-MB	**0.14 J**	0.50	0.20	0.07	1	12/11/18 18:31	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1811464
Project	ALS Houston DOD TOC/HS18111135	**Date Collected:**	11/20/18
Sample Matrix:	Water	**Date Received:**	11/27/18
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	MRL	LOQ	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
35BWW23-181120	K1811464-001DUP	0.50	0.20	0.07	1.00	1.00	1.00	<1	10	12/11/18
35BWW14-181120	K1811464-002DUP	0.50	0.20	0.07	0.89	0.76	0.826	17 *	10	12/11/18
35BWW26-181120	K1811464-003DUP	0.50	0.20	0.07	0.94	1.07	1.00	13 *	10	12/12/18
35BWW08-181120	K1811464-004DUP	0.50	0.20	0.07	0.87	0.62	0.744	34 *	10	12/11/18
35BWW04-181120	K1811464-005DUP	0.50	0.20	0.07	2.31	2.18	2.25	6	10	12/12/18
35BWW04-181120-FD	K1811464-006DUP	0.50	0.20	0.07	2.23	2.16	2.19	3	10	12/12/18
35BWW12-181119	K1811464-007DUP	0.50	0.20	0.07	0.89	0.79	0.840	13 *	10	12/12/18

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:**	K1811464
Project:	ALS Houston DOD TOC/HS18111135	**Date Collected:**	11/20/18
Sample Matrix:	Water	**Date Received:**	11/27/18
		Date Analyzed:	12/11/18
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	35BWW08-181120	**Units:**	mg/L
Lab Code:	K1811464-004	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1811464-004MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	0.87	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.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1811464
Project:	ALS Houston DOD TOC/HS18111135	**Date Analyzed:**	12/11/18
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:	618378

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1811464-LCS	20.6	21.9	94	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1811464
Project: ALS Houston DOD TOC/HS18111135

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	618378	KQ1818155-28	12/11/18 17:58	25.0	24.4	98	90-110
CCV2	618378	KQ1818155-29	12/11/18 21:45	25.0	24.4	98	90-110
CCV3	618378	KQ1818155-30	12/12/18 03:05	25.0	24.5	98	90-110
CCV4	618378	KQ1818155-31	12/12/18 07:23	25.0	24.2	97	90-110
CCV5	618378	KQ1818155-32	12/12/18 12:11	25.0	24.3	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1811464
Project: ALS Houston DOD TOC/HS18111135

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	618378	KQ1818155-33	12/11/18 18:14	0.50	0.20	0.07	ND	U
CCB2	618378	KQ1818155-34	12/11/18 22:01	0.50	0.20	0.07	0.21	J
CCB3	618378	KQ1818155-35	12/12/18 03:21	0.50	0.20	0.07	ND	U
CCB4	618378	KQ1818155-36	12/12/18 07:39	0.50	0.20	0.07	ND	U
CCB5	618378	KQ1818155-37	12/12/18 12:28	0.50	0.20	0.07	ND	U

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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General Chemistry

ALS Environmental—Kelso Laboratory
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Work Request # (Original) K1811890, 1464, 1305, 1335, 1527, 1673, 0656, 2010

Tier: IV IV I II II IV II II

Date Analyzed: 12/11/18

Analyst: CCS

Run # 618378, 618379, 618381

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:

1890-1, 1464-4, 2, 3, 7 1335-1, 2, 4, 1673-5, 0656-5 RPD not within acceptance limits. The sample results are less than 5x the MRL.

RA run 618381 CCV/LCS Fail

0656-12 RPD not within acceptance limits - cloudy non homogeneous sample.

Final Approved by: [signature] Date: 12/13/18

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618378 **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
K1811305-001	Carbon, Total Organic	N/A		Drinking Water	1.43 mg/L	10 ml	1.43 mg/L	1	0.07	0.50			12/12/18 02:33	N	I
K1811305-003	Carbon, Total Organic	N/A		Drinking Water	1.00 mg/L	10 ml	1.00 mg/L	1	0.07	0.50			12/12/18 04:43	N	I
K1811335-001	Carbon, Total Organic	N/A		Ground Water	1.25 mg/L	10 ml	1.25 mg/L	1	0.07	0.50			12/12/18 05:15	N	II
K1811335-002	Carbon, Total Organic	N/A		Ground Water	1.84 mg/L	10 ml	1.84 mg/L	1	0.07	0.50			12/12/18 06:19	N	II
K1811335-003	Carbon, Total Organic	N/A		Ground Water	0.60 mg/L	10 ml	0.60 mg/L	1	0.07	0.50			12/12/18 06:51	N	II
K1811335-004	Carbon, Total Organic	N/A		Ground Water	0.28 mg/L	10 ml	0.28 mg/L J	1	0.07	0.50			12/12/18 07:56	N	II
K1811464-001	Carbon, Total Organic	N/A		Water	1.00 mg/L	10 ml	1.00 mg/L	1	0.07	0.50			12/11/18 23:23	N	IV
K1811464-002	Carbon, Total Organic	N/A		Water	0.89 mg/L	10 ml	0.89 mg/L	1	0.07	0.50			12/11/18 23:55	N	IV
K1811464-003	Carbon, Total Organic	N/A		Water	0.94 mg/L	10 ml	0.94 mg/L	1	0.07	0.50			12/12/18 00:26	N	IV
K1811464-004	Carbon, Total Organic	N/A		Water	0.87 mg/L	10 ml	0.87 mg/L	1	0.07	0.50			12/11/18 22:18	Y	IV
K1811464-005	Carbon, Total Organic	N/A		Water	2.31 mg/L	10 ml	2.31 mg/L	1	0.07	0.50			12/12/18 00:58	N	IV
K1811464-006	Carbon, Total Organic	N/A		Water	2.23 mg/L	10 ml	2.23 mg/L	1	0.07	0.50			12/12/18 01:30	N	IV
K1811464-007	Carbon, Total Organic	N/A		Water	0.89 mg/L	10 ml	0.89 mg/L	1	0.07	0.50			12/12/18 02:01	N	IV
K1811527-001	Carbon, Total Organic	N/A		Water	0.77 mg/L	10 ml	0.77 mg/L	1	0.07	0.50			12/12/18 08:27	N	II
K1811527-002	Carbon, Total Organic	N/A		Water	2.38 mg/L	10 ml	11.9 mg/L	5	0.4	2.5			12/12/18 09:32	N	II
K1811527-003	Carbon, Total Organic	N/A		Water	0.77 mg/L	10 ml	3.9 mg/L	5	0.4	2.5			12/12/18 10:04	N	II
K1811527-004	Carbon, Total Organic	N/A		Water	0.17 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 10:35	N	II
K1811890-001	Carbon, Total Organic (TOC)	N/A		Water	1.52 mg/L	10 ml	1.52 mg/L	1	0.07	0.50			12/11/18 20:09	N	IV
KQ1818155-01	Carbon, Total Organic (TOC)	MS	K1811890-001	Water	25.14 mg/L	10 ml	25.1 mg/L	1	0.07	0.50	95		12/11/18 21:12	N	IV
KQ1818155-02	Carbon, Total Organic (TOC)	DUP	K1811890-001	Water	0.84 mg/L	10 ml	0.84 mg/L	1	0.07	0.50		57*	12/11/18 20:09	N	IV
KQ1818155-03	Carbon, Total Organic (TOC)	TRP	K1811890-001	Water	0.95 mg/L	10 ml	0.95 mg/L	1	0.07	0.50		33*	12/11/18 20:09	N	IV
KQ1818155-04	Carbon, Total Organic (TOC)	QUAD	K1811890-001	Water	0.88 mg/L	10 ml	0.88 mg/L	1	0.07	0.50		30*	12/11/18 20:09	N	IV
KQ1818155-05	Carbon, Total Organic	MS	K1811464-004	Water	25.56 mg/L	10 ml	25.6 mg/L	1	0.07	0.50	99		12/11/18 22:50	N	IV
KQ1818155-06	Carbon, Total Organic	DUP	K1811464-004	Water	0.62 mg/L	10 ml	0.62 mg/L	1	0.07	0.50		34*	12/11/18 22:18	N	IV
KQ1818155-07	Carbon, Total Organic	DUP	K1811464-001	Water	1.00 mg/L	10 ml	1.00 mg/L	1	0.07	0.50		<1	12/11/18 23:23	N	IV
KQ1818155-08	Carbon, Total Organic	DUP	K1811464-002	Water	0.76 mg/L	10 ml	0.76 mg/L	1	0.07	0.50		17*	12/11/18 23:55	N	IV
KQ1818155-09	Carbon, Total Organic	DUP	K1811464-003	Water	1.07 mg/L	10 ml	1.07 mg/L	1	0.07	0.50		13*	12/12/18 00:26	N	IV
KQ1818155-10	Carbon, Total Organic	DUP	K1811464-005	Water	2.18 mg/L	10 ml	2.18 mg/L	1	0.07	0.50		6	12/12/18 00:58	N	IV
KQ1818155-11	Carbon, Total Organic	DUP	K1811464-006	Water	2.16 mg/L	10 ml	2.16 mg/L	1	0.07	0.50		3	12/12/18 01:30	N	IV
KQ1818155-12	Carbon, Total Organic	DUP	K1811464-007	Water	0.79 mg/L	10 ml	0.79 mg/L	1	0.07	0.50		13*	12/12/18 02:01	N	IV

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

CES 12/13/18

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618378 **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
KQ1818155-13	Carbon, Total Organic	MS	K1811305-001	Drinking Water	26.08 mg/L	10 ml	26.1 mg/L	1	0.07	0.50	99		12/12/18 04:10	N	I
KQ1818155-14	Carbon, Total Organic	DUP	K1811305-001	Drinking Water	1.34 mg/L	10 ml	1.34 mg/L	1	0.07	0.50		7	12/12/18 02:33	N	I
KQ1818155-15	Carbon, Total Organic	DUP	K1811305-003	Drinking Water	0.92 mg/L	10 ml	0.92 mg/L	1	0.07	0.50		8	12/12/18 04:43	N	I
KQ1818155-16	Carbon, Total Organic	MS	K1811335-001	Ground Water	26.01 mg/L	10 ml	26.0 mg/L	1	0.07	0.50	99		12/12/18 05:47	N	II
KQ1818155-17	Carbon, Total Organic	DUP	K1811335-001	Ground Water	1.10 mg/L	10 ml	1.10 mg/L	1	0.07	0.50		13*	12/12/18 05:15	N	II
KQ1818155-18	Carbon, Total Organic	DUP	K1811335-002	Ground Water	2.10 mg/L	10 ml	2.10 mg/L	1	0.07	0.50		13*	12/12/18 06:19	N	II
KQ1818155-19	Carbon, Total Organic	DUP	K1811335-003	Ground Water	0.66 mg/L	10 ml	0.66 mg/L	1	0.07	0.50		8	12/12/18 06:51	N	II
KQ1818155-20	Carbon, Total Organic	DUP	K1811335-004	Ground Water	0.09 mg/L	10 ml	0.09 mg/L J	1	0.07	0.50		98*	12/12/18 07:56	N	II
KQ1818155-21	Carbon, Total Organic	MS	K1811527-001	Water	25.43 mg/L	10 ml	25.4 mg/L	1	0.07	0.50	99		12/12/18 08:59	N	II
KQ1818155-22	Carbon, Total Organic	DUP	K1811527-001	Water	0.77 mg/L	10 ml	0.77 mg/L	1	0.07	0.50		<1	12/12/18 08:27	N	II
KQ1818155-23	Carbon, Total Organic	DUP	K1811527-002	Water	2.30 mg/L	10 ml	11.5 mg/L	5	0.4	2.5		3	12/12/18 09:32	N	II
KQ1818155-24	Carbon, Total Organic	DUP	K1811527-003	Water	0.67 mg/L	10 ml	3.3 mg/L	5	0.4	2.5		15*	12/12/18 10:04	N	II
KQ1818155-25	Carbon, Total Organic	DUP	K1811527-004	Water	0.15 mg/L	10 ml	0.15 mg/L J	1	0.07	0.50		NC	12/12/18 10:35	N	II
KQ1818155-26	Carbon, Total Organic	MB		Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			12/11/18 18:31	N	IV
KQ1818155-26	Carbon, Total Organic (TOC)	MB		Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			12/11/18 18:31	N	IV
KQ1818155-27	Carbon, Total Organic	LCS		Water	20.58 mg/L	10 ml	20.6 mg/L	1	0.07	0.50	94		12/11/18 18:47	N	IV
KQ1818155-27	Carbon, Total Organic (TOC)	LCS		Water	20.58 mg/L	10 ml	20.6 mg/L	1	0.07	0.50	94		12/11/18 18:47	N	IV
KQ1818155-28	Carbon, Total Organic	CCV		Water	24.41 mg/L	10 ml	24.4 mg/L	1			98		12/11/18 17:58	N	IV
KQ1818155-28	Carbon, Total Organic (TOC)	CCV		Water	24.41 mg/L	10 ml	24.4 mg/L	1			98		12/11/18 17:58	N	IV
KQ1818155-29	Carbon, Total Organic	CCV		Water	24.44 mg/L	10 ml	24.4 mg/L	1			98		12/11/18 21:45	N	IV
KQ1818155-29	Carbon, Total Organic (TOC)	CCV		Water	24.44 mg/L	10 ml	24.4 mg/L	1			98		12/11/18 21:45	N	IV
KQ1818155-30	Carbon, Total Organic	CCV		Water	24.52 mg/L	10 ml	24.5 mg/L	1			98		12/12/18 03:05	N	IV
KQ1818155-30	Carbon, Total Organic (TOC)	CCV		Water	24.52 mg/L	10 ml	24.5 mg/L	1			98		12/12/18 03:05	N	IV
KQ1818155-31	Carbon, Total Organic	CCV		Water	24.25 mg/L	10 ml	24.2 mg/L	1			97		12/12/18 07:23	N	IV
KQ1818155-31	Carbon, Total Organic (TOC)	CCV		Water	24.25 mg/L	10 ml	24.2 mg/L	1			97		12/12/18 07:23	N	IV
KQ1818155-32	Carbon, Total Organic	CCV		Water	24.30 mg/L	10 ml	24.3 mg/L	1			97		12/12/18 12:11	N	IV
KQ1818155-32	Carbon, Total Organic (TOC)	CCV		Water	24.30 mg/L	10 ml	24.3 mg/L	1			97		12/12/18 12:11	N	IV
KQ1818155-33	Carbon, Total Organic	CCB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/11/18 18:14	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:** 618378 **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
KQ1818155-33	Carbon, Total Organic (TOC)	CCB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/11/18 18:14	N	IV
KQ1818155-34	Carbon, Total Organic	CCB		Water	0.21 mg/L	10 ml	0.21 mg/L J	1	0.07	0.50			12/11/18 22:01	N	IV
KQ1818155-34	Carbon, Total Organic (TOC)	CCB		Water	0.21 mg/L	10 ml	0.21 mg/L J	1	0.07	0.50			12/11/18 22:01	N	IV
KQ1818155-35	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 03:21	N	IV
KQ1818155-35	Carbon, Total Organic (TOC)	CCB		Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 03:21	N	IV
KQ1818155-36	Carbon, Total Organic	CCB		Water	-0.21 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 07:39	N	IV
KQ1818155-36	Carbon, Total Organic (TOC)	CCB		Water	-0.21 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 07:39	N	IV
KQ1818155-37	Carbon, Total Organic	CCB		Water	-0.14 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:28	N	IV
KQ1818155-37	Carbon, Total Organic (TOC)	CCB		Water	-0.14 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:28	N	IV
KQ1818155-38	Carbon, Total Organic	LODV		Water	0.31 mg/L	10 ml	0.31 mg/L J	1	0.07	0.50			12/11/18 19:36	N	IV
KQ1818155-38	Carbon, Total Organic (TOC)	LODV		Water	0.31 mg/L	10 ml	0.31 mg/L J	1	0.07	0.50			12/11/18 19:36	N	IV
KQ1818155-39	Carbon, Total Organic	LOQV		Water	0.61 mg/L	10 ml	0.61 mg/L	1	0.07	0.50			12/11/18 19:53	N	IV
KQ1818155-39	Carbon, Total Organic (TOC)	LOQV		Water	0.61 mg/L	10 ml	0.61 mg/L	1	0.07	0.50			12/11/18 19:53	N	IV
KQ1818155-40	Carbon, Total Organic	MDL		Water	0.39 mg/L	10 ml	0.387 mg/L J	1	0.07	0.50			12/11/18 19:20	N	IV
KQ1818155-40	Carbon, Total Organic (TOC)	MDL		Water	0.39 mg/L	10 ml	0.387 mg/L J	1	0.07	0.50			12/11/18 19:20	N	IV

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Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618379 **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
K1810656-004	Carbon, Total Organic	N/A		Water	4.45 mg/L	10 ml	17.8 mg/L	4	0.3	2.0			12/12/18 16:29	N	II
K1810656-005	Carbon, Total Organic	N/A		Water	2.47 mg/L	10 ml	2.47 mg/L	1	0.07	0.50			12/12/18 15:24	N	II
K1810656-006	Carbon, Total Organic	N/A		Water	7.20 mg/L	10 ml	28.8 mg/L	4	0.3	2.0			12/12/18 17:34	N	II
K1810656-007	Carbon, Total Organic	N/A		Water	6.24 mg/L	10 ml	24.9 mg/L	4	0.3	2.0			12/12/18 18:05	N	II
K1810656-010	Carbon, Total Organic	N/A		Water	3.99 mg/L	10 ml	16.0 mg/L	4	0.3	2.0			12/12/18 18:37	N	II
K1810656-011	Carbon, Total Organic	N/A		Water	6.29 mg/L	10 ml	25.2 mg/L	4	0.3	2.0			12/12/18 19:09	N	II
K1810656-012	Carbon, Total Organic	N/A		Water	3.00 mg/L	10 ml	3.00 mg/L	1	0.07	0.50			12/12/18 19:41	N	II
K1810656-014	Carbon, Total Organic	N/A		Water	11.22 mg/L	10 ml	44.9 mg/L	4	0.3	2.0			12/12/18 20:12	N	II
K1811673-001	Carbon, Total Organic	N/A		Ground Water	1.79 mg/L	10 ml	1.79 mg/L	1	0.07	0.50			12/12/18 11:07	Y	IV
K1811673-002	Carbon, Total Organic	N/A		Ground Water	2.18 mg/L	10 ml	2.18 mg/L	1	0.07	0.50			12/12/18 13:18	N	IV
K1811673-003	Carbon, Total Organic	N/A		Ground Water	2.25 mg/L	10 ml	2.25 mg/L	1	0.07	0.50			12/12/18 13:49	N	IV
K1811673-004	Carbon, Total Organic	N/A		Ground Water	2.97 mg/L	10 ml	2.97 mg/L	1	0.07	0.50			12/12/18 14:21	N	IV
K1811673-005	Carbon, Total Organic	N/A		Ground Water	2.39 mg/L	10 ml	2.39 mg/L	1	0.07	0.50			12/12/18 14:53	N	IV
KQ1818161-01	Carbon, Total Organic	MS	K1811673-001	Ground Water	26.49 mg/L	10 ml	26.5 mg/L	1	0.07	0.50	99		12/12/18 11:39	N	IV
KQ1818161-02	Carbon, Total Organic	DUP	K1811673-001	Ground Water	1.75 mg/L	10 ml	1.75 mg/L	1	0.07	0.50		2	12/12/18 11:07	N	IV
KQ1818161-03	Carbon, Total Organic	DUP	K1811673-002	Ground Water	2.09 mg/L	10 ml	2.09 mg/L	1	0.07	0.50		4	12/12/18 13:18	N	IV
KQ1818161-04	Carbon, Total Organic	DUP	K1811673-003	Ground Water	2.12 mg/L	10 ml	2.12 mg/L	1	0.07	0.50		6	12/12/18 13:49	N	IV
KQ1818161-05	Carbon, Total Organic	DUP	K1811673-004	Ground Water	2.77 mg/L	10 ml	2.77 mg/L	1	0.07	0.50		7	12/12/18 14:21	N	IV
KQ1818161-06	Carbon, Total Organic	DUP	K1811673-005	Ground Water	3.02 mg/L	10 ml	3.02 mg/L	1	0.07	0.50		23*	12/12/18 14:53	N	IV
KQ1818161-07	Carbon, Total Organic	MS	K1810656-005	Water	28.04 mg/L	10 ml	28.0 mg/L	1	0.07	0.50	102		12/12/18 15:56	N	II
KQ1818161-08	Carbon, Total Organic	DUP	K1810656-005	Water	1.89 mg/L	10 ml	1.89 mg/L	1	0.07	0.50		27*	12/12/18 15:24	N	II
KQ1818161-09	Carbon, Total Organic	DUP	K1810656-004	Water	4.13 mg/L	10 ml	16.5 mg/L	4	0.3	2.0		7	12/12/18 16:29	N	II
KQ1818161-10	Carbon, Total Organic	DUP	K1810656-006	Water	7.11 mg/L	10 ml	28.4 mg/L	4	0.3	2.0		1	12/12/18 17:34	N	II
KQ1818161-11	Carbon, Total Organic	DUP	K1810656-007	Water	5.72 mg/L	10 ml	22.9 mg/L	4	0.3	2.0		9	12/12/18 18:05	N	II
KQ1818161-12	Carbon, Total Organic	DUP	K1810656-010	Water	3.60 mg/L	10 ml	14.4 mg/L	4	0.3	2.0		10	12/12/18 18:37	N	II
KQ1818161-13	Carbon, Total Organic	DUP	K1810656-011	Water	6.35 mg/L	10 ml	25.4 mg/L	4	0.3	2.0		<1	12/12/18 19:09	N	II
KQ1818161-14	Carbon, Total Organic	DUP	K1810656-012	Water	2.52 mg/L	10 ml	2.52 mg/L	1	0.07	0.50		18*	12/12/18 19:41	N	II
KQ1818161-15	Carbon, Total Organic	DUP	K1810656-014	Water	11.33 mg/L	10 ml	45.3 mg/L	4	0.3	2.0		<1	12/12/18 20:12	N	II
KQ1818161-16	Carbon, Total Organic	MB		Ground Water	0.02 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 03:38	N	IV

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

CES 12/13/18

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618379 **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
KQ1818161-17	Carbon, Total Organic	LCS		Ground Water	19.97 mg/L	10 ml	20.0 mg/L	1	0.07	0.50	91		12/12/18 03:54	N	IV
KQ1818161-18	Carbon, Total Organic	CCV		Ground Water	24.52 mg/L	10 ml	24.5 mg/L	1			98		12/12/18 03:05	N	IV
KQ1818161-19	Carbon, Total Organic	CCV		Ground Water	24.25 mg/L	10 ml	24.2 mg/L	1			97		12/12/18 07:23	N	IV
KQ1818161-20	Carbon, Total Organic	CCV		Ground Water	24.30 mg/L	10 ml	24.3 mg/L	1			97		12/12/18 12:11	N	IV
KQ1818161-21	Carbon, Total Organic	CCV		Ground Water	24.51 mg/L	10 ml	24.5 mg/L	1			98		12/12/18 17:01	N	IV
KQ1818161-22	Carbon, Total Organic	CCV		Ground Water	24.95 mg/L	10 ml	24.9 mg/L	1			100		12/12/18 22:35	N	IV
KQ1818161-23	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 03:21	N	IV
KQ1818161-24	Carbon, Total Organic	CCB		Ground Water	-0.21 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 07:39	N	IV
KQ1818161-25	Carbon, Total Organic	CCB		Ground Water	-0.14 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:28	N	IV
KQ1818161-26	Carbon, Total Organic	CCB		Ground Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 17:17	N	IV
KQ1818161-27	Carbon, Total Organic	CCB		Ground Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			12/12/18 22:52	N	IV

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

Analytical Results Summary

LCS/CCV fail RA

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 618381 **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
K1812010-009	Carbon, Total Organic	N/A		Water	5.04 mg/L	10 ml	5.04 mg/L	1	0.07	0.50			12/12/18 20:44	N	II
K1812010-010	Carbon, Total Organic	N/A		Water	7.22 mg/L	10 ml	36.1 mg/L	5	0.4	2.5			12/12/18 22:04	N	II
K1812010-011	Carbon, Total Organic	N/A		Water	0.87 mg/L	10 ml	4.3 mg/L	5	0.4	2.5			12/12/18 23:41	N	II
K1812010-012	Carbon, Total Organic	N/A		Water	1.15 mg/L	10 ml	5.8 mg/L	5	0.4	2.5			12/13/18 00:13	N	II
K1812010-013	Carbon, Total Organic	N/A		Water	4.76 mg/L	10 ml	4.76 mg/L	1	0.07	0.50			12/13/18 00:44	N	II
K1812010-014	Carbon, Total Organic	N/A		Water	10.70 mg/L	10 ml	53.5 mg/L	5	0.4	2.5			12/13/18 01:16	N	II
K1812010-015	Carbon, Total Organic	N/A		Water	8.36 mg/L	10 ml	41.8 mg/L	5	0.4	2.5			12/13/18 01:48	N	II
K1812010-016	Carbon, Total Organic	N/A		Water	-0.22 mg/L	10 ml	2.5 mg/L U	5	0.4	2.5			12/13/18 02:20	N	II
K1812010-017	Carbon, Total Organic	N/A		Water	110.72 mg/L	10 ml	554 mg/L	5	0.4	2.5			12/13/18 02:51	N	II
K1812010-018	Carbon, Total Organic	N/A		Water	7.42 mg/L	10 ml	37.1 mg/L	5	0.4	2.5			12/13/18 04:28	N	II
K1812010-019	Carbon, Total Organic	N/A		Water	5.59 mg/L	10 ml	22.4 mg/L	4	0.3	2.0			12/13/18 05:00	N	II
K1812010-020	Carbon, Total Organic	N/A		Water	7.18 mg/L	10 ml	71.8 mg/L	10	0.7	5.0			12/13/18 05:32	N	II
K1812010-021	Carbon, Total Organic	N/A		Water	8.02 mg/L	10 ml	40.1 mg/L	5	0.4	2.5			12/13/18 06:04	N	II
KQ1818162-01	Carbon, Total Organic	MS	K1812010-009	Water	29.55 mg/L	10 ml	29.5 mg/L	1	0.07	0.50	98		12/12/18 21:16	N	II
KQ1818162-02	Carbon, Total Organic	DUP	K1812010-009	Water	5.25 mg/L	10 ml	5.25 mg/L	1	0.07	0.50		4	12/12/18 20:44	N	II
KQ1818162-03	Carbon, Total Organic	DUP	K1812010-010	Water	6.54 mg/L	10 ml	32.7 mg/L	5	0.4	2.5		10	12/12/18 22:04	N	II
KQ1818162-04	Carbon, Total Organic	DUP	K1812010-011	Water	3.54 mg/L	10 ml	17.7 mg/L	5	0.4	2.5		121*	12/12/18 23:41	N	II
KQ1818162-05	Carbon, Total Organic	DUP	K1812010-012	Water	0.87 mg/L	10 ml	4.4 mg/L	5	0.4	2.5		28*	12/13/18 00:13	N	II
KQ1818162-06	Carbon, Total Organic	DUP	K1812010-013	Water	4.72 mg/L	10 ml	4.72 mg/L	1	0.07	0.50		<1	12/13/18 00:44	N	II
KQ1818162-07	Carbon, Total Organic	DUP	K1812010-014	Water	16.59 mg/L	10 ml	83.0 mg/L	5	0.4	2.5		43*	12/13/18 01:16	N	II
KQ1818162-08	Carbon, Total Organic	DUP	K1812010-015	Water	7.50 mg/L	10 ml	37.5 mg/L	5	0.4	2.5		11*	12/13/18 01:48	N	II
KQ1818162-09	Carbon, Total Organic	DUP	K1812010-016	Water	-0.22 mg/L	10 ml	2.5 mg/L U	5	0.4	2.5		NC	12/13/18 02:20	N	II
KQ1818162-10	Carbon, Total Organic	DUP	K1812010-017	Water	18.33 mg/L	10 ml	91.6 mg/L	5	0.4	2.5		143*	12/13/18 02:51	N	II
KQ1818162-11	Carbon, Total Organic	DUP	K1812010-018	Water	7.34 mg/L	10 ml	36.7 mg/L	5	0.4	2.5		1	12/13/18 04:28	N	II
KQ1818162-12	Carbon, Total Organic	DUP	K1812010-019	Water	5.14 mg/L	10 ml	20.5 mg/L	4	0.3	2.0		8	12/13/18 05:00	N	II
KQ1818162-13	Carbon, Total Organic	DUP	K1812010-020	Water	6.71 mg/L	10 ml	67.1 mg/L	10	0.7	5.0		7	12/13/18 05:32	N	II
KQ1818162-14	Carbon, Total Organic	DUP	K1812010-021	Water	7.43 mg/L	10 ml	37.2 mg/L	5	0.4	2.5		8	12/13/18 06:04	N	II
KQ1818162-15	Carbon, Total Organic	MB		Water	-0.05 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:45	N	II
KQ1818162-16	Carbon, Total Organic	LCS		Water	18.95 mg/L	10 ml	18.9 mg/L	1	0.07	0.50	87		12/12/18 23:25	N	II
KQ1818162-17	Carbon, Total Organic	CCV		Water	24.30 mg/L	10 ml	24.3 mg/L	1					12/12/18 12:11	N	II
KQ1818162-18	Carbon, Total Organic	CCV		Water	24.51 mg/L	10 ml	24.5 mg/L	1					12/12/18 17:01	N	II
KQ1818162-19	Carbon, Total Organic	CCV		Water	24.95 mg/L	10 ml	24.9 mg/L	1					12/12/18 22:35	N	II
KQ1818162-20	Carbon, Total Organic	CCV		Water	29.50 mg/L	10 ml	29.5 mg/L	1					12/13/18 03:55	N	II
KQ1818162-21	Carbon, Total Organic	CCV		Water	24.73 mg/L	10 ml	24.7 mg/L	1					12/13/18 07:38	N	II
KQ1818162-22	Carbon, Total Organic	CCB		Water	-0.14 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 12:28	N	II
KQ1818162-23	Carbon, Total Organic	CCB		Water	-0.10 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/12/18 17:17	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:** 618381 **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
KQ1818162-24	Carbon, Total Organic	CCB		Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			12/12/18 22:52	N	II
KQ1818162-25	Carbon, Total Organic	CCB		Water	2.24 mg/L	10 ml	2.24 mg/L	1	0.07	0.50			12/13/18 04:12	N	II
KQ1818162-26	Carbon, Total Organic	CCB		Water	0.24 mg/L	10 ml	0.24 mg/L J	1	0.07	0.50			12/13/18 07:55	N	II
KQ1818162-27	Carbon, Total Organic	LCS		Water	18.06 mg/L	10 mL	18.1 mg/L	1	0.07	0.50	82*		12/12/18 13:01:00	N	II
KQ1818162-28	Carbon, Total Organic	MB		Water	0.11 mg/L	10 ml	0.11 mg/L J	1	0.07	0.50			12/12/18 23:09	N	II

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

StarLIMS Run: 618378, 618379, 618381

Analysis: TOC

Method: SM 5310 C, 9060A

CCV: 1 1-GEN-05-73F 50 ppm LCS: 11-GEN-05-73C 21.9 ppm

ICAL Date: 11/26/18

ICAL ID: 11-GEN-05-72J

ICS ID: 11-GEN-05-67D

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-70O 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-73F

21 % H3PO4: 11-GEN-05-73H

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, Marge

FILTER ID: NA

Analyzed By: /CES	Date Analyzed: 12/11/18
Reviewed By: K	Date Reviewed: 12/13/18

0.250	0.250	0.250	0.250	OBSERVATIONS	10	0.2503
0.361				STD Deviation	0.13399	ABOVE
0.428				AVERAGE	0.22170	ABOVE
0.216	0.216	0.216	0.216	UCL	0.35569	0.2159
0.241	0.241	0.241	0.241	LCL	0.08771	0.2413
.007						BELO
0.077						BELOW
0.168	0.168	0.168	0.168	OBSERVATIONS	6	0.1677
0.116	0.116			STD Deviation	0.08457	0.1155
0.354	0.354			AVERAGE	0.22408	0.3538
				UCL	0.30865	BELOW
				LCL	0.13952	BELOW
						BELOW
						BELOW
				OBSERVATIONS	4	BELOW
				STD Deviation	0.06934	BELOW
				AVERAGE	0.21880	BELOW
				UCL	0.28814	BELOW
				LCL	0.14946	BELOW
						BELOW
						BELOW
				OBSERVATIONS	4	BELOW
				STD Deviation	0.04278	BELOW
				AVERAGE	0.21880	BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW

TOC: 618378, 618379, 618381

Schedule: 12112018

Version: 10
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2018/12/11 17:43 - Tuesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
(Clean)	Clean	Clean		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
(Clean)	Clean	Clean		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
(Clean)	Clean	Clean		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
(Blank)	Blank	Reagent/Acid Blank		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Sample	MB1	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Sample	ICS	Extended Reaction 021711 (Extended Reaction 021711)	1
4	Sample	MDL	Extended Reaction 021711 (Extended Reaction 021711)	1
5	Sample	LOD	Extended Reaction 021711 (Extended Reaction 021711)	1
6	Sample	LOQ	Extended Reaction 021711 (Extended Reaction 021711)	1
7	Sample	K1811890-001.01	Extended Reaction 021711 (Extended Reaction 021711)	4
8	Sample	K1811890-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
9	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	K1811464-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
11	Sample	K1811464-004.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
12	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
13	Sample	K1811464-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
14	Sample	K1811464-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
15	Sample	K1811464-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
16	Sample	K1811464-005.01	Extended Reaction 021711 (Extended Reaction 021711)	2
17	Sample	K1811464-006.01	Extended Reaction 021711 (Extended Reaction 021711)	2
18	Sample	K1811464-007.01	Extended Reaction 021711 (Extended Reaction 021711)	2
19	Sample	K1811305-001.02	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	MB2	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Sample	K1811305-001.02 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
22	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
23	Sample	K1811305-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
24	Sample	K1811335-001.03	Extended Reaction 021711 (Extended Reaction 021711)	2
25	Sample	K1811335-001.03 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
26	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
27	Sample	K1811335-002.03	Extended Reaction 021711 (Extended Reaction 021711)	2
28	Sample	K1811335-003.03	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Sample	K1811335-004.03	Extended Reaction 021711 (Extended Reaction 021711)	2
30	Sample	K1811527-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
31	Sample	K1811527-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
32	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
33	Sample	K1811527-002.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
34	Sample	K1811527-003.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
35	Sample	K1811527-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
36	Sample	K1811673-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
37	Sample	K1811673-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1

Schedule: 12112018

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
38	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
39	Sample	MB3	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
40	Sample	K1811673-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
41	Sample	K1811673-003.01	Extended Reaction 021711 (Extended Reaction 021711)	2
42	Sample	K1811673-004.01	Extended Reaction 021711 (Extended Reaction 021711)	2
43	Sample	K1811673-005.01	Extended Reaction 021711 (Extended Reaction 021711)	2
44	Sample	K1810656-005.08	Extended Reaction 021711 (Extended Reaction 021711)	2
45	Sample	K1810656-005.08 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
46	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
47	Sample	K1810656-004.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
48	Sample	K1810656-006.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
49	Sample	K1810656-007.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
50	Sample	K1810656-010.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
51	Sample	K1810656-011.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
52	Sample	K1810656-012.08	Extended Reaction 021711 (Extended Reaction 021711)	2
53	Sample	K1810656-014.08 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
54	Sample	K1812010-009.01	Extended Reaction 021711 (Extended Reaction 021711)	2
55	Sample	K1812010-009.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
56	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
57	Sample	K1812010-010.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
58	Sample	MB4	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	[TOC] LCS ER [21.9 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
59	Sample	K1812010-011.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
60	Sample	K1812010-012.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
61	Sample	K1812010-013.01	Extended Reaction 021711 (Extended Reaction 021711)	2
62	Sample	K1812010-014.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
63	Sample	K1812010-015.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
64	Sample	K1812010-016.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
65	Sample	K1812010-017.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
66	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
67	Sample	K1812010-018.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
68	Sample	K1812010-019.01 4x	Extended Reaction 021711 (Extended Reaction 021711)	2
69	Sample	K1812010-020.01 10x	Extended Reaction 021711 (Extended Reaction 021711)	2
70	Sample	K1812010-021.01 5x	Extended Reaction 021711 (Extended Reaction 021711)	2
71	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	4
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

fail —

— NR

Fusion Report - 12112018
Tuesday, December 11, 2018 03:00 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2018/12/13 10:55 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	12112018	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) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v8) Fusion1 (Fusion1) (v9) Fusion1 (Fusion1) (v10)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2018/12/11 15:00

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.20	17.43	5.22	49.43	05:27
2	TC Clean	20.64	23.35	2.71	50.00	04:03
3	TC Clean	2.72	5.35	2.63	50.02	03:47
4	TC Clean	2.05	4.74	2.69	50.15	03:46

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/11 15:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.29	16.01	2.71	50.17	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 16.8616 (IC) (v1197)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Clean From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2018/12/11 15:42

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.38	14.87	3.49	49.41	05:26
2	TC Clean	5.13	7.79	2.67	49.97	04:01
3	TC Clean	2.69	5.42	2.73	50.09	03:46
4	TC Clean	1.80	4.63	2.83	50.08	03:45

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%	2018/12/11 16:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	14.55	17.33	2.79	50.22	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 16.8616 (IC) (v1197)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Clean From Schedule Version 6

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2018/12/11 16:22

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.45	14.66	3.21	49.26	05:24
2	TC Clean	5.24	8.07	2.82	50.14	03:59
3	TC Clean	2.17	4.87	2.70	50.09	03:46
4	TC Clean	1.66	4.35	2.69	50.17	03:46

Sample Type: Sample From Schedule Version 7

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

		Type			(ppmC)		
◆	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/11 16:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	15.89	18.39	2.50	50.30	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 16.8616 (IC) (v1197)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Blank (Creating v1198) From Schedule Version 8

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2018/12/11 17:04

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.51	14.65	3.14	49.45	05:25
2	TC Clean	5.21	8.06	2.85	50.00	04:00
3	TC Clean	2.07	4.83	2.76	50.17	03:46
4	TC Clean	2.03	4.70	2.67	50.20	03:55
5	Reagent Blank	7.28	10.00	2.72	50.07	05:03
6	Acid Blank	1.67	4.34	2.66	49.47	05:28

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	1.5919 ppm	0.0000 ppm	0.0000%	2018/12/11 17:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5919	15.9194	29.26	32.13	2.87	50.24	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	24.6239 ppm (PASS)	0.0000 ppm	0%	2018/12/11 17:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6239	246.2390	206.69	209.44	2.76	50.25	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.2503 ppm (PASS)	0.0000 ppm	0%	2018/12/11 18:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.2503	2.5028	20.36	23.27	2.91	50.25	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.3606 ppm	0.0000 ppm	0.0000%	2018/12/11 18:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3606	3.6062	19.84	22.72	2.88	50.29	12:29

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	20.7974 ppm (PASS)	0.0000 ppm	0%	2018/12/11 18:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	20.7974	207.9744	177.44	180.40	2.96	50.28	12:32

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos 2: 21.9 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	ICS	0.6657 ppm	0.0000 ppm	0.0000%	2018/12/11 19:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6657	6.6567	22.18	25.15	2.98	50.30	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	MDL	0.6058 ppm	0.0000 ppm	0.0000%	2018/12/11 19:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6058	6.0576	21.72	24.64	2.92	50.33	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	LOD	0.5300 ppm	0.0000 ppm	0.0000%	2018/12/11 19:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5300	5.3002	21.14	23.87	2.73	50.34	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	LOQ	0.8326 ppm	0.0000 ppm	0.0000%	2018/12/11 19:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8326	8.3259	23.45	26.29	2.84	50.38	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1811890-001.01	1.2654 ppm	0.3171 ppm	25.0600%	2018/12/11 20:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7362	17.3622	30.36	33.44	3.08	50.36	12:27
2	TOC	1.0594	10.5941	25.19	28.09	2.90	50.38	12:25
3	TOC	1.1680	11.6798	26.02	28.98	2.96	50.37	12:26

4	TOC	1.0979	10.9787	25.48	28.49	3.01	50.41	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1811890-001.01 ms	25.3636 ppm	0.0000 ppm	0.0000%	2018/12/11 21:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.3636	253.6357	210.98	213.83	2.85	50.38	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	RB	0.7642 ppm	0.0000 ppm	0.0000%	2018/12/11 21:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7642	7.6417	22.93	26.04	3.11	50.39	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	24.6571 ppm (PASS)	0.0000 ppm	0%	2018/12/11 21:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6571	246.5713	206.94	209.74	2.80	50.41	12:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.4277 ppm (PASS)	0.0000 ppm	0%	2018/12/11 22:01

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

D	TOC	0.0 ppm	1	0.4277	4.2766	21.72	24.55	2.84	50.40	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K1811464-004.01	0.9626 ppm	0.1776 ppm	18.4500%	2018/12/11 22:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0882	10.8819	25.41	28.31	2.90	50.39	12:26
2	TOC	0.8370	8.3703	23.49	26.26	2.77	50.37	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1811464-004.01 ms	25.7739 ppm	0.0000 ppm	0.0000%	2018/12/11 22:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.7739	257.7392	214.12	216.83	2.71	50.36	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	RB	0.5779 ppm	0.0000 ppm	0.0000%	2018/12/11 23:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5779	5.7790	21.51	24.40	2.89	50.34	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1811464-001.01	1.2190 ppm	0.0035 ppm	0.2900%	2018/12/11 23:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2165	12.1651	26.39	29.37	2.98	50.32	12:27
2	TOC	1.2215	12.2148	26.43	29.37	2.95	50.29	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1811464-002.01	1.0448 ppm	0.0967 ppm	9.2500%	2018/12/11 23:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1132	11.1317	25.60	28.47	2.87	50.29	12:25
2	TOC	0.9765	9.7648	24.55	27.34	2.78	50.28	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1811464-003.01	1.2191 ppm	0.0916 ppm	7.5100%	2018/12/12 00:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1544	11.5438	25.91	28.64	2.73	50.29	12:28
2	TOC	1.2839	12.8388	26.90	29.52	2.61	50.27	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1811464-005.01	2.4664 ppm	0.0931 ppm	3.7700%	2018/12/12 00:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5322	25.3220	36.45	39.14	2.69	50.26	12:23
2	TOC	2.4006	24.0061	35.44	38.26	2.82	50.26	12:22

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1811464-006.01	2.4125 ppm	0.0527 ppm	2.1900%	2018/12/12 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4498	24.4979	35.82	38.52	2.70	50.25	12:24
2	TOC	2.3752	23.7523	35.25	38.12	2.87	50.23	12:22

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1811464-007.01	1.0588 ppm	0.0745 ppm	7.0300%	2018/12/12 02:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1115	11.1147	25.58	28.34	2.75	50.24	12:26

2	TOC	1.0062	10.0617	24.78	27.52	2.74	50.24	12:25

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1811305-001.02	1.6053 ppm	0.0669 ppm	4.1700%	2018/12/12 02:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6526	16.5264	29.72	32.62	2.90	50.23	12:25
2	TOC	1.5581	15.5806	29.00	31.80	2.80	50.22	12:28

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 — 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 021711 [25 ppm]	0 / infinity (NA / NA)	24.7384 ppm (PASS)	0.0000 ppm	0%	2018/12/12 03:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7384	247.3836	207.56	210.41	2.85	50.22	12:29

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.2159 ppm (PASS)	0.0000 ppm	0%	2018/12/12 03:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.2159	2.1588	20.10	22.93	2.84	50.22	12:33

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample — From Schedule Version 10

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.2413 ppm	0.0000 ppm	0.0000%	2018/12/12 03:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2413	2.4132	18.93	21.58	2.64	50.21	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER

From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	20.1914 ppm (PASS)	0.0000 ppm	0%	2018/12/12 03:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	20.1914	201.9139	172.80	175.74	2.94	50.18	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	21.9 ppmC

Sample Type: Sample

From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1811305-001.02 ms	26.2956 ppm	0.0000 ppm	0.0000%	2018/12/12 04:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.2956	262.9559	218.11	220.98	2.87	50.20	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	RB	0.4166 ppm	0.0000 ppm	0.0000%	2018/12/12 04:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4166	4.1661	20.27	23.17	2.89	50.19	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1811305-003.02	1.1791 ppm	0.0564 ppm	4.7900%	2018/12/12 04:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2190	12.1900	26.41	29.34	2.93	50.20	12:24
2	TOC	1.1392	11.3921	25.80	28.62	2.82	50.20	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1811335-001.03	1.3955 ppm	0.1088 ppm	7.7900%	2018/12/12 05:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4724	14.7238	28.34	31.04	2.69	50.18	12:27
2	TOC	1.3185	13.1855	27.17	30.16	2.99	50.17	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1811335-001.03 ms	26.2337 ppm	0.0000 ppm	0.0000%	2018/12/12 05:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.2337	262.3372	217.64	220.42	2.79	50.19	12:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	RB	0.1360 ppm	0.0000 ppm	0.0000%	2018/12/12 06:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1360	1.3602	18.13	20.87	2.74	50.17	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1811335-002.03	2.1850 ppm	0.1830 ppm	8.3700%	2018/12/12 06:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0557	20.5566	32.80	35.47	2.67	50.15	12:25
2	TOC	2.3144	23.1440	34.78	37.75	2.97	50.17	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	28	TOC	K1811335-003.03	0.8492 ppm	0.0364 ppm	4.2900%	2018/12/12 06:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8234	8.2343	23.38	26.11	2.73	50.17	12:27
2	TOC	0.8750	8.7497	23.78	26.55	2.78	50.16	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	24.4676 ppm (PASS)	0.0000 ppm	0%	2018/12/12 07:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4676	244.6758	205.49	208.18	2.69	50.16	12:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0071 ppm (PASS)	0.0000 ppm	0%	2018/12/12 07:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0071	0.0711	18.50	21.19	2.69	50.15	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1811335-004.03	0.4040 ppm	0.1288 ppm	31.8900%	2018/12/12 07:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4951	4.9510	20.87	23.55	2.68	50.15	12:25

2	TOC	0.3129	3.1288	19.48	22.12	2.64	50.16	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1811527-001.01	0.9867 ppm	0.0028 ppm	0.2800%	2018/12/12 08:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9886	9.8864	24.65	27.57	2.92	50.13	12:27
2	TOC	0.9847	9.8472	24.62	27.50	2.88	50.13	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1811527-001.01 ms	25.6466 ppm	0.0000 ppm	0.0000%	2018/12/12 08:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.6466	256.4664	213.15	216.10	2.95	50.14	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	RB	0.1870 ppm	0.0000 ppm	0.0000%	2018/12/12 09:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1870	1.8704	18.52	21.42	2.90	50.12	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1811527-002.01 5x	2.5582 ppm	0.0554 ppm	2.1700%	2018/12/12 09:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5973	25.9735	36.94	39.65	2.71	50.15	12:26
2	TOC	2.5190	25.1899	36.34	39.03	2.69	50.09	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1811527-003.01 5x	0.9399 ppm	0.0758 ppm	8.0600%	2018/12/12 10:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9935	9.9348	24.68	27.43	2.75	50.07	12:25
2	TOC	0.8863	8.8635	23.86	26.51	2.65	50.03	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1811527-004.01	0.3785 ppm	0.0178 ppm	4.6900%	2018/12/12 10:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3911	3.9110	20.08	22.71	2.63	50.05	12:30
2	TOC	0.3660	3.6599	19.89	22.42	2.54	49.97	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1811673-001.01	1.9917 ppm	0.0263 ppm	1.3200%	2018/12/12 11:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0103	20.1027	32.46	35.17	2.71	49.95	12:27
2	TOC	1.9731	19.7312	32.17	34.87	2.70	49.94	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1811673-001.01 ms	26.7049 ppm	0.0000 ppm	0.0000%	2018/12/12 11:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.7049	267.0490	221.24	223.94	2.71	49.99	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	RB	0.2344 ppm	0.0000 ppm	0.0000%	2018/12/12 11:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2344	2.3439	18.88	21.56	2.68	50.00	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	24.5160 ppm (PASS)	0.0000 ppm	0%	2018/12/12 12:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5160	245.1598	205.86	208.44	2.58	50.01	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0771 ppm (PASS)	0.0000 ppm	0%	2018/12/12 12:28

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0771	0.7709	19.04	21.89	2.85	50.07	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	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	0.1677 ppm	0.0000 ppm	0.0000%	2018/12/12 12:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1677	1.6768	18.37	21.20	2.83	50.07	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	18.2817 ppm (PASS)	0.0000 ppm	0%	2018/12/12 13:01

	Base

Pos	Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	18.2817	182.8170	158.21	161.06	2.86	50.07	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	21.9 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1811673-002.01	2.3550 ppm	0.0679 ppm	2.8800%	2018/12/12 13:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4030	24.0296	35.46	38.15	2.69	50.08	12:28
2	TOC	2.3069	23.0695	34.72	37.68	2.96	50.07	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1811673-003.01	2.3994 ppm	0.0910 ppm	3.7900%	2018/12/12 13:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4638	24.6379	35.92	38.64	2.72	50.09	12:27
2	TOC	2.3351	23.3507	34.94	37.76	2.82	50.07	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1811673-004.01	3.0871 ppm	0.1387 ppm	4.4900%	2018/12/12 14:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1852	31.8521	41.44	44.30	2.87	50.03	12:28
2	TOC	2.9890	29.8899	39.94	42.62	2.68	50.04	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1811673-005.01	2.9265 ppm	0.4442 ppm	15.1800%	2018/12/12 14:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6124	26.1239	37.06	39.86	2.80	50.11	12:24
2	TOC	3.2405	32.4054	41.86	44.66	2.80	50.09	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1810656-005.08	2.4018 ppm	0.4116 ppm	17.1400%	2018/12/12 15:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6928	26.9284	37.67	40.61	2.94	50.09	12:23
2	TOC	2.1107	21.1073	33.22	36.02	2.80	50.11	12:22

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1810656-005.08 ms	28.2614 ppm	0.0000 ppm	0.0000%	2018/12/12 15:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2614	282.6141	233.14	235.99	2.85	50.12	12:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	RB	0.9906 ppm	0.0000 ppm	0.0000%	2018/12/12 16:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9906	9.9060	24.66	27.45	2.79	50.15	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1810656-004.08 4x	4.5129 ppm	0.2254 ppm	4.9900%	2018/12/12 16:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.6723	46.7226	52.81	55.67	2.86	50.14	12:30
2	TOC	4.3535	43.5348	50.37	53.42	3.05	50.11	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	24.7265 ppm (PASS)	0.0000 ppm	0%	2018/12/12 17:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7265	247.2646	207.47	210.23	2.76	50.12	12:31

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.1155 ppm (PASS)	0.0000 ppm	0%	2018/12/12 17:17

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.1155	1.1555	19.33	22.08	2.75	50.17	12:30

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1810656-006.08 4x	7.3717 ppm	0.0610 ppm	0.8300%	2018/12/12 17:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.4148	74.1483	73.77	76.54	2.77	50.13	12:26
2	TOC	7.3285	73.2849	73.11	75.86	2.75	50.13	12:23

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1810656-007.08 4x	6.1978 ppm	0.3644 ppm	5.8800%	2018/12/12 18:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.4555	64.5547	66.44	69.25	2.81	50.11	12:29
2	TOC	5.9401	59.4007	62.50	65.50	3.00	50.13	12:27

Dilution: 1:10
Blank Contribution: (TC) 17.0882 (IC) (v1198)
Method: Extended Reaction 021711 (v3)
Calibration: Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1810656-010.08 4x	4.0113 ppm	0.2794 ppm	6.9700%	2018/12/12 18:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2089	42.0893	49.26	52.26	3.00	50.09	12:27
2	TOC	3.8138	38.1375	46.24	49.12	2.88	50.12	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1810656-011.08 4x	6.5407 ppm	0.0417 ppm	0.6400%	2018/12/12 19:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.5112	65.1119	66.86	69.68	2.82	50.23	12:28
2	TOC	6.5702	65.7019	67.32	70.10	2.78	50.17	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1810656-012.08	2.9799 ppm	0.3433 ppm	11.5200%	2018/12/12 19:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2226	32.2262	41.72	44.47	2.74	50.17	12:28
2	TOC	2.7372	27.3718	38.01	40.73	2.72	50.15	12:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1810656-014.08 4x	11.4909 ppm	0.0781 ppm	0.6800%	2018/12/12 20:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.4357	114.3567	104.51	107.31	2.80	50.16	12:27
2	TOC	11.5461	115.4608	105.35	108.22	2.86	50.15	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1812010-009.01	5.3652 ppm	0.1505 ppm	2.8000%	2018/12/12 20:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2588	52.5881	57.29	60.00	2.71	50.15	12:28

2	TOC	5.4716	54.7164	58.92	61.86	2.94	50.14	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1812010-009.01 ms	29.7647 ppm	0.0000 ppm	0.0000%	2018/12/12 21:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.7647	297.6468	244.63	247.62	2.99	50.13	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	RB	0.9116 ppm	0.1715 ppm	18.8100%	2018/12/12 21:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0329	10.3286	24.98	27.91	2.92	50.10	12:27
2	TOC	0.7903	7.9033	23.13	26.20	3.07	50.05	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1812010-010.01 5x	7.0992 ppm	0.4858 ppm	6.8400%	2018/12/12 22:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.4427	74.4269	73.98	76.79	2.80	50.05	12:29
2	TOC	6.7557	67.5567	68.73	71.47	2.73	50.04	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	25.1674 ppm (PASS)	0.0000 ppm	0%	2018/12/12 22:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1674	251.6742	210.84	213.79	2.95	49.97	12:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos B

Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.3538 ppm (PASS)	0.0000 ppm	0%	2018/12/12 22:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.3538	3.5375	21.15	23.90	2.75	49.94	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample From Schedule Version 10

NR

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.3300 ppm	0.0000 ppm	0.0000%	2018/12/12 23:09

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Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3300	3.3001	19.61	22.48	2.87	49.94	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> LCS ER From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	TOC	21.9000	1:1	[TOC] LCS ER [21.9 ppm]	0 / infinity (NA / NA)	19.1671 ppm (PASS)	0.0000 ppm	0%	2018/12/12 23:25

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	TOC	21.9 ppm	1	19.1671	191.6715	164.97	167.93	2.95	49.94	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	21.9 ppmC

Sample Type: Sample From Schedule Version 10

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

NR

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		Type			(ppmC)		
◈	59	TOC	K1812010-011.01 5x	2.4218 ppm	1.8910 ppm	78.0800%	2018/12/12 23:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0847	10.8466	25.38	28.29	2.91	49.94	12:25
2	TOC	3.7589	37.5894	45.82	49.32	3.49	49.95	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1812010-012.01 5x	1.2324 ppm	0.1982 ppm	16.0800%	2018/12/13 00:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3726	13.7257	27.58	30.46	2.88	49.94	12:25
2	TOC	1.0922	10.9224	25.44	28.45	3.02	49.92	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1812010-013.01	4.9603 ppm	0.0235 ppm	0.4700%	2018/12/13 00:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.9769	49.7692	55.14	57.69	2.55	49.90	12:24
2	TOC	4.9437	49.4369	54.88	57.70	2.82	49.89	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1812010-014.01 5x	13.8675 ppm	4.1649 ppm	30.0300%	2018/12/13 01:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.9225	109.2251	100.59	103.37	2.78	49.87	12:26
2	TOC	16.8125	168.1250	145.61	148.52	2.90	49.89	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1812010-015.01 5x	8.1454 ppm	0.6094 ppm	7.4800%	2018/12/13 01:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.5763	85.7629	82.65	85.88	3.23	49.91	12:22
2	TOC	7.7145	77.1451	76.06	78.92	2.85	49.90	12:25

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	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1812010-016.01 5x	0.0000 ppm	0.0000 ppm	0.0000%	2018/12/13 02:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	-2.94	0.00	2.94	49.91	12:25
2	TOC	0.0000	0.0000	-375232.71	-375220.43	12.28	49.90	12:26

Dilution 1:10
Blank Contribution (TC) 17.0882 (IC) (v1198)
Method Extended Reaction 021711 (v3)
Calibration Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1812010-017.01 5x	64.7443 ppm	65.3341 ppm	100.9100%	2018/12/13 02:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	110.9425	1109.4253	865.21	873.76	8.56	49.88	12:27
2	TOC	18.5461	185.4613	158.87	162.92	4.05	49.85	12:24

Dilution 1:10
Blank Contribution (TC) 17.0882 (IC) (v1198)
Method Extended Reaction 021711 (v3)
Calibration Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	RB	7.1584 ppm	1.7966 ppm	25.1000%	2018/12/13 03:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.4287	84.2874	81.52	84.60	3.08	49.86	12:26
2	TOC	5.8880	58.8801	62.10	65.34	3.24	49.87	12:27

Dilution 1:10
Blank Contribution (TC) 17.0882 (IC) (v1198)
Method Extended Reaction 021711 (v3)
Calibration Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	29.7222 ppm (PASS)	0.0000 ppm	0%	2018/12/13 03:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	29.7222	297.2223	245.66	248.52	2.86	49.86	12:31

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

met.	021711 (v3)	021711 (v24)

Sample Type: Check Standard --> CCB 021711

From Schedule Version 10

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	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	2.4612 ppm (PASS)	0.0000 ppm	0%	2018/12/13 04:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	2.4612	24.6124	37.26	40.17	2.90	49.85	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	0 ppmC

Sample Type: Sample

From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1812010-018.01 5x	7.5993 ppm	0.0573 ppm	0.7500%	2018/12/13 04:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.6398	76.3982	75.49	78.24	2.74	49.86	12:26
2	TOC	7.5587	75.5872	74.87	77.90	3.03	49.88	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	K1812010-019.01 4x	5.5813 ppm	0.3202 ppm	5.7400%	2018/12/13 05:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8077	58.0769	61.49	64.33	2.85	49.87	12:26
2	TOC	5.3548	53.5483	58.02	60.89	2.87	49.89	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1812010-020.01 10x	7.1645 ppm	0.3321 ppm	4.6300%	2018/12/13 05:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.3993	73.9926	73.65	76.51	2.86	49.88	12:29
2	TOC	6.9297	69.2965	70.06	72.95	2.88	49.86	12:27

NR

CES 12/13/18

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1812010-021.01 5x	7.9470 ppm	0.4174 ppm	5.2500%	2018/12/13 06:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.2422	82.4220	80.10	82.96	2.86	49.85	12:26
2	TOC	7.6519	76.5186	75.58	78.60	3.01	49.82	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	RB	0.8691 ppm	0.3256 ppm	37.4700%	2018/12/13 06:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3303	13.3032	27.26	30.36	3.10	49.85	12:23
2	TOC	0.8641	8.6411	23.69	26.76	3.06	49.83	12:26
3	TOC	0.6663	6.6633	22.18	25.06	2.88	49.82	12:23
4	TOC	0.6156	6.1557	21.79	24.44	2.65	49.83	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 17.0882 (IC) (v1198)	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	24.9443 ppm (PASS)	0.0000 ppm	0%	2018/12/13 07:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9443	249.4425	209.14	211.95	2.81	49.85	12:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.4580 ppm (PASS)	0.0000 ppm	0%	2018/12/13 07:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.4580	4.5801	21.95	24.67	2.72	49.83	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v3)	Extended Reaction 021711 (v24)	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
v1197	1.2933	0.9880	0.0000	0.0000	0.0000	2018/12/07 13:33	Fusion1 (Fusion1)
v1198	2.4263	1.6720	0.0000	0.0000	0.0000	2018/12/11 17:38	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version: v24
Ver Creation: 2018/11/26 18:53
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 7.645x + 18.448
r^2 value: TOC: r^2 = 0.99984

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	19.1720	0.0000		2018/11/26 17:15
0.50 ppm	23.8410	0.5000		2018/11/26 17:31
1.00 ppm	25.1300	1.0000		2018/11/26 17:47
5.00 ppm	53.5500	5.0000		2018/11/26 18:03
10.0 ppm	95.3860	10.0000		2018/11/26 18:20
25.0 ppm	211.7220	25.0000		2018/11/26 18:36
50.0 ppm	399.8190	50.0000		2018/11/26 18:52

Methods

Name: Extended Reaction 021711 (TOC)

Version: v3
Ver Creation: 2013/02/04 11:44
Operator: Gen Chem Lab (Fusion1)

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	4.00 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	2018/12/13 08:14

Service Request Summary

8 - 40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa H2SO4

Folder #: **K1811890**
Client Name: ALS Environmental - US
Project Name: HS18120063
Project Number:
P.O. Number: HS18120063

Report To: Dane Wacasey
ALS Group USA, Corp.
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: dane.wacasey@alsglobal.com

Project Chemist: Kelley Lovejoy
Logged By: CGRAVES
Date Received: 12/ 5/18
Time Received: 1526
Archive? N
Folder Due Date: 12/12/18
Internal Due Date: 12/12/18
QAP: DOD QSM v5.1 Kelso
Qualifier Set: DOD
Formset: DOD
Report to MDL?: Y
Merged?: Y Batch QC?: Y
PC Approved?: Y
State of Sampling Location: TX
EDD: BASIC_WQC, SEDD 2A, URS Subsurface

Location: GENPRE 107 (K-GEN PRES)

RUSH

Lab Samp No.	Client Samp No.	Matrix	Collected	GenChem 9060A/ TOC T
K1811890-001	ERH694	Water	10/23/18 0830	IV

TOC
1
1 MS

Folder Comments:

Please report MDL/MRL for this Service Request.

Service Request Summary

18 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4

Location: GENPRE 89 (K-ATHENA)

Folder #: K1811464
Client Name: ALS Environmental - US
Project Name: ALS Houston DOD TOC
Project Number: HS18111135
P.O. Number: HS18111135

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

Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Kelley Lovejoy
Logged By: CGRAVES
Date Received: 11/27/18
Time Received: 0940
Archive? N
Folder Due Date: 12/7/18
Internal Due Date: 12/5/18
QAP: DOD QSM v5.1 Kelso
Qualifier Set: DOD
Formset: DOD
Report to MDL?: Y
Merged?: Y Batch QC?: Y
PC Approved?: Y
State of Sampling Location: TX
EDD: Adapt 8.3 DOD, BASIC_WQC_L
EQUIS EFWEDD_LHAAP

TOC
1→7
4MS

Lab Samp No.	Client Samp No.	Matrix	Collected	GenChem: SM 5310 C/TOC T
K1811464-001	35BWW23-181120	Water	11/20/18 0955	IV
K1811464-002	35BWW14-181120	Water	11/20/18 1053	IV
K1811464-003	35BWW26-181120	Water	11/20/18 1156	IV
K1811464-004	35BWW08-181120	Water	11/20/18 1258	IV
K1811464-005	35BWW04-181120	Water	11/20/18 1410	IV
K1811464-006	35BWW04-181120-FD	Water	11/20/18 1410	IV
K1811464-007	35BWW12-181119	Water	11/20/18 1510	IV

Run QC on sample K1811464-004 for SM 5310 C/TOC T

Service Request Summary

Folder #: **K1811305**
Client Name: Rainier, City of
Project Name: Monthly TOC Monitoring
Project Number: OR41 00689
P.O. Number:

Report To: John Dewey
Rainier, City of
P.O. Box 100
Rainier, OR 97048

Phone Number:
Cell Number: 503-410-2176
Fax Number:
E-mail: jdewey@cityofrainier.com

Project Chemist: Amanda Juell
Logged By: SWOLF
Date Received: 11/19/18
Time Received: 1540
Archive? N
Folder Due Date: 12/10/18
Internal Due Date: 12/6/18
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Drinking Water
Report to MDL?: N
Merged?: Y Batch QC?: N
PC Approved?: Y
State of Sampling Location: OR
EDD: No EDD Specified

2 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4
1 - 125 mL-Plastic Bottle HDPE NM CLEAR Unpreserved

Location: GENPRE 79 (K-ATHENA), GENUNP 106 (K-GEN UNP)

TOC

1, 3

1 MS

				GenChem	
Lab Samp No.	**Client Samp No.**	**Matrix**	**Collected**	SM 2320 B/ Alkalinity Titr	SM 5310 C/ TOC T
K1811305-001	Raw Water Plant-TOC	DW	11/19/18 1350		I
K1811305-002	Raw Water Plant-ALK	DW	11/19/18 1350	I	
K1811305-003	Finish Water Plant-TOC	DW	11/19/18 1350		I

Folder Comments:

OR DW Form

Service Request Summary

Folder #: K1811335
Client Name: McKinley Paper Co. (Formerly Nippon Paper Indu
Project Name: McKinley Landfill - Groundwater Samples
Project Number:
P.O. Number: 7131700029

Report To: Amy Dougherty
McKinley Paper Co. - Washington Mill
1902 Marine Drive
P.O. Box 271
Port Angeles, WA 98362
Phone Number: 360-565-7019
Cell Number: 360-477-1316
Fax Number: 360-457-8675
E-mail: amy.dougherty@biopappel.com

Project Chemist: Chris Leaf
Logged By: DPLIMPTON
Date Received: 11/20/18
Time Received: 0940
Archive? N
Folder Due Date: 12/11/18
Internal Due Date: 12/7/18
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Report to MDL?: Y
Merged?: Y Batch QC?: N
PC Approved?: Y
State of Sampling Location: WA
EDD: NPIUSA-Port Angeles

TOC
1→4
1 MS

4 - 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
4 - 125 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
4 - 125 ml-Plastic Bottle WM CLEAR H2SO4
4 - 250 mL-Plastic Bottle WM CLEAR HNO3 (Diss)

Location: GENUNP 102 (K-GenChem), METALS 205 (K-MET LTS), GENPRE 82 (K-ATHENA), METALS 217 (K-MET LTS), METALS 218 (K-MET LTS)

NPDES

				GenChem								Metals	
Lab Samp No.	**Client Samp No.**	**Matrix**	**Collected**	300.0/ Chloride	300.0/ NO3	300.0/ SO4	350.1/ Ammonia LL	SM 2320 B/ Alkalinity Titr	SM 2320 B/ Bicarb Alk	SM 2540 C/ TDS	SM 5310 C/ TOC T	200.7/ Metals D	Filter Met/ Filter Met
K1811335-001	MW-5S	Ground	11/19/18 0810	II	II	II	II	II	II	II	II	II	II
K1811335-002	MW-6S	Ground	11/19/18 0810	II	II	II	II	II	II	II	II	II	II
K1811335-003	Weiler	Ground	11/19/18 0910	II	II	II	II	II	II	II	II	II	II
K1811335-004	Equip Blank	Ground	11/19/18 0945	II	II	II	II	II	II	II	II	II	II

Folder Comments:

Send two large and two small coolers for the sampling event 13 samples, 13 bottles each Report to Mg/L for metals: watch EDD for "Total Dissolved Solids" header and XX-XX name format.

Test Comments:

Group	Test/Method	Samples	Comments
GenChem	Ammonia LL/350.1	1-4	Low Level
Metals	Metals D/200.7	1-4	Lab Filter for Ca,Fe,Mg,Mn,Na REPORT TO mg/L

Test/Method	Samples	Elements
200.7/Metals D	1-4	Calcium / Iron / Magnesium / Manganese / Sodium

Service Request Summary

Folder #: K1811527
Client Name: Barr Engineering Company
Project Name: Gerdau FDLF
Project Number: 23/62-0884.41
P.O. Number:

Report To: Terri Olson
Barr Engineering
4300 Market Pointe Drive, Suite 200
Minneapolis, MN 55435
Phone Number: 952-842-3578
Cell Number:
Fax Number:
E-mail: tolson@barr.com

Project Chemist: Chris Leaf
Logged By: CGRAVES
Date Received: 11/28/18
Time Received: 1030
Archive? Y, 60 Days, N
Folder Due Date: 12/12/18
Internal Due Date: 12/7/18
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Report to MDL?: N
Merged?: Y Batch QC?: N
PC Approved?: Y
State of Sampling Location:
EDD: BARR - EQUIS

TOC
1→4
1 MS

8 - 125 mL-Plastic Bottle NM CLEAR HNO3
8 - 125 mL-Fluoropoly 1631 WM HCL
4 - 125 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
4 - 500 mL-Glass Bottle NM AMBER Teflon Liner HCL
4 - 40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa H2SO4
4 - 125 mL-Fluoropoly Natural HCl Cleaned WM Unpreserved

Location: METALS 213 (K-MET LTS), LL HG 45 (K-MET LTS), SMO, GENUNP 123 (K-SAMSON), SVEXT 107 (K-DELILAH), GENPRE 92 (K-GEN PRES), LL HG 44 (K-MET LTS)

				GenChem		Metals								SVG	SMO
Lab Samp No.	Client Samp No.	Matrix	Collected	300.0/ Chloride	SM 5310 C/ TOC T	1631E/ Hg LL D	1631E/ Hg LL T	6010C/ Metals D	6010C/ Metals T	6020A/ Metals D	6020A/ Metals T	Filter Hg LL/ Filter Hg LL		SW-141/ WI_DRO	Archive/ Archive 4C
K1811527-001	FD-MW-10D	Water	11/27/18 1445	II	II	II	II	II	II	II	II	II		II(C)	II
K1811527-002	FD-MW-10S	Water	11/27/18 1520	II	II	II	II	II	II	II	II	II		II(C)	II
K1811527-003	FD-MW-11D	Water	11/27/18 1555	II	II	II	II	II	II	II	II	II		II(C)	II
K1811527-004	FB-1	Water	11/27/18 1700	II	II	II	II	II	II	II	II	II		II(C)	II

Folder Comments:

Note that sample MW2-1 has high levels of Hg. Analyze by CVAA

Test Comments:

Group	Test/Method	Samples	Comments
Metals	Hg LL D/1631E	1-4	Filter at Lab - narrate if filtered past hold time
Metals	Metals D/6010C	1-4	Fe,Na,Mn
Metals	Metals D/6020A	1-4	Cr
Metals	Metals T/6010C	1-4	Fe,Na,Mn
Metals	Metals T/6020A	1-4	Cr

Service Request Summary

14 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4

Folder #: **K1811673**
Client Name: ALS Environmental - US
Project Name: ALS Houston DOD TOC
Project Number: HS18111440
P.O. Number: HS18111440

Report To: RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338
Phone Number: 281-530-5656
Cell Number:
Fax Number: 281-530-5887
E-mail: rj.modashia@alsglobal.com

Project Chemist: Kelley Lovejoy
Logged By: CGRAVES
Date Received: 11/30/18
Time Received: 1000
Archive? N
Folder Due Date: 12/13/18
Internal Due Date: 12/10/18
QAP: DOD QSM v5.1 Kelso
Qualifier Set: ~~DOD~~
Formset: DOD
Report to MDL?: Y
Merged?: Y Batch QC?: Y
PC Approved?: Y
State of Sampling Location: TX
EDD: Adapt 8.3 DOD, BASIC_WQC_L
EQUIS EFWEDD_LHAAP

Location: GENPRE 98 (K-ATHENA)

Run if room
TOC
1→5
MS (must be 1

Lab Samp No.	Client Samp No.	Matrix	Collected	GenChem: SM 5310 C/ TOC T
K1811673-001	50WW16-181128	Ground	11/28/18 0845	IV
K1811673-002	50WW11-181128	Ground	11/28/18 1105	IV
K1811673-003	50WW11-181128-FD	Ground	11/28/18 1105	IV
K1811673-004	50WW12-181128	Ground	11/28/18 1220	IV
K1811673-005	50WW08-181128	Ground	11/28/18 1325	IV

Run QC on sample K1811673-001 for SM 5310 C/TOC T

Service Request Summary

Folder #: K1810656
Client Name: General Atomics
Project Name: CS Tear Gas
Project Number: 30499
P.O. Number:

Report To: Ken Liberty
General Atomics
Electromagnetic Systems Group (GA-EMS)
16530 Via Esprillo
San Diego, CA 92127
Phone Number: 858-964-6742
Cell Number: 858-349-5428
Fax Number:
E-mail: kenneth.liberty@ga.com

Project Chemist: Mark Harris
Logged By: CGRAVES
Date Received: 11/ 1/18
Time Received: 0950
Archive? N
Folder Due Date: 11/22/18
Internal Due Date: 11/16/18
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Report to MDL?: N
Merged?: Y Batch QC?: N
PC Approved?: Y
State of Sampling Location: CA
EDD: No EDD Specified

TOC
4→7, 10→12, 14
SAMS

24 - 500 mL-Plastic Bottle NM CLEAR Unpreserved
16 - 125 mL-Plastic Bottle NM CLEAR HNO3
14 - 250 mL-Plastic Bottle NM CLEAR H2SO4
14 - 500 mL-Plastic Bottle NM CLEAR NaOH
8 - 125 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
8 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4

Location: GENUNP 56 (K-GEN UNP), GENUNP 57 (K-GEN UNP), METALS 176 (K-MET LTS), METALS 177 (K-MET LTS), GENPRE 40 (K-GEN PRES), GENPRE 41 (K-GEN PRES)

					GenChem						Metals	
Lab Samp No.	Client Samp No.	Matrix	Collected		300.0/ Chloride	335.4/ CN T	350.1/ Ammonia T	7196A/ Cr6	SM 2540 D/ TSS	SM 5310 C/ TOC T	6020A/ Metals T	7470A/ Hg T
K1810656-001	LE-1000-Base	Water	8/14/18	1000		II	II	II	II			
K1810656-002	LE-1103	Water	8/14/18	1103		II	II	II	II			
K1810656-003	LE-1130	Water	8/14/18	1130		II	II	II	II		II	II
K1810656-004	LE-1200	Water	8/14/18	1200		II	II	II	II	II	II	II
K1810656-005	Cond-1235	Water	8/16/18	1235	II					II	II	
K1810656-006	LE-1011-Base	Water	8/16/18	1011	II	II	II	II	II	II	II	II
K1810656-007	LE-1045	Water	8/16/18	1045		II	II	II	II	II	II	II
K1810656-008	LE-1115	Water	8/16/18	1115		II	II	II	II		II	II
K1810656-009	LE-1145	Water	8/16/18	1145		II	II	II	II		II	II
K1810656-010	LE-1215	Water	8/16/18	1215	II	II	II	II	II	II	II	II
K1810656-011	LE-1150-Base	Water	6/25/18	1150	II	II	II	II	II	II	II	II
K1810656-012	LE-1330	Water	6/25/18	1330	II	II	II	II	II	II	II	II
K1810656-013	LE-1215-Base	Water	6/28/18	1215	II	II	II	II	II		II	II
K1810656-014	LE-1350	Water	6/28/18	1350	II	II	II	II	II	II	II	II
K1810656-015	Cond-1645	Water	6/28/18	1645	II	II	II				II	II
K1810656-016	Water Feed	Water	6/28/18	0640							II	II

Test Comments:

Group	Test/Method	Samples	Comments
Metals	Metals T/6020A	3-16	Cd,Cr,Cu,Pb,Ni,Ag,Zn

Service Request Summary

Folder #: K1812010
Client Name: General Atomics
Project Name: Ansol
Project Number: 30504
P.O. Number: 4500073573

Report To: Ken Liberty
General Atomics
Electromagnetic Systems Group (GA-EMS)
16530 Via Esprillo
San Diego, CA 92127

Phone Number: 858-964-6742
Cell Number: 858-349-5428
Fax Number:
E-mail: kenneth.liberty@ga.com

Project Chemist: Mark Harris
Logged By: DPLIMPTON
Date Received: 12/ 8/18
Time Received: 0945
Archive? N
Folder Due Date: 12/29/18
Internal Due Date: 12/25/18
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Report to MDL?: N
Merged?: Y Batch QC?: N
PC Approved?: Y
State of Sampling Location: CA
EDD: No EDD Specified

21 - 500 mL-Plastic Bottle NM CLEAR Unpreserved
21 - 250 mL-Plastic Bottle NM CLEAR H2SO4
21 - 40 mL-Glass Vial VOA AMBER Tef/Silicone Septa H2SO4
21 - 125 mL-Plastic Bottle NM CLEAR HNO3

Location: GENUNP 141 (K-GenChem), GENUNP 143 (K-GEN UNP), SMO, GENPRE 112 (K-GEN PRES), METALS 228 (K-METALS)

TOC
QNS
~~Maybe run 1-28~~
9→21

IHT!

Lab Samp No.	Client Samp No.	Matrix	Collected		GenChem				Metals	
					350.1/ Ammonia T	353.2/ NO2 NO3 T	SM 2540 D/ TSS	SM 5310 C/ TOC T	6010C/ Metals T	6020A/ Metals T
K1812010-001	1-Feed	Water	7/13/18	1000	II	II	II	II	II	II
K1812010-002	1-Baseline	Water	7/13/18	1030	II	II	II	II	II	II
K1812010-003	1a-LE1130	Water	7/13/18	1130	II	II	II	II	II	II
K1812010-004	1b-LE1215	Water	7/13/18	1215	II	II	II	II	II	II
K1812010-005	1b-LE1400	Water	7/13/18	1400	II	II	II	II	II	II
K1812010-006	1b-LE1446	Water	7/13/18	1446	II	II	II	II	II	II
K1812010-007	1c-LE1600	Water	7/13/18	1600	II	II	II	II	II	II
K1812010-008	1c-LE1645	Water	7/13/18	1645	II	II	II	II	II	II
K1812010-009	2a-LE1200	Water	11/14/18	1200	II	II	II	II	II	II
K1812010-010	2a-LE1246	Water	11/14/18	1246	II	II	II	II	II	II
K1812010-011	2b-LE1345	Water	11/14/18	1345	II	II	II	II	II	II
K1812010-012	2b-LE1430	Water	11/14/18	1430	II	II	II	II	II	II
K1812010-013	2c-Baseline	Water	11/15/18	1200	II	II	II	II	II	II
K1812010-014	2c-LE1345	Water	11/15/18	1345	II	II	II	II	II	II
K1812010-015	2c-LE1430	Water	11/15/18	1430	II	II	II	II	II	II
K1812010-016	2/3-Feed	Water	11/15/18	1200	II	II	II	II	II	II
K1812010-017	3-LE1530	Water	11/15/18	1530	II	II	II	II	II	II
K1812010-018	3-LE1615	Water	11/15/18	1615	II	II	II	II	II	II
K1812010-019	4-Baseline	Water	11/16/18	1045	II	II	II	II	II	II
K1812010-020	4-LE1145	Water	11/16/18	1145	II	II	II	II	II	II

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
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December 18, 2018

Analytical Report for Service Request No: K1811602

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

RE: HS18111135

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory November 29, 2018
For your reference, these analyses have been assigned our service request number **K1811602.**

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

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
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www.alsglobal.com

Table of Contents

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

ALS Environmental

Client: ALS Environmental - US
Project: HS18111135
Sample Matrix: Water

Service Request: K1811602
Date Received: 11/29/2018

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Seven water samples were received for analysis at ALS Environmental on 11/29/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 12/18/2018

Chain of Custody

ALS Environmental—Kelso Laboratory
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K1811602

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

COC ID: 10314

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:	HS18111135
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18111135-02**	**35BWW23-181120**	**Liquid**	**20 Nov 2018 09:55**
	TIC Analysis with Level IV			07 Dec 2018
2.	**HS18111135-03**	**35BWW14-181120**	**Liquid**	**20 Nov 2018 10:53**
	TIC Analysis with Level IV			07 Dec 2018
3.	**HS18111135-04**	**35BWW26-181120**	**Liquid**	**20 Nov 2018 11:56**
	TIC Analysis with Level IV			07 Dec 2018
4.	**HS18111135-05**	**35BWW08-181120**	**Liquid**	**20 Nov 2018 12:58**
	TIC Analysis with Level IV			07 Dec 2018
5.	**HS18111135-06**	**35BWW04-181120**	**Liquid**	**20 Nov 2018 14:10**
	TIC Analysis with Level IV			07 Dec 2018
6.	**HS18111135-07**	**35BWW04-181120-FD**	**Liquid**	**20 Nov 2018 14:10**
	TIC Analysis with Level IV			07 Dec 2018
7.	**HS18111135-08**	**35BWW12-181119**	**Liquid**	**20 Nov 2018 15:10**
	TIC Analysis with Level IV			07 Dec 2018

Comments:

Received: [signature] 11/29/18 1040

K1811602

Subcontract Chain of Custody

COC ID: 10314

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

HS18111135-05 MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By:	J. Marcum	Date/Time:	11/28/18 18:00
Received By:		Date/Time:	11/29/18 1040
Cooler ID(s):		Temperature(s):	

PC KL

Cooler Receipt and Preservation Form

Client ALS Houston Service Request K18 11602

Received: 11/29/18 Opened: 11/29/18 By: CG Unloaded: 11/29/18 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

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
3.2	3.0	0.8	0.6	-0.2	380	10314	4380 9535 0887	

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: 2 vials per sample.. 6 vials for "-05" (MS/MSD).
(35BWW08-181120)

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1811602
Project:	HS18111135	**Date Collected:**	11/20/18
Sample Matrix:	Water	**Date Received:**	11/29/18
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Inorganic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
35BWW23-181120	K1811602-001	**48.7**	2.0	1.0	1	12/17/18 12:36	
35BWW14-181120	K1811602-002	**36.9**	2.0	1.0	1	12/17/18 12:51	
35BWW26-181120	K1811602-003	**29.5**	2.0	1.0	1	12/17/18 13:04	
35BWW08-181120	K1811602-004	**27.4**	4.0	2.0	2	12/17/18 14:51	
35BWW04-181120	K1811602-005	**41.2**	8.0	4.0	4	12/17/18 15:24	
35BWW04-181120-FD	K1811602-006	**43.4**	8.0	4.0	4	12/17/18 15:37	
35BWW12-181119	K1811602-007	**44.9**	8.0	4.0	4	12/17/18 15:50	
Method Blank	K1811602-MB	ND U	2.0	1.0	1	12/17/18 12:16	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1811602
Project	HS18111135	**Date Collected:**	11/20/18
Sample Matrix:	Water	**Date Received:**	11/29/18
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Inorganic

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
35BWW23-181120	K1811602-001DUP	2.0	1.0	48.7	47.7	48.2	2	10	12/17/18
35BWW14-181120	K1811602-002DUP	2.0	1.0	36.9	36.7	36.8	<1	10	12/17/18
35BWW26-181120	K1811602-003DUP	2.0	1.0	29.5	29.3	29.4	<1	10	12/17/18
35BWW08-181120	K1811602-004DUP	4.0	2.0	27.4	27.8	27.6	2	10	12/17/18
35BWW04-181120	K1811602-005DUP	8.0	4.0	41.2	41.6	41.4	<1	10	12/17/18
35BWW04-181120-FD	K1811602-006DUP	8.0	4.0	43.4	43.9	43.6	1	10	12/17/18
35BWW12-181119	K1811602-007DUP	8.0	4.0	44.9	45.9	45.4	2	10	12/17/18

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:**	K1811602
Project:	HS18111135	**Date Collected:**	11/20/18
Sample Matrix:	Water	**Date Received:**	11/29/18
		Date Analyzed:	12/17/18
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Inorganic

Sample Name:	35BWW08-181120	**Units:**	mg/L
Lab Code:	K1811602-004	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1811602-004MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Inorganic	27.4	77.8	50.0	101	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:**	K1811602
Project:	HS18111135	**Date Analyzed:**	12/17/18
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Inorganic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	619136

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1811602-LCS	24.5	25.0	98	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1811602
Project: HS18111135

Continuing Calibration Verification (CCV) Summary

Carbon, Total Inorganic

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

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	619136	KQ1818342-11	12/17/18 11:59	25.0	24.9	99	90-110
CCV2	619136	KQ1818342-12	12/17/18 14:11	25.0	24.8	99	90-110
CCV3	619136	KQ1818342-13	12/17/18 16:29	25.0	24.7	99	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1811602
Project: HS18111135

Continuing Calibration Blank (CCB) Summary
Carbon, Total Inorganic

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

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	619136	KQ1818342-14	12/17/18 12:07	2.0	1.0	ND	U
CCB2	619136	KQ1818342-15	12/17/18 14:18	2.0	1.0	ND	U
CCB3	619136	KQ1818342-16	12/17/18 16:36	2.0	1.0	ND	U

Raw Data

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General Chemistry

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Work Request # Original ( ) K1811602

Tier: IV

Date Analyzed: 12/17/18

Analyst: CES Run # 619136

Analysis: TIC

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: [signature] Date: 12/18/18

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** CSETHE **Analysis Lot:** 619136 **Method/Testcode:** SM 5310 C/TIC

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1811602-001	Carbon, Total Inorganic	N/A		Water	48.72 mg/L	10 ml	48.7 mg/L	1	1.0	2.0			12/17/18 12:36	N	IV
K1811602-002	Carbon, Total Inorganic	N/A		Water	36.94 mg/L	10 ml	36.9 mg/L	1	1.0	2.0			12/17/18 12:51	N	IV
K1811602-003	Carbon, Total Inorganic	N/A		Water	29.49 mg/L	10 ml	29.5 mg/L	1	1.0	2.0			12/17/18 13:04	N	IV
K1811602-004	Carbon, Total Inorganic	N/A		Water	13.68 mg/L	10 ml	27.4 mg/L	2	2.0	4.0			12/17/18 14:51	Y	IV
K1811602-005	Carbon, Total Inorganic	N/A		Water	10.31 mg/L	10 ml	41.2 mg/L	4	4.0	8.0			12/17/18 15:24	N	IV
K1811602-006	Carbon, Total Inorganic	N/A		Water	10.85 mg/L	10 ml	43.4 mg/L	4	4.0	8.0			12/17/18 15:37	N	IV
K1811602-007	Carbon, Total Inorganic	N/A		Water	11.24 mg/L	10 ml	44.9 mg/L	4	4.0	8.0			12/17/18 15:50	N	IV
KQ1818342-01	Carbon, Total Inorganic	DUP	K1811602-001	Water	47.68 mg/L	10 ml	47.7 mg/L	1	1.0	2.0		2	12/17/18 12:36	N	IV
KQ1818342-02	Carbon, Total Inorganic	DUP	K1811602-002	Water	36.73 mg/L	10 ml	36.7 mg/L	1	1.0	2.0		<1	12/17/18 12:51	N	IV
KQ1818342-03	Carbon, Total Inorganic	DUP	K1811602-003	Water	29.32 mg/L	10 ml	29.3 mg/L	1	1.0	2.0		<1	12/17/18 13:04	N	IV
KQ1818342-04	Carbon, Total Inorganic	MS	K1811602-004	Water	38.89 mg/L	10 ml	77.8 mg/L	2	2.0	4.0	101		12/17/18 15:04	N	IV
KQ1818342-05	Carbon, Total Inorganic	DUP	K1811602-004	Water	13.89 mg/L	10 ml	27.8 mg/L	2	2.0	4.0		2	12/17/18 14:51	N	IV
KQ1818342-06	Carbon, Total Inorganic	DUP	K1811602-005	Water	10.41 mg/L	10 ml	41.6 mg/L	4	4.0	8.0		<1	12/17/18 15:24	N	IV
KQ1818342-07	Carbon, Total Inorganic	DUP	K1811602-006	Water	10.97 mg/L	10 ml	43.9 mg/L	4	4.0	8.0		1	12/17/18 15:37	N	IV
KQ1818342-08	Carbon, Total Inorganic	DUP	K1811602-007	Water	11.47 mg/L	10 ml	45.9 mg/L	4	4.0	8.0		2	12/17/18 15:50	N	IV
KQ1818342-09	Carbon, Total Inorganic	MB		Water	-0.10 mg/L	10 ml	2.0 mg/L U	1	1.0	2.0			12/17/18 12:16	N	IV
KQ1818342-10	Carbon, Total Inorganic	LCS		Water	24.46 mg/L	10 ml	24.5 mg/L	1	1.0	2.0	98		12/17/18 12:26	N	IV
KQ1818342-11	Carbon, Total Inorganic	CCV		Water	24.86 mg/L	10 ml	24.9 mg/L	1			100		12/17/18 11:59	N	IV
KQ1818342-12	Carbon, Total Inorganic	CCV		Water	24.77 mg/L	10 ml	24.8 mg/L	1			99		12/17/18 14:11	N	IV
KQ1818342-13	Carbon, Total Inorganic	CCV		Water	24.66 mg/L	10 ml	24.7 mg/L	1			99		12/17/18 16:29	N	IV
KQ1818342-14	Carbon, Total Inorganic	CCB		Water	1.85000000000002E	10 ml	2.0 mg/L U	1	1.0	2.0			12/17/18 12:07	N	IV
KQ1818342-15	Carbon, Total Inorganic	CCB		Water	0.06 mg/L	10 ml	2.0 mg/L U	1	1.0	2.0			12/17/18 14:18	N	IV
KQ1818342-16	Carbon, Total Inorganic	CCB		Water	0.00 mg/L	10 ml	2.0 mg/L U	1	1.0	2.0			12/17/18 16:36	N	IV
KQ1818342-17	Carbon, Total Inorganic	LODV		Water	1.04 mg/L	10 ml	1.0 mg/L J	1	1.0	2.0			12/17/18 16:03	N	IV
KQ1818342-18	Carbon, Total Inorganic	LOQV		Water	2.26 mg/L	10 ml	2.3 mg/L	1	1.0	2.0			12/17/18 16:16	N	IV

12/18/18 CES 12/17/18

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

0.224	0.224	0.224	0.224	OBSERVATIONS	4	0.2242
0.118				STD Deviation	0.06846	BELOW
0.282				AVERAGE	0.21108	ABOVE
0.221	0.221	0.221	0.221	UCL	0.27954	0.2205
				LCL	0.14261	BELOW
						BELOW
						BELOW
				OBSERVATIONS	2	BELOW
				STD Deviation	0.06162	BELOW
				AVERAGE	0.22235	BELOW
				UCL	0.28397	BELOW
				LCL	0.16073	BELOW
						BELOW
						BELOW
				OBSERVATIONS	2	BELOW
				STD Deviation	0.06162	BELOW
				AVERAGE	0.22235	BELOW
				UCL	0.28397	BELOW
				LCL	0.16073	BELOW
						BELOW
						BELOW
				OBSERVATIONS	2	BELOW
				STD Deviation	0.00370	BELOW
				AVERAGE	0.22235	BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW

12/18/18

TIC: 619136

Schedule: 12172018B

Version: 8
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2018/12/17 14:38 - Monday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
D	Sample	RB	IC 030411 (IC 030411)	1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
D	Sample	RB	IC 030411 (IC 030411)	1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
D	Sample	RB	IC 030411 (IC 030411)	1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	IC 030411 (IC 030411)	1	True	Ready
A	Check Standard	[IC] CCV 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
D	Check Standard	[IC] CCB 030411 [0.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
1	Sample	MB1	IC 030411 (IC 030411)	1	True	Ready
2	Check Standard	[IC] LCS 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
3	Sample	K1811602-001.01	IC 030411 (IC 030411)	2	True	Ready
4	Sample	K1811602-002.01	IC 030411 (IC 030411)	2	True	Ready
5	Sample	K1811602-003.01	IC 030411 (IC 030411)	2	True	Ready
6	Sample	K1811602-004.01	IC 030411 (IC 030411)	2	True	Ready
7	Sample	K1811602-004.01 ms	IC 030411 (IC 030411)	1	True	Ready
8	Sample	RB	IC 030411 (IC 030411)	1	True	Ready
9	Sample	K1811602-005.01	IC 030411 (IC 030411)	2	True	Ready
10	Sample	K1811602-006.01	IC 030411 (IC 030411)	2	True	Ready
A	Check Standard	[IC] CCV 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
D	Check Standard	[IC] CCB 030411 [0.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
11	Sample	K1811602-007.01	IC 030411 (IC 030411)	2	True	Ready
12	Sample	RB	IC 030411 (IC 030411)	2	True	Ready
13	Sample	K1811602-004.02 2x	IC 030411 (IC 030411)	2	True	Ready
14	Sample	K1811602-004.02 ms 2x	IC 030411 (IC 030411)	1	True	Ready
15	Sample	RB	IC 030411 (IC 030411)	2	True	Ready
16	Sample	K1811602-005.02 4x	IC 030411 (IC 030411)	2	True	Ready
17	Sample	K1811602-006.02 4x	IC 030411 (IC 030411)	2	True	Ready
18	Sample	K1811602-007.02 4x	IC 030411 (IC 030411)	2	True	Ready
19	Sample	LOD	IC 030411 (IC 030411)	2	True	Ready
20	Sample	LOQ	IC 030411 (IC 030411)	2	True	Ready
A	Check Standard	[IC] CCV 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
D	Check Standard	[IC] CCB 030411 [0.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
					False	

12/18/18

Fusion Report - 12172018B
Monday, December 17, 2018 09:25 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2018/12/17 16:45 - Monday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	12172018B	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) (v3) Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v8)		
Comment:			

12/18/18

Report Results

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2018/12/17 09:25

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	10.83	13.56	2.73	49.53	05:23
2	TC Clean	5.17	7.97	2.80	50.00	04:03
3	TC Clean	1.96	4.70	2.73	49.98	03:47
4	TC Clean	2.07	4.80	2.73	50.05	03:56

Sample Type: Sample — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	IC	RB	0.1724 ppm	0.0000 ppm	0.0000%	2018/12/17 09:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.1724	0.6896	4.08	6.97	2.89	49.35	04:54

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.5414 (IC) (v1199)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Clean From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2018/12/17 09:55

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.34	15.00	2.66	49.56	05:24
2	TC Clean	4.85	7.60	2.75	50.04	04:06
3	TC Clean	1.58	4.55	2.97	50.07	03:48
4	TC Clean	1.53	4.27	2.74	50.06	03:50

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	IC	RB	0.1693 ppm	0.0000 ppm	0.0000%	2018/12/17 10:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.1693	0.6774	4.03	6.67	2.64	49.39	04:52

Dilution: 1:2

Blank Contribution: (TC) 1.5414 (IC) (v1199)

Method: IC 030411 (v3)

Calibration: IC 030411 (v13)

Sample Type: Clean From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2018/12/17 10:24

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.24	14.90	2.66	49.49	05:23
2	TC Clean	4.52	7.33	2.81	49.80	07:16
3	TC Clean	1.88	4.59	2.71	49.81	07:04
4	TC Clean	1.78	4.35	2.57	49.84	07:01

Sample Type: Sample From Schedule Version 1

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	IC	RB	0.1579 ppm	0.0000 ppm	0.0000%	2018/12/17 10:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	IC	0.1579	0.6314	3.86	6.61	2.74	49.46	04:55

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.5414 (IC) (v1199)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Blank (Creating v1200) From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2018/12/17 11:03

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.29	14.97	2.68	49.59	05:26
2	TC Clean	4.35	6.99	2.64	49.80	07:17
3	TC Clean	1.91	4.77	2.87	49.82	07:00
4	TC Clean	1.63	4.40	2.77	49.77	07:03
5	Reagent Blank	3.69	6.32	2.63	49.74	08:11
6	Acid Blank	1.00	3.65	2.65	49.67	05:34

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	IC	RB	0.1526 ppm	0.0000 ppm	0.0000%	2018/12/17 11:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.1526	0.6105	3.91	7.11	3.20	49.45	07:27

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Check Standard --> CCV 030411 From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	A	IC	25.0000	1:1	[IC] CCV 030411 [25.0 ppm]	0 / infinity (NA / NA)	25.0856 ppm (PASS)	0.0000 ppm	0%	2018/12/17 11:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
A	IC	25.0 ppm	1	25.0856	100.3425	371.43	374.72	3.28	49.52	05:01

Completion State	Success Action	Method	Calibration	STD Conc - Pos A
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	25 ppmC

Sample Type: Check Standard --> CCB 030411 From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	IC	DI Water [0]	DI	[IC] CCB 030411 [0.0 ppm]	0 / infinity (NA / NA)	0.2242 ppm (PASS)	0.0000 ppm	0%	2018/12/17 12:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	IC	0.0 ppm	1	0.2242	0.8969	5.63	8.90	3.27	49.52	07:08

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	0 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	IC	MB1	0.1175 ppm	0.0000 ppm	0.0000%	2018/12/17 12:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.1175	0.4699	3.39	6.63	3.24	49.48	07:24

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Check Standard --> LCS 030411 From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	IC	25.0000	1:1	[IC] LCS 030411 [25.0 ppm]	0 / infinity (NA / NA)	24.6810 ppm (PASS)	0.0000 ppm	0%	2018/12/17 12:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	IC	25.0 ppm	1	24.6810	98.7239	365.48	368.57	3.09	49.50	07:27

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	25 ppmC

Sample Type: Sample From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	IC	K1811602-001.01	48.4249 ppm	0.7339 ppm	1.5200%	2018/12/17 12:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	48.9439	195.7756	721.81	725.03	3.22	49.39	07:25
2	IC	47.9060	191.6239	706.54	712.17	5.63	49.37	05:03

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	IC	K1811602-002.01	37.0581 ppm	0.1502 ppm	0.4100%	2018/12/17 12:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	37.1643	148.6574	548.49	551.89	3.40	49.34	05:00
2	IC	36.9520	147.8078	545.36	550.11	4.74	49.32	05:06

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	IC	K1811602-003.01	29.6286 ppm	0.1253 ppm	0.4200%	2018/12/17 13:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	29.7172	118.8688	438.92	442.22	3.30	49.33	05:00
2	IC	29.5399	118.1598	436.31	440.59	4.28	49.34	05:01

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	IC	K1811602-004.01	27.3999 ppm	0.2132 ppm	0.7800%	2018/12/17 13:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	27.2492	108.9966	402.60	405.92	3.32	49.28	05:02
2	IC	27.5507	110.2028	407.04	411.29	4.26	49.29	04:57

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	IC	K1811602-004.01 ms	55.8240 ppm	0.0000 ppm	0.0000%	2018/12/17 13:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	55.8240	223.2961	823.04	826.37	3.32	49.27	05:00

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	8	IC	RB	0.4682 ppm	0.0000 ppm	0.0000%	2018/12/17 13:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.4682	1.8727	8.55	11.91	3.35	49.30	05:01

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	9	IC	K1811602-005.01	51.2951 ppm	0.4358 ppm	0.8500%	2018/12/17 13:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	51.6033	206.4131	760.94	764.18	3.24	49.26	05:00
2	IC	50.9870	203.9479	751.87	757.16	5.29	49.28	04:56

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	10	IC	K1811602-006.01	53.8443 ppm	0.4899 ppm	0.9100%	2018/12/17 13:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	54.1907	216.7629	799.01	802.42	3.41	49.28	05:03
2	IC	53.4980	213.9919	788.82	794.87	6.05	49.30	04:58

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Check Standard --> CCV 030411 From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◉	A	IC	25.0000	1:1	[IC] CCV 030411 [25.0 ppm]	0 / infinity (NA / NA)	24.9970 ppm (PASS)	0.0000 ppm	0%	2018/12/17 14:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
A	IC	25.0 ppm	1	24.9970	99.9880	370.13	373.45	3.32	49.16	04:57

Completion State	Success Action	Method	Calibration	STD Conc - Pos A
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	25 ppmC

Sample Type: Check Standard --> CCB 030411 From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	IC	DI Water [0]	DI	[IC] CCB 030411 [0.0 ppm]	0 / infinity (NA / NA)	0.2821 ppm (PASS)	0.0000 ppm	0%	2018/12/17 14:18

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	IC	0.0 ppm	1	0.2821	1.1283	6.48	9.70	3.21	49.16	04:36

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	IC	K1811602-007.01	49.9840 ppm	0.4048 ppm	0.8100%	2018/12/17 14:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	50.2703	201.0812	741.33	744.60	3.27	49.28	04:58
2	IC	49.6978	198.7911	732.90	738.03	5.13	49.24	04:59

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	IC	RB	0.4965 ppm	0.0602 ppm	12.1300%	2018/12/17 14:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.4539	1.8156	8.34	11.88	3.53	49.26	04:58
2	IC	0.5391	2.1563	9.60	12.36	2.76	49.15	04:57

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	IC	K1811602-004.02 2x	14.0078 ppm	0.1543 ppm	1.1000%	2018/12/17 14:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	13.8987	55.5949	206.17	209.47	3.31	49.27	05:00
2	IC	14.1169	56.4676	209.38	212.95	3.58	49.15	04:55

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	IC	K1811602-004.02 ms 2x	39.1125 ppm	0.0000 ppm	0.0000%	2018/12/17 15:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	39.1125	156.4501	577.16	580.32	3.16	49.13	04:55

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	IC	RB	0.3333 ppm	0.0057 ppm	1.7000%	2018/12/17 15:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.3373	1.3491	6.63	10.07	3.45	49.16	04:56
2	IC	0.3293	1.3170	6.51	9.46	2.95	49.27	04:59

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	IC	K1811602-005.02 4x	10.5829 ppm	0.0683 ppm	0.6500%	2018/12/17 15:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	10.5346	42.1383	156.67	159.78	3.11	49.17	05:00
2	IC	10.6312	42.5249	158.09	161.32	3.23	49.13	04:57

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	IC	K1811602-006.02 4x	11.1320 ppm	0.0786 ppm	0.7100%	2018/12/17 15:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	11.0764	44.3056	164.64	167.77	3.13	49.15	04:55
2	IC	11.1875	44.7501	166.28	169.36	3.09	49.19	04:59

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	IC	K1811602-007.02 4x	11.5740 ppm	0.1614 ppm	1.3900%	2018/12/17 15:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	11.4598	45.8394	170.28	173.33	3.05	49.12	05:01
2	IC	11.6881	46.7523	173.64	176.86	3.22	49.16	04:55

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	19	IC	LOD	1.3180 ppm	0.0737 ppm	5.5900%	2018/12/17 16:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	1.2659	5.0635	20.29	23.50	3.21	49.13	04:56
2	IC	1.3701	5.4802	21.82	24.48	2.66	49.14	04:55

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	20	IC	LOQ	2.5405 ppm	0.0759 ppm	2.9900%	2018/12/17 16:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	2.4868	9.9471	38.25	41.49	3.23	49.16	04:54
2	IC	2.5942	10.3766	39.84	42.50	2.67	49.13	04:54

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.6654 (IC) (v1200)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Check Standard --> CCV 030411 From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◉	A	IC	25.0000	1:1	[IC] CCV 030411 [25.0 ppm]	0 / infinity (NA / NA)	24.8783 ppm (PASS)	0.0000 ppm	0%	2018/12/17 16:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
A	IC	25.0 ppm	1	24.8783	99.5131	368.38	371.55	3.16	49.17	04:57

Completion State	Success Action	Method	Calibration	STD Conc - Pos A
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	25 ppmC

Sample Type: Check Standard --> CCB 030411 From Schedule Version 8

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

*	D	IC	DI Water [0]	DI	[IC] CCB 030411 [0.0 ppm]	0 / infinity (NA / NA)	0.2205 ppm (PASS)	0.0000 ppm	0%	2018/12/17 16:36

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	IC	0.0 ppm	1	0.2205	0.8820	5.58	8.91	3.33	49.20	04:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	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
v1199	1.2287	0.7510	0.0000	0.0000	0.0000	2018/12/13 19:48	Fusion1 (Fusion1)
v1200	1.2290	0.9990	0.0000	0.0000	0.0000	2018/12/17 11:49	Fusion1 (Fusion1)

Calibrations

Name: IC 030411 (IC)

Version: v13

Ver Creation: 2018/11/20 15:25

Comment:

Operator: Fusion1 (Fusion1)

Basic Analysis Type: IC

Calibration curve formula: IC: y = 14.714x + 2.332

r^2 value: IC: r^2 = 0.99968

Basic Analysis Type: IC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	4.3260	0.0000		2018/11/20 14:40
0.50 ppm	12.5220	0.5000		2018/11/20 14:47
1.00 ppm	20.0790	1.0000		2018/11/20 14:54
5.00 ppm	74.7040	5.0000		2018/11/20 15:02
10.0 ppm	146.8910	10.0000		2018/11/20 15:09
25.0 ppm	360.9070	25.0000		2018/11/20 15:16
50.0 ppm	743.1960	50.0000		2018/11/20 15:24

Methods

Name: IC 030411 (IC)

Version: v3 Operator: Gen Chem Lab (Fusion1)
Ver Creation: 2013/02/04 11:47
Comment:

Parameter	Value
SampleVolume	4.0 mL
Dilution	1:2
AcidVolume	1.0 ml
DetectorSweepFlow	500 ml/min
PreSpargeTime	0.00 mins
SystemFlow	200 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	300 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	50 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	7
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	7
SyringeSpeedICAspirate	5
NDIRPressureStabilize	0.50 min
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	2018/12/17 16:44

ALS Environmental

StarLIMS Run: 619136

Analysis: TIC

Method: SM 5310 C

CCV: 11-GEN-05-72A 25 ppm LCS: 11-GEN-05-73B 25 ppm

ICAL Date: 11/20/18

ICAL ID: 11-GEN-05-72D

Spike ID: 11-GEN-05-67A 0.25 ml of 1000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

21 % H3PO4: 11-GEN-05-73H

Equipment ID: K-TOC-03

PIPETTE ID: N11314F, Marge , 129001F

FILTER ID: NA

Analyzed By: CES	Date Analyzed: 12/17/18
Reviewed By: [signature]	Date Reviewed: 12/18/18

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: Kim Napier
APTIM
2410 Cherahala Blvd
Knoxville, TN 37932
United States

Phone:

Fax:

Identifier: 080PK **Date Rec:** 11/21/2018 **Report Date:** 11/27/2018

Client Project #: 501032 **Client Project Name:** Longhorn AAP - LHAAP-37

Purchase Order #: 204818

Analysis Requested: CENSUS, Miscellaneous

Reviewed By:

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: Longhorn AAP - LHAAP-37

MI Project Number: **080PK**
Date Received: 11/21/2018

Sample Information

Client Sample ID:		**35BWW23-181120**	**35BWW14-181120**	**35BWW26-181120**	**35BWW08-181120**	**35BWW04-181120**
Sample Date:		11/20/2018	11/20/2018	11/20/2018	11/20/2018	11/20/2018
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		JS	JS	JS	JS	JS
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**4.00E-01 (J)**	**1.00E-01 (J)**	**4.00E-01 (J)**	**2.00E-01 (J)**	<5.00E-01

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: Longhorn AAP - LHAAP-37

MI Project Number: **080PK**
Date Received: 11/21/2018

Sample Information

Client Sample ID:	**35BWW12-1811 20**
Sample Date:	11/20/2018
Units:	cells/mL
Analyst/Reviewer:	JS

Dechlorinating Bacteria

Dehalococcoides	*DHC*	**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 **11/21/2018**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	11/21/2018	11/27/2018	0 °C	105%	non-detect	non-detect

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

March 11, 2019

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

Work Order: **HS19020648**

Laboratory Results for: **LHAAP-37 501032**

Dear Susan,

ALS Environmental received 8 sample(s) on Feb 13, 2019 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-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Work Order: HS19020648

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19020648-01	35BWW23-190212	Groundwater		12-Feb-2019 08:25	13-Feb-2019 08:40	☐
HS19020648-02	35BWW14-190212	Groundwater		12-Feb-2019 09:25	13-Feb-2019 08:40	☐
HS19020648-03	35BWW08-190212	Groundwater		12-Feb-2019 10:25	13-Feb-2019 08:40	☐
HS19020648-04	35BWW26-190212	Groundwater		12-Feb-2019 11:25	13-Feb-2019 08:40	☐
HS19020648-05	35BWW01-190212	Groundwater		12-Feb-2019 12:20	13-Feb-2019 08:40	☐
HS19020648-06	35BWW01-190212-FD	Groundwater		12-Feb-2019 12:20	13-Feb-2019 08:40	☐
HS19020648-07	35BWW10-190212	Groundwater		12-Feb-2019 13:10	13-Feb-2019 08:40	☐
HS19020648-08	TRIP BLANK ALS-123118-34	Water		12-Feb-2019 00:00	13-Feb-2019 08:40	☐

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-37 501032
Work Order:

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.

GCMS Volatiles by Method SW8260

Batch ID: R333253

Sample ID: HS19020648-04MS

- MS and MSD are for an unrelated sample

Batch ID: R333479

Sample ID: CCV

- 4-Methyl-2-Pentanone exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: VLCSW-190225

- 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2,3-Trichloropropane and 1,2-Dichlorobenzene exceeded QC limits for LCS. CCV is OK. Samples are ND for these compounds.

Sample ID: HS19020720-03MS

- MS and MSD are for an unrelated sample

WetChemistry by Method SW9056

Batch ID: R333650

Sample ID: 35BWW23-190212 (HS19020648-01MSD)

- 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)

Batch ID: R333686

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW23-190212
Collection Date: 12-Feb-2019 08:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:27
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 19:27
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Feb-2019 19:27
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:27
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Feb-2019 19:27
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	20-Feb-2019 19:27
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Feb-2019 19:27
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW23-190212
Collection Date: 12-Feb-2019 08:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Feb-2019 19:27
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 19:27
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	20-Feb-2019 19:27
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:27
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:27
Surr: 1,2-Dichloroethane-d4	*87.7*			**0**	*81-118*	*%REC*	*1*	*20-Feb-2019 19:27*
Surr: 4-Bromofluorobenzene	*94.7*			**0**	*85-114*	*%REC*	*1*	*20-Feb-2019 19:27*
Surr: Dibromofluoromethane	*88.7*			**0**	*80-119*	*%REC*	*1*	*20-Feb-2019 19:27*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*20-Feb-2019 19:27*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**55.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	13-Feb-2019 19:07
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	13-Feb-2019 19:07
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	13-Feb-2019 19:07
Sulfate	**96.0**		**2.00**	**5.00**	**5.00**	**mg/L**	10	14-Feb-2019 14:46
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	26-Feb-2019 15:16

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW23-190212
Collection Date: 12-Feb-2019 08:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 501032 WorkOrder:HS19020648
Sample ID: 35BWW14-190212 Lab ID:HS19020648-02
Collection Date: 12-Feb-2019 09:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,1,2-Trichlor-1,2,2-trifluoroethane	**15**		**0.50**	**0.50**	**1.0**	**UG/L**	1	20-Feb-2019 20:39
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,1-Dichloroethane	**0.84**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	20-Feb-2019 20:39
1,1-Dichloroethene	**5.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	20-Feb-2019 20:39
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:39
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 20:39
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Feb-2019 20:39
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:39
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Feb-2019 20:39
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	20-Feb-2019 20:39
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Feb-2019 20:39
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW14-190212
Collection Date: 12-Feb-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
cis-1,2-Dichloroethene	**2.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	20-Feb-2019 20:39
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Feb-2019 20:39
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 20:39
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	20-Feb-2019 20:39
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:39
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Tetrachloroethene	**37**		**0.30**	**0.50**	**1.0**	**UG/L**	1	20-Feb-2019 20:39
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Trichloroethene	**22**		**0.20**	**0.50**	**1.0**	**UG/L**	1	20-Feb-2019 20:39
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:39
Surr: 1,2-Dichloroethane-d4	*85.8*			**0**	*81-118*	*%REC*	*1*	*20-Feb-2019 20:39*
Surr: 4-Bromofluorobenzene	*97.6*			**0**	*85-114*	*%REC*	*1*	*20-Feb-2019 20:39*
Surr: Dibromofluoromethane	*88.3*			**0**	*80-119*	*%REC*	*1*	*20-Feb-2019 20:39*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*20-Feb-2019 20:39*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**12.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	13-Feb-2019 20:34
Nitrogen, Nitrate (As N)	**0.483**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	13-Feb-2019 20:34
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	13-Feb-2019 20:34
Sulfate	**57.1**		**0.200**	**0.500**	**0.500**	**mg/L**	1	13-Feb-2019 20:34
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	26-Feb-2019 15:16

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW14-190212
Collection Date: 12-Feb-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 501032 WorkOrder:HS19020648
Sample ID: 35BWW08-190212 Lab ID:HS19020648-03
Collection Date: 12-Feb-2019 10:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:51
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 19:51
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Feb-2019 19:51
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:51
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Feb-2019 19:51
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	20-Feb-2019 19:51
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Feb-2019 19:51
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW08-190212
Collection Date: 12-Feb-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Feb-2019 19:51
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 19:51
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	20-Feb-2019 19:51
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 19:51
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 19:51
Surr: 1,2-Dichloroethane-d4	*86.8*			**0**	*81-118*	*%REC*	*1*	*20-Feb-2019 19:51*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*85-114*	*%REC*	*1*	*20-Feb-2019 19:51*
Surr: Dibromofluoromethane	*89.6*			**0**	*80-119*	*%REC*	*1*	*20-Feb-2019 19:51*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*20-Feb-2019 19:51*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**7.22**		**0.200**	**0.500**	**0.500**	**mg/L**	1	13-Feb-2019 20:49
Nitrogen, Nitrate (As N)	**0.206**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	13-Feb-2019 20:49
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	13-Feb-2019 20:49
Sulfate	**27.4**		**0.200**	**0.500**	**0.500**	**mg/L**	1	13-Feb-2019 20:49
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	26-Feb-2019 15:16

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW08-190212
Collection Date: 12-Feb-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW26-190212
Collection Date: 12-Feb-2019 11:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:15
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 20:15
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Feb-2019 20:15
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:15
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Feb-2019 20:15
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	20-Feb-2019 20:15
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Feb-2019 20:15
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW26-190212
Collection Date: 12-Feb-2019 11:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Feb-2019 20:15
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 20:15
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	20-Feb-2019 20:15
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 20:15
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 20:15
Surr: 1,2-Dichloroethane-d4	*86.7*			**0**	*81-118*	*%REC*	*1*	*20-Feb-2019 20:15*
Surr: 4-Bromofluorobenzene	*96.7*			**0**	*85-114*	*%REC*	*1*	*20-Feb-2019 20:15*
Surr: Dibromofluoromethane	*88.7*			**0**	*80-119*	*%REC*	*1*	*20-Feb-2019 20:15*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*20-Feb-2019 20:15*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**33.0**		**0.200**	**0.500**	**0.500**	**mg/L**	1	13-Feb-2019 21:03
Nitrogen, Nitrate (As N)	**0.146**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	13-Feb-2019 21:03
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	13-Feb-2019 21:03
Sulfate	**30.3**		**0.200**	**0.500**	**0.500**	**mg/L**	1	13-Feb-2019 21:03
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	26-Feb-2019 15:16

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW26-190212
Collection Date: 12-Feb-2019 11:25

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW01-190212
Collection Date: 12-Feb-2019 12:20

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:17
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 18:17
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 18:17
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:17
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 18:17
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 18:17
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 18:17
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW01-190212
Collection Date: 12-Feb-2019 12:20

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 18:17
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 18:17
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 18:17
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:17
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:17
Surr: 1,2-Dichloroethane-d4	*99.4*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 18:17*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 18:17*
Surr: Dibromofluoromethane	*96.6*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 18:17*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 18:17*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW01-190212-FD
Collection Date: 12-Feb-2019 12:20

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:41
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 18:41
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 18:41
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:41
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 18:41
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 18:41
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 18:41
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW01-190212-FD
Collection Date: 12-Feb-2019 12:20

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 18:41
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 18:41
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 18:41
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 18:41
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 18:41
Surr: 1,2-Dichloroethane-d4	*97.3*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 18:41*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 18:41*
Surr: Dibromofluoromethane	*95.2*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 18:41*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 18:41*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 501032 WorkOrder:HS19020648
Sample ID: 35BWW10-190212 Lab ID:HS19020648-07
Collection Date: 12-Feb-2019 13:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,1,2-Trichlor-1,2,2-trifluoroethane	**11**		**0.50**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 19:05
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 19:05
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 19:05
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 19:05
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 19:05
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 19:05
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 19:05
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 19:05
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW10-190212
Collection Date: 12-Feb-2019 13:10

ANALYTICAL REPORT
WorkOrder:HS19020648
Lab ID:HS19020648-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 19:05
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 19:05
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 19:05
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 19:05
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Tetrachloroethene	**37**		**0.30**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 19:05
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Trichloroethene	**50**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 19:05
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 19:05
Surr: 1,2-Dichloroethane-d4	*96.7*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 19:05*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 19:05*
Surr: Dibromofluoromethane	*97.1*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 19:05*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 19:05*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 501032 WorkOrder:HS19020648
Sample ID: TRIP BLANK ALS-123118-34 Lab ID:HS19020648-08
Collection Date: 12-Feb-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 13:02
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 13:02
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	20-Feb-2019 13:02
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 13:02
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	20-Feb-2019 13:02
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	20-Feb-2019 13:02
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	20-Feb-2019 13:02
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 501032 WorkOrder:HS19020648
Sample ID: TRIP BLANK ALS-123118-34 Lab ID:HS19020648-08
Collection Date: 12-Feb-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	20-Feb-2019 13:02
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	20-Feb-2019 13:02
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	20-Feb-2019 13:02
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	20-Feb-2019 13:02
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	20-Feb-2019 13:02
Surr: 1,2-Dichloroethane-d4	*89.0*			**0**	*81-118*	*%REC*	*1*	*20-Feb-2019 13:02*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*85-114*	*%REC*	*1*	*20-Feb-2019 13:02*
Surr: Dibromofluoromethane	*91.8*			**0**	*80-119*	*%REC*	*1*	*20-Feb-2019 13:02*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*20-Feb-2019 13:02*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R333253	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS19020648-08	TRIP BLANK ALS-123118-34	12 Feb 2019 00:00			20 Feb 2019 13:02	1
Batch ID R333253	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS19020648-01	35BWW23-190212	12 Feb 2019 08:25			20 Feb 2019 19:27	1
HS19020648-02	35BWW14-190212	12 Feb 2019 09:25			20 Feb 2019 20:39	1
HS19020648-03	35BWW08-190212	12 Feb 2019 10:25			20 Feb 2019 19:51	1
HS19020648-04	35BWW26-190212	12 Feb 2019 11:25			20 Feb 2019 20:15	1
Batch ID R333479	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS19020648-05	35BWW01-190212	12 Feb 2019 12:20			25 Feb 2019 18:17	1
HS19020648-06	35BWW01-190212-FD	12 Feb 2019 12:20			25 Feb 2019 18:41	1
HS19020648-07	35BWW10-190212	12 Feb 2019 13:10			25 Feb 2019 19:05	1
Batch ID R333532	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Groundwater		
HS19020648-01	35BWW23-190212	12 Feb 2019 08:25			26 Feb 2019 15:16	1
HS19020648-02	35BWW14-190212	12 Feb 2019 09:25			26 Feb 2019 15:16	1
HS19020648-03	35BWW08-190212	12 Feb 2019 10:25			26 Feb 2019 15:16	1
HS19020648-04	35BWW26-190212	12 Feb 2019 11:25			26 Feb 2019 15:16	1
Batch ID R333650	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS19020648-01	35BWW23-190212	12 Feb 2019 08:25			13 Feb 2019 19:07	1
HS19020648-02	35BWW14-190212	12 Feb 2019 09:25			13 Feb 2019 20:34	1
HS19020648-03	35BWW08-190212	12 Feb 2019 10:25			13 Feb 2019 20:49	1
HS19020648-04	35BWW26-190212	12 Feb 2019 11:25			13 Feb 2019 21:03	1
Batch ID R333686	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS19020648-01	35BWW23-190212	12 Feb 2019 08:25			14 Feb 2019 14:46	10
Batch ID R334336	**Test Name :** SUBCONTRACTED ANALYSIS			**Matrix:** Groundwater		
HS19020648-01	35BWW23-190212	12 Feb 2019 08:25			11 Mar 2019 17:40	1
HS19020648-01	35BWW23-190212	12 Feb 2019 08:25			11 Mar 2019 17:40	1
HS19020648-02	35BWW14-190212	12 Feb 2019 09:25			11 Mar 2019 17:40	1
HS19020648-02	35BWW14-190212	12 Feb 2019 09:25			11 Mar 2019 17:40	1
HS19020648-03	35BWW08-190212	12 Feb 2019 10:25			11 Mar 2019 17:40	1
HS19020648-03	35BWW08-190212	12 Feb 2019 10:25			11 Mar 2019 17:40	1
HS19020648-04	35BWW26-190212	12 Feb 2019 11:25			11 Mar 2019 17:40	1
HS19020648-04	35BWW26-190212	12 Feb 2019 11:25			11 Mar 2019 17:40	1

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190220** Units: **UG/L** Analysis Date: **20-Feb-2019 11:50**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958247** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190220** Units: **UG/L** Analysis Date: **20-Feb-2019 11:50**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958247** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.06*	*1.0*	*50*	*0*	*90.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.05*	*1.0*	*50*	*0*	*98.1*	*85 - 114*				
Surr: Dibromofluoromethane	*45.32*	*1.0*	*50*	*0*	*90.6*	*80 - 119*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190220** Units: **UG/L** Analysis Date: **20-Feb-2019 11:50**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958247** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.24*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190220** Units: **UG/L** Analysis Date: **20-Feb-2019 11:02**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958246** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.45	1.0	20	0	102	78 - 124				
1,1,1-Trichloroethane	15.8	1.0	20	0	79.0	74 - 131				
1,1,2,2-Tetrachloroethane	22.75	1.0	20	0	114	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	16.65	1.0	20	0	83.2	70 - 136				
1,1,2-Trichloroethane	21.92	1.0	20	0	110	80 - 119				
1,1-Dichloroethane	17.8	1.0	20	0	89.0	77 - 125				
1,1-Dichloroethene	16.9	1.0	20	0	84.5	71 - 131				
1,1-Dichloropropene	16.82	1.0	20	0	84.1	78 - 125				
1,2,3-Trichlorobenzene	20.83	1.0	20	0	104	69 - 129				
1,2,3-Trichloropropane	19.87	1.0	20	0	99.4	73 - 122				
1,2,4-Trichlorobenzene	20.65	1.0	20	0	103	69 - 130				
1,2,4-Trimethylbenzene	19.97	1.0	20	0	99.9	76 - 124				
1,2-Dibromo-3-chloropropane	20.41	1.0	20	0	102	62 - 128				
1,2-Dibromoethane	20.49	1.0	20	0	102	77 - 121				
1,2-Dichlorobenzene	20.69	1.0	20	0	103	80 - 119				
1,2-Dichloroethane	19.03	1.0	20	0	95.1	73 - 128				
1,2-Dichloropropane	19.33	1.0	20	0	96.7	78 - 122				
1,3,5-Trimethylbenzene	19.21	1.0	20	0	96.0	75 - 124				
1,3-Dichlorobenzene	20.4	1.0	20	0	102	80 - 119				
1,3-Dichloropropane	19.9	1.0	20	0	99.5	80 - 119				
1,4-Dichlorobenzene	21.15	1.0	20	0	106	79 - 118				
2,2-Dichloropropane	16.38	1.0	20	0	81.9	60 - 139				
2-Butanone	36.47	2.0	40	0	91.2	56 - 143				
2-Chlorotoluene	19.47	1.0	20	0	97.4	79 - 122				
2-Hexanone	39.89	2.0	40	0	99.7	57 - 139				
4-Chlorotoluene	20.26	1.0	20	0	101	78 - 122				
4-Isopropyltoluene	19.04	1.0	20	0	95.2	77 - 127				
4-Methyl-2-pentanone	39.5	2.0	40	0	98.8	67 - 130				
Acetone	40.32	2.0	40	0	101	39 - 160				
Benzene	18.73	1.0	20	0	93.6	79 - 120				
Bromobenzene	20.92	1.0	20	0	105	80 - 120				
Bromochloromethane	17.64	1.0	20	0	88.2	78 - 123				
Bromodichloromethane	19.66	1.0	20	0	98.3	79 - 125				
Bromoform	21.18	1.0	20	0	106	66 - 130				

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Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190220** Units: **UG/L** Analysis Date: **20-Feb-2019 11:02**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958246** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	23.25	1.0	20	0	116	53 - 141				
Carbon disulfide	32.83	2.0	40	0	82.1	64 - 133				
Carbon tetrachloride	15.55	1.0	20	0	77.7	72 - 136				
Chlorobenzene	19.93	1.0	20	0	99.6	82 - 118				
Chloroethane	17.86	1.0	20	0	89.3	60 - 138				
Chloroform	19.45	1.0	20	0	97.3	79 - 124				
Chloromethane	18.64	1.0	20	0	93.2	50 - 139				
cis-1,2-Dichloroethene	18.06	1.0	20	0	90.3	78 - 123				
cis-1,3-Dichloropropene	19.37	1.0	20	0	96.8	75 - 124				
Dibromochloromethane	20.31	1.0	20	0	102	74 - 126				
Dibromomethane	19.22	1.0	20	0	96.1	79 - 123				
Dichlorodifluoromethane	15.73	1.0	20	0	78.6	32 - 152				
Ethylbenzene	19.72	1.0	20	0	98.6	79 - 121				
Hexachlorobutadiene	18.75	1.0	20	0	93.7	66 - 134				
Isopropylbenzene	18.62	1.0	20	0	93.1	72 - 131				
m,p-Xylene	38.95	2.0	40	0	97.4	80 - 121				
Methylene chloride	19.56	2.0	20	0	97.8	74 - 124				
Naphthalene	20.33	1.0	20	0	102	61 - 128				
n-Butylbenzene	19.25	1.0	20	0	96.2	75 - 128				
n-Propylbenzene	18.58	1.0	20	0	92.9	76 - 126				
o-Xylene	20.07	1.0	20	0	100	78 - 122				
sec-Butylbenzene	19.72	1.0	20	0	98.6	77 - 126				
Styrene	20.51	1.0	20	0	103	78 - 123				
tert-Butylbenzene	20.29	1.0	20	0	101	78 - 124				
Tetrachloroethene	18.2	1.0	20	0	91.0	74 - 129				
Toluene	20.09	1.0	20	0	100	80 - 121				
trans-1,2-Dichloroethene	17.31	1.0	20	0	86.5	75 - 124				
trans-1,3-Dichloropropene	19.07	1.0	20	0	95.3	73 - 127				
Trichloroethene	18.04	1.0	20	0	90.2	79 - 123				
Trichlorofluoromethane	15.28	1.0	20	0	76.4	65 - 141				
Vinyl chloride	16.73	1.0	20	0	83.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.05*	*1.0*	*50*	*0*	*88.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.27*	*1.0*	*50*	*0*	*98.5*	*85 - 114*				
Surr: Dibromofluoromethane	*45.68*	*1.0*	*50*	*0*	*91.4*	*80 - 119*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190220** Units: **UG/L** Analysis Date: **20-Feb-2019 11:02**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958246** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.69*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19020473-04MS** Units: **UG/L** Analysis Date: **20-Feb-2019 17:26**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958259** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	105.8	5.0	100	0	106	78 - 124				
1,1,1-Trichloroethane	97.25	5.0	100	0	97.3	74 - 131				
1,1,2,2-Tetrachloroethane	112.1	5.0	100	0	112	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	125.7	5.0	100	0	126	70 - 136				
1,1,2-Trichloroethane	114.6	5.0	100	0	115	80 - 119				
1,1-Dichloroethane	95.22	5.0	100	0	95.2	77 - 125				
1,1-Dichloroethene	107.4	5.0	100	0	107	71 - 131				
1,1-Dichloropropene	107.3	5.0	100	0	107	78 - 125				
1,2,3-Trichlorobenzene	116.7	5.0	100	0	117	69 - 129				
1,2,3-Trichloropropane	104.6	5.0	100	0	105	73 - 122				
1,2,4-Trichlorobenzene	117.8	5.0	100	0	118	69 - 130				
1,2,4-Trimethylbenzene	322.3	5.0	100	180.9	141	76 - 124				S
1,2-Dibromo-3-chloropropane	97.34	5.0	100	0	97.3	62 - 128				
1,2-Dibromoethane	104.8	5.0	100	0	105	77 - 121				
1,2-Dichlorobenzene	109.2	5.0	100	0	109	80 - 119				
1,2-Dichloroethane	99.16	5.0	100	0	99.2	73 - 128				
1,2-Dichloropropane	101.7	5.0	100	0	102	78 - 122				
1,3,5-Trimethylbenzene	161.9	5.0	100	40.81	121	75 - 124				
1,3-Dichlorobenzene	110.5	5.0	100	0	110	80 - 119				
1,3-Dichloropropane	102.5	5.0	100	0	103	80 - 119				
1,4-Dichlorobenzene	109.6	5.0	100	0	110	79 - 118				
2,2-Dichloropropane	99.21	5.0	100	0	99.2	60 - 139				
2-Butanone	180.4	10	200	0	90.2	56 - 143				
2-Chlorotoluene	117.2	5.0	100	0	117	79 - 122				
2-Hexanone	199.6	10	200	0	99.8	57 - 139				
4-Chlorotoluene	115.2	5.0	100	0	115	78 - 122				
4-Isopropyltoluene	122.6	5.0	100	0	123	77 - 127				
4-Methyl-2-pentanone	203.3	10	200	0	102	67 - 130				
Acetone	201.1	10	200	0	101	39 - 160				
Benzene	208.6	5.0	100	99.07	110	79 - 120				
Bromobenzene	111.2	5.0	100	0	111	80 - 120				
Bromochloromethane	92.78	5.0	100	0	92.8	78 - 123				
Bromodichloromethane	102.8	5.0	100	0	103	79 - 125				
Bromoform	105.9	5.0	100	0	106	66 - 130				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19020473-04MS** Units: **UG/L** Analysis Date: **20-Feb-2019 17:26**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958259** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	160	5.0	100	0	160	53 - 141				S
Carbon disulfide	189.9	10	200	0	94.9	64 - 133				
Carbon tetrachloride	105.5	5.0	100	0	106	72 - 136				
Chlorobenzene	105.5	5.0	100	0	105	82 - 118				
Chloroethane	107.1	5.0	100	0	107	60 - 138				
Chloroform	104.8	5.0	100	0	105	79 - 124				
Chloromethane	118	5.0	100	0	118	50 - 139				
cis-1,2-Dichloroethene	97.35	5.0	100	0	97.3	78 - 123				
cis-1,3-Dichloropropene	96.58	5.0	100	0	96.6	75 - 124				
Dibromochloromethane	102.8	5.0	100	0	103	74 - 126				
Dibromomethane	102.8	5.0	100	0	103	79 - 123				
Dichlorodifluoromethane	111.9	5.0	100	0	112	32 - 152				
Ethylbenzene	320.4	5.0	100	194.1	126	79 - 121				S
Hexachlorobutadiene	126.4	5.0	100	0	126	66 - 134				
Isopropylbenzene	175.6	5.0	100	53.73	122	72 - 131				
m,p-Xylene	327.6	10	200	94.67	116	80 - 121				
Methylene chloride	106.2	10	100	0	106	74 - 124				
Naphthalene	342.6	5.0	100	200.6	142	61 - 128				S
n-Butylbenzene	135.8	5.0	100	9.406	126	75 - 128				
n-Propylbenzene	236.8	5.0	100	108.6	128	76 - 126				S
o-Xylene	212.7	5.0	100	94.98	118	78 - 122				
sec-Butylbenzene	132.6	5.0	100	12.39	120	77 - 126				
Styrene	118.4	5.0	100	0	118	78 - 123				
tert-Butylbenzene	120.7	5.0	100	0	121	78 - 124				
Tetrachloroethene	118.5	5.0	100	0	119	74 - 129				
Toluene	231.3	5.0	100	112.8	118	80 - 121				
trans-1,2-Dichloroethene	95.85	5.0	100	0	95.8	75 - 124				
trans-1,3-Dichloropropene	97.06	5.0	100	0	97.1	73 - 127				
Trichloroethene	104.8	5.0	100	0	105	79 - 123				
Trichlorofluoromethane	109.7	5.0	100	0	110	65 - 141				
Vinyl chloride	101.7	5.0	100	0	102	58 - 137				
Surr: 1,2-Dichloroethane-d4	*220.8*	*5.0*	*250*	*0*	*88.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*244.3*	*5.0*	*250*	*0*	*97.7*	*85 - 114*				
Surr: Dibromofluoromethane	*227.9*	*5.0*	*250*	*0*	*91.2*	*80 - 119*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19020473-04MS** Units: **UG/L** Analysis Date: **20-Feb-2019 17:26**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958259** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*251.1*	*5.0*	*250*	*0*	*100*	*89 - 112*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19020473-04MSD** Units: **UG/L** Analysis Date: **20-Feb-2019 17:51**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958260** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	95.63	5.0	100	0	95.6	78 - 124	105.8	10.1	20	
1,1,1-Trichloroethane	87.53	5.0	100	0	87.5	74 - 131	97.25	10.5	20	
1,1,2,2-Tetrachloroethane	98.61	5.0	100	0	98.6	71 - 121	112.1	12.8	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	114.7	5.0	100	0	115	70 - 136	125.7	9.17	20	
1,1,2-Trichloroethane	100.3	5.0	100	0	100	80 - 119	114.6	13.4	20	
1,1-Dichloroethane	86.68	5.0	100	0	86.7	77 - 125	95.22	9.39	20	
1,1-Dichloroethene	98.32	5.0	100	0	98.3	71 - 131	107.4	8.79	20	
1,1-Dichloropropene	96.07	5.0	100	0	96.1	78 - 125	107.3	11.1	20	
1,2,3-Trichlorobenzene	102.8	5.0	100	0	103	69 - 129	116.7	12.6	20	
1,2,3-Trichloropropane	93.47	5.0	100	0	93.5	73 - 122	104.6	11.2	20	
1,2,4-Trichlorobenzene	105.1	5.0	100	0	105	69 - 130	117.8	11.4	20	
1,2,4-Trimethylbenzene	281	5.0	100	180.9	100	76 - 124	322.3	13.7	20	
1,2-Dibromo-3-chloropropane	90.37	5.0	100	0	90.4	62 - 128	97.34	7.42	20	
1,2-Dibromoethane	94.76	5.0	100	0	94.8	77 - 121	104.8	10	20	
1,2-Dichlorobenzene	97.11	5.0	100	0	97.1	80 - 119	109.2	11.7	20	
1,2-Dichloroethane	94.07	5.0	100	0	94.1	73 - 128	99.16	5.27	20	
1,2-Dichloropropane	92.42	5.0	100	0	92.4	78 - 122	101.7	9.57	20	
1,3,5-Trimethylbenzene	142.5	5.0	100	40.81	102	75 - 124	161.9	12.7	20	
1,3-Dichlorobenzene	97.04	5.0	100	0	97.0	80 - 119	110.5	13	20	
1,3-Dichloropropane	92.5	5.0	100	0	92.5	80 - 119	102.5	10.3	20	
1,4-Dichlorobenzene	97.02	5.0	100	0	97.0	79 - 118	109.6	12.2	20	
2,2-Dichloropropane	89.05	5.0	100	0	89.1	60 - 139	99.21	10.8	20	
2-Butanone	170.7	10	200	0	85.4	56 - 143	180.4	5.51	20	
2-Chlorotoluene	102.7	5.0	100	0	103	79 - 122	117.2	13.3	20	
2-Hexanone	183.1	10	200	0	91.6	57 - 139	199.6	8.62	20	
4-Chlorotoluene	102	5.0	100	0	102	78 - 122	115.2	12.2	20	
4-Isopropyltoluene	108.4	5.0	100	0	108	77 - 127	122.6	12.3	20	
4-Methyl-2-pentanone	185.9	10	200	0	92.9	67 - 130	203.3	8.94	20	
Acetone	183.5	10	200	0	91.7	39 - 160	201.1	9.16	20	
Benzene	188.7	5.0	100	99.07	89.7	79 - 120	208.6	10	20	
Bromobenzene	99.47	5.0	100	0	99.5	80 - 120	111.2	11.2	20	
Bromochloromethane	88.3	5.0	100	0	88.3	78 - 123	92.78	4.94	20	
Bromodichloromethane	96.36	5.0	100	0	96.4	79 - 125	102.8	6.48	20	
Bromoform	96.96	5.0	100	0	97.0	66 - 130	105.9	8.8	20	

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19020473-04MSD** Units: **UG/L** Analysis Date: **20-Feb-2019 17:51**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958260** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	143.7	5.0	100	0	144	53 - 141	160	10.7	20	S
Carbon disulfide	173	10	200	0	86.5	64 - 133	189.9	9.3	20	
Carbon tetrachloride	95.82	5.0	100	0	95.8	72 - 136	105.5	9.65	20	
Chlorobenzene	94.34	5.0	100	0	94.3	82 - 118	105.5	11.2	20	
Chloroethane	104.8	5.0	100	0	105	60 - 138	107.1	2.11	20	
Chloroform	96.91	5.0	100	0	96.9	79 - 124	104.8	7.86	20	
Chloromethane	102.1	5.0	100	0	102	50 - 139	118	14.5	20	
cis-1,2-Dichloroethene	87.78	5.0	100	0	87.8	78 - 123	97.35	10.3	20	
cis-1,3-Dichloropropene	90.58	5.0	100	0	90.6	75 - 124	96.58	6.41	20	
Dibromochloromethane	94.44	5.0	100	0	94.4	74 - 126	102.8	8.44	20	
Dibromomethane	94.05	5.0	100	0	94.0	79 - 123	102.8	8.87	20	
Dichlorodifluoromethane	104.7	5.0	100	0	105	32 - 152	111.9	6.62	20	
Ethylbenzene	287.3	5.0	100	194.1	93.2	79 - 121	320.4	10.9	20	
Hexachlorobutadiene	111.9	5.0	100	0	112	66 - 134	126.4	12.1	20	
Isopropylbenzene	157.3	5.0	100	53.73	104	72 - 131	175.6	11	20	
m,p-Xylene	291.5	10	200	94.67	98.4	80 - 121	327.6	11.6	20	
Methylene chloride	98.06	10	100	0	98.1	74 - 124	106.2	8	20	
Naphthalene	297.6	5.0	100	200.6	97.1	61 - 128	342.6	14.1	20	
n-Butylbenzene	118.1	5.0	100	9.406	109	75 - 128	135.8	13.9	20	
n-Propylbenzene	206.4	5.0	100	108.6	97.8	76 - 126	236.8	13.7	20	
o-Xylene	189	5.0	100	94.98	94.0	78 - 122	212.7	11.8	20	
sec-Butylbenzene	114.7	5.0	100	12.39	102	77 - 126	132.6	14.4	20	
Styrene	106.5	5.0	100	0	107	78 - 123	118.4	10.6	20	
tert-Butylbenzene	107.3	5.0	100	0	107	78 - 124	120.7	11.8	20	
Tetrachloroethene	106	5.0	100	0	106	74 - 129	118.5	11.2	20	
Toluene	205.3	5.0	100	112.8	92.4	80 - 121	231.3	11.9	20	
trans-1,2-Dichloroethene	86.11	5.0	100	0	86.1	75 - 124	95.85	10.7	20	
trans-1,3-Dichloropropene	91.42	5.0	100	0	91.4	73 - 127	97.06	5.99	20	
Trichloroethene	96.51	5.0	100	0	96.5	79 - 123	104.8	8.23	20	
Trichlorofluoromethane	100.2	5.0	100	0	100	65 - 141	109.7	9.08	20	
Vinyl chloride	90.72	5.0	100	0	90.7	58 - 137	101.7	11.4	20	
Surr: 1,2-Dichloroethane-d4	*214.2*	*5.0*	*250*	*0*	*85.7*	*81 - 118*	*220.8*	*3.05*	*20*	
Surr: 4-Bromofluorobenzene	*245.3*	*5.0*	*250*	*0*	*98.1*	*85 - 114*	*244.3*	*0.381*	*20*	
Surr: Dibromofluoromethane	*226.4*	*5.0*	*250*	*0*	*90.6*	*80 - 119*	*227.9*	*0.631*	*20*	

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333253 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19020473-04MSD** Units: **UG/L** Analysis Date: **20-Feb-2019 17:51**
Client ID: Run ID: **VOA6_333253** SeqNo: **4958260** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*245*	*5.0*	*250*	*0*	*98.0*	*89 - 112*	*251.1*	*2.45*	*20*	

The following samples were analyzed in this batch: HS19020648-01 HS19020648-02 HS19020648-03 HS19020648-04 HS19020648-08

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 14:41**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 14:41**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*48.73*	*1.0*	*50*	*0*	*97.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50*	*1.0*	*50*	*0*	*100.0*	*85 - 114*				
Surr: Dibromofluoromethane	*48.21*	*1.0*	*50*	*0*	*96.4*	*80 - 119*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 14:41**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.95*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 13:53**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.26	1.0	20	0	111	78 - 124				
1,1,1-Trichloroethane	17.86	1.0	20	0	89.3	74 - 131				
1,1,2,2-Tetrachloroethane	26.44	1.0	20	0	132	71 - 121				S
1,1,2-Trichlor-1,2,2-trifluoroethane	19.29	1.0	20	0	96.5	70 - 136				
1,1,2-Trichloroethane	23.81	1.0	20	0	119	80 - 119				S
1,1-Dichloroethane	20.45	1.0	20	0	102	77 - 125				
1,1-Dichloroethene	17.56	1.0	20	0	87.8	71 - 131				
1,1-Dichloropropene	18.08	1.0	20	0	90.4	78 - 125				
1,2,3-Trichlorobenzene	23.78	1.0	20	0	119	69 - 129				
1,2,3-Trichloropropane	25.37	1.0	20	0	127	73 - 122				S
1,2,4-Trichlorobenzene	23.26	1.0	20	0	116	69 - 130				
1,2,4-Trimethylbenzene	23.2	1.0	20	0	116	76 - 124				
1,2-Dibromo-3-chloropropane	25.44	1.0	20	0	127	62 - 128				
1,2-Dibromoethane	23.21	1.0	20	0	116	77 - 121				
1,2-Dichlorobenzene	23.94	1.0	20	0	120	80 - 119				S
1,2-Dichloroethane	21.59	1.0	20	0	108	73 - 128				
1,2-Dichloropropane	22.96	1.0	20	0	115	78 - 122				
1,3,5-Trimethylbenzene	22.29	1.0	20	0	111	75 - 124				
1,3-Dichlorobenzene	23.56	1.0	20	0	118	80 - 119				
1,3-Dichloropropane	23.36	1.0	20	0	117	80 - 119				
1,4-Dichlorobenzene	23.32	1.0	20	0	117	79 - 118				
2,2-Dichloropropane	16.9	1.0	20	0	84.5	60 - 139				
2-Butanone	46.09	2.0	40	0	115	56 - 143				
2-Chlorotoluene	23.24	1.0	20	0	116	79 - 122				
2-Hexanone	50.61	2.0	40	0	127	57 - 139				
4-Chlorotoluene	23.41	1.0	20	0	117	78 - 122				
4-Isopropyltoluene	21.26	1.0	20	0	106	77 - 127				
4-Methyl-2-pentanone	51.2	2.0	40	0	128	67 - 130				
Acetone	47.2	2.0	40	0	118	39 - 160				
Benzene	21.21	1.0	20	0	106	79 - 120				
Bromobenzene	23.69	1.0	20	0	118	80 - 120				
Bromochloromethane	20.08	1.0	20	0	100	78 - 123				
Bromodichloromethane	22.47	1.0	20	0	112	79 - 125				
Bromoform	23.85	1.0	20	0	119	66 - 130				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 13:53**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	24.03	1.0	20	0	120	53 - 141				
Carbon disulfide	37.62	2.0	40	0	94.1	64 - 133				
Carbon tetrachloride	16.31	1.0	20	0	81.6	72 - 136				
Chlorobenzene	21.76	1.0	20	0	109	82 - 118				
Chloroethane	20.09	1.0	20	0	100	60 - 138				
Chloroform	20.6	1.0	20	0	103	79 - 124				
Chloromethane	22.77	1.0	20	0	114	50 - 139				
cis-1,2-Dichloroethene	20.5	1.0	20	0	102	78 - 123				
cis-1,3-Dichloropropene	22.03	1.0	20	0	110	75 - 124				
Dibromochloromethane	22.84	1.0	20	0	114	74 - 126				
Dibromomethane	21.97	1.0	20	0	110	79 - 123				
Dichlorodifluoromethane	16.56	1.0	20	0	82.8	32 - 152				
Ethylbenzene	20.74	1.0	20	0	104	79 - 121				
Hexachlorobutadiene	20.52	1.0	20	0	103	66 - 134				
Isopropylbenzene	20.12	1.0	20	0	101	72 - 131				
m,p-Xylene	41.95	2.0	40	0	105	80 - 121				
Methylene chloride	20.94	2.0	20	0	105	74 - 124				
Naphthalene	24.1	1.0	20	0	120	61 - 128				
n-Butylbenzene	22	1.0	20	0	110	75 - 128				
n-Propylbenzene	22.33	1.0	20	0	112	76 - 126				
o-Xylene	21.51	1.0	20	0	108	78 - 122				
sec-Butylbenzene	21.1	1.0	20	0	105	77 - 126				
Styrene	21.94	1.0	20	0	110	78 - 123				
tert-Butylbenzene	21.17	1.0	20	0	106	78 - 124				
Tetrachloroethene	18.85	1.0	20	0	94.2	74 - 129				
Toluene	21.66	1.0	20	0	108	80 - 121				
trans-1,2-Dichloroethene	19.1	1.0	20	0	95.5	75 - 124				
trans-1,3-Dichloropropene	21.66	1.0	20	0	108	73 - 127				
Trichloroethene	19.86	1.0	20	0	99.3	79 - 123				
Trichlorofluoromethane	16.94	1.0	20	0	84.7	65 - 141				
Vinyl chloride	20.12	1.0	20	0	101	58 - 137				
Surr: 1,2-Dichloroethane-d4	*48.9*	*1.0*	*50*	*0*	*97.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.73*	*1.0*	*50*	*0*	*99.5*	*85 - 114*				
Surr: Dibromofluoromethane	*48.93*	*1.0*	*50*	*0*	*97.9*	*80 - 119*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 13:53**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.76*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19020720-03MS** Units: **UG/L** Analysis Date: **25-Feb-2019 16:17**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964300** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.32	1.0	20	0	112	78 - 124				
1,1,1-Trichloroethane	22.16	1.0	20	0	111	74 - 131				
1,1,2,2-Tetrachloroethane	23.43	1.0	20	0	117	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	27.31	1.0	20	0	137	70 - 136				S
1,1,2-Trichloroethane	23.62	1.0	20	0	118	80 - 119				
1,1-Dichloroethane	22.71	1.0	20	0	114	77 - 125				
1,1-Dichloroethene	22.46	1.0	20	0	112	71 - 131				
1,1-Dichloropropene	22.65	1.0	20	0	113	78 - 125				
1,2,3-Trichlorobenzene	21.64	1.0	20	0	108	69 - 129				
1,2,3-Trichloropropane	22.62	1.0	20	0	113	73 - 122				
1,2,4-Trichlorobenzene	23.04	1.0	20	0	115	69 - 130				
1,2,4-Trimethylbenzene	25.59	1.0	20	0	128	76 - 124				S
1,2-Dibromo-3-chloropropane	21.39	1.0	20	0	107	62 - 128				
1,2-Dibromoethane	23	1.0	20	0	115	77 - 121				
1,2-Dichlorobenzene	23.47	1.0	20	0	117	80 - 119				
1,2-Dichloroethane	22.58	1.0	20	0	113	73 - 128				
1,2-Dichloropropane	24.13	1.0	20	0	121	78 - 122				
1,3,5-Trimethylbenzene	25.18	1.0	20	0	126	75 - 124				S
1,3-Dichlorobenzene	23.79	1.0	20	0	119	80 - 119				
1,3-Dichloropropane	23.69	1.0	20	0	118	80 - 119				
1,4-Dichlorobenzene	23.36	1.0	20	0	117	79 - 118				
2,2-Dichloropropane	20.07	1.0	20	0	100	60 - 139				
2-Butanone	45.71	2.0	40	0	114	56 - 143				
2-Chlorotoluene	24.09	1.0	20	0	120	79 - 122				
2-Hexanone	48.76	2.0	40	0	122	57 - 139				
4-Chlorotoluene	24.21	1.0	20	0	121	78 - 122				
4-Isopropyltoluene	24.9	1.0	20	0	125	77 - 127				
4-Methyl-2-pentanone	50.51	2.0	40	0	126	67 - 130				
Acetone	46.86	2.0	40	0	117	39 - 160				
Benzene	24.05	1.0	20	0	120	79 - 120				S
Bromobenzene	23.97	1.0	20	0	120	80 - 120				
Bromochloromethane	21.39	1.0	20	0	107	78 - 123				
Bromodichloromethane	23.37	1.0	20	0	117	79 - 125				
Bromoform	23.5	1.0	20	0	118	66 - 130				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19020720-03MS** Units: **UG/L** Analysis Date: **25-Feb-2019 16:17**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964300** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	34.62	1.0	20	0	173	53 - 141				S
Carbon disulfide	45	2.0	40	0	112	64 - 133				
Carbon tetrachloride	21.21	1.0	20	0	106	72 - 136				
Chlorobenzene	23.11	1.0	20	0	116	82 - 118				
Chloroethane	23.98	1.0	20	0	120	60 - 138				
Chloroform	22.84	1.0	20	0	114	79 - 124				
Chloromethane	30.56	1.0	20	0	153	50 - 139				S
cis-1,2-Dichloroethene	22.57	1.0	20	0	113	78 - 123				
cis-1,3-Dichloropropene	21.77	1.0	20	0	109	75 - 124				
Dibromochloromethane	22.35	1.0	20	0	112	74 - 126				
Dibromomethane	22.98	1.0	20	0	115	79 - 123				
Dichlorodifluoromethane	23.47	1.0	20	0	117	32 - 152				
Ethylbenzene	24.62	1.0	20	0	123	79 - 121				S
Hexachlorobutadiene	21.81	1.0	20	0	109	66 - 134				
Isopropylbenzene	25.03	1.0	20	0	125	72 - 131				
m,p-Xylene	48	2.0	40	0	120	80 - 121				
Methylene chloride	22.49	2.0	20	0	112	74 - 124				
Naphthalene	21.81	1.0	20	0	109	61 - 128				
n-Butylbenzene	25.96	1.0	20	0	130	75 - 128				S
n-Propylbenzene	25.19	1.0	20	0	126	76 - 126				
o-Xylene	23.67	1.0	20	0	118	78 - 122				
sec-Butylbenzene	24.78	1.0	20	0	124	77 - 126				
Styrene	24.2	1.0	20	0	121	78 - 123				
tert-Butylbenzene	24.23	1.0	20	0	121	78 - 124				
Tetrachloroethene	28.92	1.0	20	5.334	118	74 - 129				
Toluene	24.23	1.0	20	0	121	80 - 121				S
trans-1,2-Dichloroethene	22.13	1.0	20	0	111	75 - 124				
trans-1,3-Dichloropropene	21.66	1.0	20	0	108	73 - 127				
Trichloroethene	23.62	1.0	20	0.5947	115	79 - 123				
Trichlorofluoromethane	22.86	1.0	20	0	114	65 - 141				
Vinyl chloride	24.3	1.0	20	0	121	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.26*	*1.0*	*50*	*0*	*98.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.48*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*48.74*	*1.0*	*50*	*0*	*97.5*	*80 - 119*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19020720-03MS** Units: **UG/L** Analysis Date: **25-Feb-2019 16:17**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964300** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.29*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19020720-03MSD** Units: **UG/L** Analysis Date: **25-Feb-2019 16:41**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.88	1.0	20	0	109	78 - 124	22.32	2.02	20	
1,1,1-Trichloroethane	21.63	1.0	20	0	108	74 - 131	22.16	2.43	20	
1,1,2,2-Tetrachloroethane	22.34	1.0	20	0	112	71 - 121	23.43	4.75	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	26.37	1.0	20	0	132	70 - 136	27.31	3.52	20	
1,1,2-Trichloroethane	22.95	1.0	20	0	115	80 - 119	23.62	2.87	20	
1,1-Dichloroethane	22.33	1.0	20	0	112	77 - 125	22.71	1.71	20	
1,1-Dichloroethene	22.07	1.0	20	0	110	71 - 131	22.46	1.72	20	
1,1-Dichloropropene	22.07	1.0	20	0	110	78 - 125	22.65	2.59	20	
1,2,3-Trichlorobenzene	22.11	1.0	20	0	111	69 - 129	21.64	2.16	20	
1,2,3-Trichloropropane	22.17	1.0	20	0	111	73 - 122	22.62	2.03	20	
1,2,4-Trichlorobenzene	22.36	1.0	20	0	112	69 - 130	23.04	3	20	
1,2,4-Trimethylbenzene	24.63	1.0	20	0	123	76 - 124	25.59	3.83	20	
1,2-Dibromo-3-chloropropane	21.06	1.0	20	0	105	62 - 128	21.39	1.54	20	
1,2-Dibromoethane	22.61	1.0	20	0	113	77 - 121	23	1.71	20	
1,2-Dichlorobenzene	22.8	1.0	20	0	114	80 - 119	23.47	2.9	20	
1,2-Dichloroethane	22.01	1.0	20	0	110	73 - 128	22.58	2.56	20	
1,2-Dichloropropane	23.86	1.0	20	0	119	78 - 122	24.13	1.13	20	
1,3,5-Trimethylbenzene	24.07	1.0	20	0	120	75 - 124	25.18	4.52	20	
1,3-Dichlorobenzene	23	1.0	20	0	115	80 - 119	23.79	3.37	20	
1,3-Dichloropropane	23.02	1.0	20	0	115	80 - 119	23.69	2.87	20	
1,4-Dichlorobenzene	22.35	1.0	20	0	112	79 - 118	23.36	4.41	20	
2,2-Dichloropropane	19.58	1.0	20	0	97.9	60 - 139	20.07	2.46	20	
2-Butanone	45.08	2.0	40	0	113	56 - 143	45.71	1.4	20	
2-Chlorotoluene	23.28	1.0	20	0	116	79 - 122	24.09	3.45	20	
2-Hexanone	48.69	2.0	40	0	122	57 - 139	48.76	0.157	20	
4-Chlorotoluene	23.49	1.0	20	0	117	78 - 122	24.21	3.01	20	
4-Isopropyltoluene	24.15	1.0	20	0	121	77 - 127	24.9	3.05	20	
4-Methyl-2-pentanone	47.85	2.0	40	0	120	67 - 130	50.51	5.42	20	
Acetone	45.73	2.0	40	0	114	39 - 160	46.86	2.44	20	
Benzene	23.7	1.0	20	0	119	79 - 120	24.05	1.46	20	
Bromobenzene	22.83	1.0	20	0	114	80 - 120	23.97	4.89	20	
Bromochloromethane	20.79	1.0	20	0	104	78 - 123	21.39	2.82	20	
Bromodichloromethane	23.35	1.0	20	0	117	79 - 125	23.37	0.0867	20	
Bromoform	22.93	1.0	20	0	115	66 - 130	23.5	2.47	20	

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19020720-03MSD** Units: **UG/L** Analysis Date: **25-Feb-2019 16:41**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	33.99	1.0	20	0	170	53 - 141	34.62	1.83	20	S
Carbon disulfide	43.5	2.0	40	0	109	64 - 133	45	3.38	20	
Carbon tetrachloride	20.55	1.0	20	0	103	72 - 136	21.21	3.13	20	
Chlorobenzene	22.39	1.0	20	0	112	82 - 118	23.11	3.17	20	
Chloroethane	23.68	1.0	20	0	118	60 - 138	23.98	1.25	20	
Chloroform	22.42	1.0	20	0	112	79 - 124	22.84	1.84	20	
Chloromethane	28.35	1.0	20	0	142	50 - 139	30.56	7.47	20	S
cis-1,2-Dichloroethene	22.11	1.0	20	0	111	78 - 123	22.57	2.08	20	
cis-1,3-Dichloropropene	21.62	1.0	20	0	108	75 - 124	21.77	0.648	20	
Dibromochloromethane	21.98	1.0	20	0	110	74 - 126	22.35	1.65	20	
Dibromomethane	22.67	1.0	20	0	113	79 - 123	22.98	1.38	20	
Dichlorodifluoromethane	22.91	1.0	20	0	115	32 - 152	23.47	2.39	20	
Ethylbenzene	23.73	1.0	20	0	119	79 - 121	24.62	3.71	20	
Hexachlorobutadiene	21.78	1.0	20	0	109	66 - 134	21.81	0.137	20	
Isopropylbenzene	24.38	1.0	20	0	122	72 - 131	25.03	2.65	20	
m,p-Xylene	47.08	2.0	40	0	118	80 - 121	48	1.93	20	
Methylene chloride	21.77	2.0	20	0	109	74 - 124	22.49	3.27	20	
Naphthalene	21.74	1.0	20	0	109	61 - 128	21.81	0.29	20	
n-Butylbenzene	25.06	1.0	20	0	125	75 - 128	25.96	3.55	20	
n-Propylbenzene	23.98	1.0	20	0	120	76 - 126	25.19	4.91	20	
o-Xylene	23.05	1.0	20	0	115	78 - 122	23.67	2.64	20	
sec-Butylbenzene	23.88	1.0	20	0	119	77 - 126	24.78	3.69	20	
Styrene	23.55	1.0	20	0	118	78 - 123	24.2	2.72	20	
tert-Butylbenzene	23.28	1.0	20	0	116	78 - 124	24.23	3.98	20	
Tetrachloroethene	28.15	1.0	20	5.334	114	74 - 129	28.92	2.67	20	
Toluene	23.45	1.0	20	0	117	80 - 121	24.23	3.24	20	
trans-1,2-Dichloroethene	21.16	1.0	20	0	106	75 - 124	22.13	4.48	20	
trans-1,3-Dichloropropene	21.73	1.0	20	0	109	73 - 127	21.66	0.325	20	
Trichloroethene	23.16	1.0	20	0.5947	113	79 - 123	23.62	1.97	20	
Trichlorofluoromethane	21.93	1.0	20	0	110	65 - 141	22.86	4.17	20	
Vinyl chloride	23.7	1.0	20	0	119	58 - 137	24.3	2.47	20	
Surr: 1,2-Dichloroethane-d4	*48.9*	*1.0*	*50*	*0*	*97.8*	*81 - 118*	*49.26*	*0.746*	*20*	
Surr: 4-Bromofluorobenzene	*51.41*	*1.0*	*50*	*0*	*103*	*85 - 114*	*50.48*	*1.82*	*20*	
Surr: Dibromofluoromethane	*49.17*	*1.0*	*50*	*0*	*98.3*	*80 - 119*	*48.74*	*0.881*	*20*	

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19020720-03MSD** Units: **UG/L** Analysis Date: **25-Feb-2019 16:41**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.73*	*1.0*	*50*	*0*	*99.5*	*89 - 112*	*50.29*	*1.11*	*20*	

The following samples were analyzed in this batch: HS19020648-05 HS19020648-06 HS19020648-07

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333650 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-021319** Units: **mg/L** Analysis Date: **13-Feb-2019 13:42**
Client ID: Run ID: **ICS2100_333650** SeqNo: **4967847** PrepDate: DF: **1**

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

LCS Sample ID: **WLCSW1-021319** Units: **mg/L** Analysis Date: **13-Feb-2019 14:11**
Client ID: Run ID: **ICS2100_333650** SeqNo: **4967848** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.04	0.500	20	0	100	80 - 120				
Nitrogen, Nitrate (As N)	3.924	0.100	4	0	98.1	80 - 120				
Nitrogen, Nitrite (As N)	4.249	0.100	4	0	106	80 - 120				
Sulfate	20.03	0.500	20	0	100	80 - 120				

LCSD Sample ID: **WLCSDW1-021319** Units: **mg/L** Analysis Date: **13-Feb-2019 14:25**
Client ID: Run ID: **ICS2100_333650** SeqNo: **4967849** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.9	0.500	20	0	99.5	80 - 120	20.04	0.726	20	
Nitrogen, Nitrate (As N)	3.892	0.100	4	0	97.3	80 - 120	3.924	0.819	20	
Nitrogen, Nitrite (As N)	4.23	0.100	4	0	106	80 - 120	4.249	0.448	20	
Sulfate	19.9	0.500	20	0	99.5	80 - 120	20.03	0.636	20	

MS Sample ID: **HS19020648-01MS** Units: **mg/L** Analysis Date: **13-Feb-2019 19:36**
Client ID: **35BWW23-190212** Run ID: **ICS2100_333650** SeqNo: **4967856** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	65.92	0.500	10	55.63	103	80 - 120				O
Nitrogen, Nitrate (As N)	2.046	0.100	2	0	102	80 - 120				
Nitrogen, Nitrite (As N)	2.101	0.100	2	0	105	80 - 120				
Sulfate	114	0.500	10	104.6	93.5	80 - 120				EO

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333650 **Instrument: ICS2100** **Method: SW9056**

MSD Sample ID: **HS19020648-01MSD** Units: **mg/L** Analysis Date: **13-Feb-2019 19:51**
Client ID: **35BWW23-190212** Run ID: **ICS2100_333650** SeqNo: **4967857** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	63.97	0.500	10	55.63	83.4	80 - 120	65.92	3.01	20	O
Nitrogen, Nitrate (As N)	2.009	0.100	2	0	100	80 - 120	2.046	1.82	20	
Nitrogen, Nitrite (As N)	2.032	0.100	2	0	102	80 - 120	2.101	3.34	20	
Sulfate	110.9	0.500	10	104.6	62.8	80 - 120	114	2.73	20	SEO

The following samples were analyzed in this batch: HS19020648-01 HS19020648-02 HS19020648-03 HS19020648-04

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020648

QC BATCH REPORT

Batch ID: R333686 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-021419** Units: **mg/L** Analysis Date: **14-Feb-2019 12:02**
Client ID: Run ID: **ICS2100_333686** SeqNo: **4968483** 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								U

LCS Sample ID: **WLCSW1-021419** Units: **mg/L** Analysis Date: **14-Feb-2019 12:17**
Client ID: Run ID: **ICS2100_333686** SeqNo: **4968484** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.89	0.500	20	0	99.4	80 - 120				

LCSD Sample ID: **WLCSDW1-021419** Units: **mg/L** Analysis Date: **14-Feb-2019 12:31**
Client ID: Run ID: **ICS2100_333686** SeqNo: **4968485** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	20.31	0.500	20	0	102	80 - 120	19.89	2.11	20	

MS Sample ID: **HS19020720-03MS** Units: **mg/L** Analysis Date: **14-Feb-2019 16:14**
Client ID: Run ID: **ICS2100_333686** SeqNo: **4968492** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	43.1	0.500	10	34.59	85.2	80 - 120				

MSD Sample ID: **HS19020720-03MSD** Units: **mg/L** Analysis Date: **14-Feb-2019 16:28**
Client ID: Run ID: **ICS2100_333686** SeqNo: **4968493** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	43.3	0.500	10	34.59	87.1	80 - 120	43.1	0.451	20	

The following samples were analyzed in this batch: HS19020648-01

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: **HS19020648**

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	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
California	2919, 2018-2019	30-Apr-2019
Maryland	343, 2018-2019	30-Jun-2019

ALS Houston, US Date: 11-Mar-19

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19020648
Date/Time Received: **13-Feb-2019 08:40**
Received by: **RPG**

Checklist completed by: *Raegen Giga* eSignature 13-Feb-2019 Date
Reviewed by: *RJ Modashia* eSignature 13-Feb-2019 Date

Matrices: **GW**
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):	0.5c/0.9c uc/c	IR 11
Cooler(s)/Kit(s):	24408	
Date/Time sample(s) sent to storage:	02/13/2019 12:48	

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: LHAAP37-FEB2019-ALSsaltLake-1902-12 TURNAROUND TIME: RUSH:

PROJECT/CLIENT INFO			
Facility Name	Longhorn AAP		
Project Number	501032		
	LHAAP-37		
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	960 W. LeVoy Drive		
City	Salt Lake	State	UTAH
Postal Code	84123	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

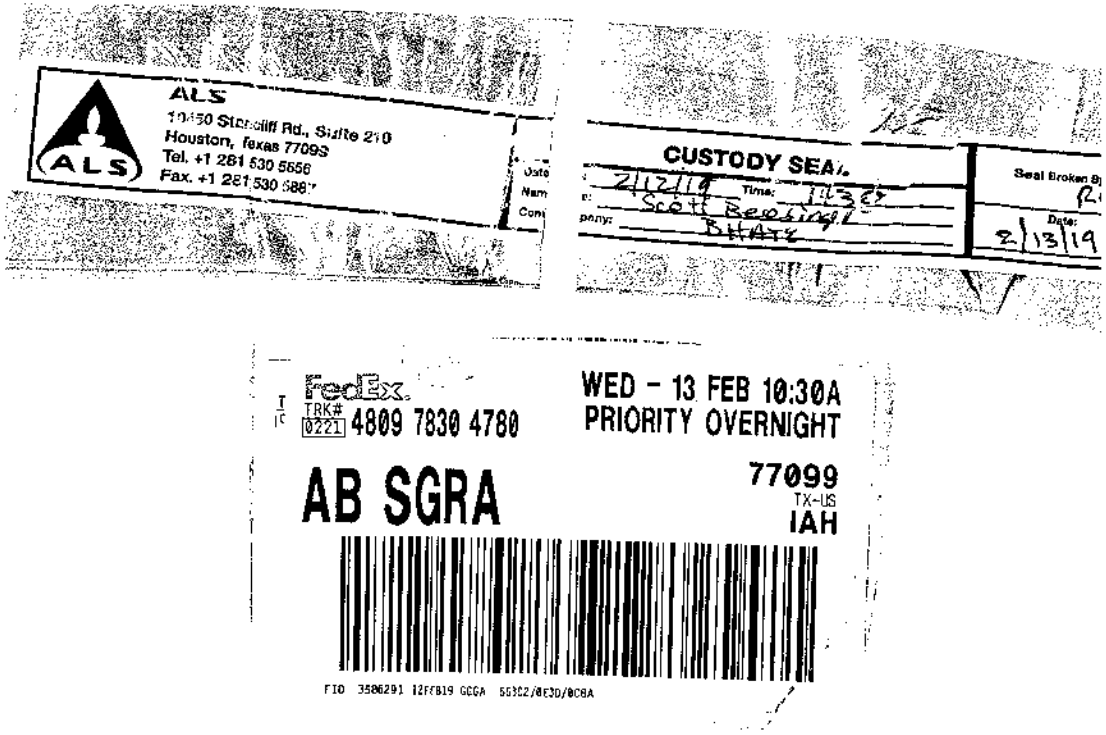
Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS: Sample Container and Preservatives	3-40 ml VOA/HCL	3-40 ml VOA/HCL	3-40 ml VOA/Cool to 6 deg C	2-40ml Amber/H2SO4	2-40ml Amber/Cool to 6 deg C	1-250ml /Cool to 6 deg C						
										Vocs by 8260B	MEE by RSK175	CO2 by RSK175	Toc by Sm5310C	TIC by SM5310C	Anions (chloride/sulfate/nitrate/ nitrite) by 9056						
35BWW23-190212	LHAAP37	27.55	27.80		WG	2/12/19	0825	14		X	X	X	X	X	X						
35BWW14-190212	LHAAP37	21.54	21.74		WG	2/12/19	0925	14		X	X	X	X	X	X						
35BWW08-190212	LHAAP37	23.67	23.89		WG	2/12/19	1025	14		X	X	X	X	X	X						
35BWW26-190212	LHAAP37	26.50	26.77		WG	2/12/19	1125	14		X	X	X	X	X	X						
35BWW01-190212	LHAAP37	8.11	8.34		WG	2/12/19	1220	3		X											
35BWW01-190212-FD	LHAAP37	8.11	8.34		WG	2/12/19	1220	3		X											
35BWW10-190212	LHAAP37	23.31	23.55		WG	2/12/19	1310	3		X											
TRIP BLANK	LHAAP37				W	2/12/19		2		X											

HS19020648

Aptim Environmental & Infrastucture, Inc.

LHAAP-37 501032

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Scott Beesley / BHATE	2/12/19 1430	R Cuy	2/13/19 0830
			coolers # 24408 IR 11 CF+0.4C	TEMP = 0.5C



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

CUSTODY SEAL
2/12/19 Time: 1130
Scott Beesinger
BHATE
Seal Broken
Date: 2/13/19

FedEx.
TRK# 0221 4809 7830 4780
WED - 13 FEB 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH
FID 3586291 12FF819 GCGA 5G3C2/8E3D/8C8A

ALS Environmental
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March 11, 2019

Analytical Report for Service Request No: K1901414

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

RE: HS19020648

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory February 15, 2019
For your reference, these analyses have been assigned our service request number **K1901414.**

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

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Table of Contents

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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ALS Environmental

Client: ALS Environmental - US
Project: HS19020648
Sample Matrix: Ground Water

Service Request: K1901414
Date Received: 02/15/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Four ground water samples were received for analysis at ALS Environmental on 02/15/2019. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 03/11/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
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K1901414

Subcontract Chain of Custody

COC ID: 10748

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:	HS19020648
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE	
	ANALYSIS REQUESTED			DUE DATE	
1.	**HS19020648-01**	**35BWW23-190212**	**Groundwater**	**12 Feb 2019 08:25**	4
	TIC Analysis with Level IV			27 Feb 2019	
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			27 Feb 2019	
2.	**HS19020648-02**	**35BWW14-190212**	**Groundwater**	**12 Feb 2019 09:25**	4
	TIC Analysis with Level IV			27 Feb 2019	
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			27 Feb 2019	
3.	**HS19020648-03**	**35BWW08-190212**	**Groundwater**	**12 Feb 2019 10:25**	4
	TIC Analysis with Level IV			27 Feb 2019	
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			27 Feb 2019	
4.	**HS19020648-04**	**35BWW26-190212**	**Groundwater**	**12 Feb 2019 11:25**	4
	TIC Analysis with Level IV			27 Feb 2019	
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			27 Feb 2019	

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

NEAT AMBER VIALS FOR TIC ANALYSES

QC Level: DOD IV (DoD Data Package)

Received: Cody Graves ALS 2/15/19 0940

00955720

PC KL

Cooler Receipt and Preservation Form

Client ALS, Houston Service Request K19 01414

Received: 2/15/19 Opened: 2/15/19 By: CG Unloaded: 2/15/19 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

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
1.1	1.1	1.2	1.2	0.0	349	10748	4809 7830 8878	

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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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:**	K1901414
Project:	HS19020648	**Date Collected:**	02/12/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Inorganic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
35BWW23-190212	K1901414-001	**141**	13	5	2	25	03/08/19 23:05	
35BWW14-190212	K1901414-002	**137**	13	5	2	25	03/08/19 23:18	
35BWW08-190212	K1901414-003	**33**	13	5	2	25	03/08/19 23:58	
35BWW26-190212	K1901414-004	**112**	13	5	2	25	03/09/19 00:11	
Method Blank	K1901414-MB	ND U	0.50	0.20	0.07	1	03/08/19 21:30	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1901414
Project	HS19020648	**Date Collected:**	02/12/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Inorganic

Sample Name:	Lab Code:	MRL	LOQ	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1901413-001DUP	13	5	2	103	101	102	2	10	03/08/19
Batch QC	K1901413-002DUP	13	5	2	132	129	131	2	10	03/08/19
Batch QC	K1901413-003DUP	13	5	2	123	120	122	2	10	03/08/19
35BWW23-190212	K1901414-001DUP	13	5	2	141	140	140	<1	10	03/08/19
35BWW14-190212	K1901414-002DUP	13	5	2	137	135	136	1	10	03/08/19
35BWW08-190212	K1901414-003DUP	13	5	2	33	35	33.8	4	10	03/08/19
35BWW26-190212	K1901414-004DUP	13	5	2	112	110	111	2	10	03/09/19

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:**	K1901414
Project:	HS19020648	**Date Collected:**	N/A
Sample Matrix:	Ground Water	**Date Received:**	N/A
		Date Analyzed:	03/8/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Inorganic

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1901413-003	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1901413-003MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Inorganic	123	758	625	102	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:**	K1901414
Project:	HS19020648	**Date Analyzed:**	03/08/19
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Inorganic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	627738

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1901414-LCS	25.3	25.0	101	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1901414
Project: HS19020648

Continuing Calibration Verification (CCV) Summary

Carbon, Total Inorganic

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

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	627738	KQ1903025-04	03/08/19 21:10	25.0	24.6	98	90-110
CCV2	627738	KQ1903025-05	03/08/19 23:44	25.0	24.4	98	90-110
CCV3	627738	KQ1903025-06	03/09/19 00:37	25.0	24.3	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1901414
Project: HS19020648

Continuing Calibration Blank (CCB) Summary
Carbon, Total Inorganic

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

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	627738	KQ1903025-01	03/08/19 21:20	0.50	0.20	0.07	ND	U
CCB2	627738	KQ1903025-02	03/08/19 23:51	0.50	0.20	0.07	ND	U
CCB3	627738	KQ1903025-03	03/09/19 00:44	0.50	0.20	0.07	ND	U

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1901414
Project:	HS19020648	**Date Collected:**	02/12/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
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
35BWW23-190212	K1901414-001	**1.47**	0.50	0.20	0.07	1	02/20/19 20:41	
35BWW14-190212	K1901414-002	**3.25**	0.50	0.20	0.07	1	02/20/19 21:46	
35BWW08-190212	K1901414-003	**0.86**	0.50	0.20	0.07	1	02/20/19 22:18	
35BWW26-190212	K1901414-004	**2.81**	0.50	0.20	0.07	1	02/20/19 22:50	
Method Blank	K1901414-MB	ND U	0.50	0.20	0.07	1	02/20/19 01:10	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1901414
Project	HS19020648	**Date Collected:**	02/12/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	MRL	LOQ	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1901413-001DUP	0.50	0.20	0.07	1.63	1.54	1.58	6	10	02/20/19
Batch QC	K1901413-002DUP	0.50	0.20	0.07	2.48	2.44	2.46	2	10	02/20/19
Batch QC	K1901413-003DUP	0.50	0.20	0.07	3.81	3.84	3.83	<1	10	02/20/19
35BWW23-190212	K1901414-001DUP	0.50	0.20	0.07	1.47	1.41	1.44	4	10	02/20/19
35BWW14-190212	K1901414-002DUP	0.50	0.20	0.07	3.25	3.02	3.14	7	10	02/20/19
35BWW08-190212	K1901414-003DUP	0.50	0.20	0.07	0.86	0.84	0.849	3	10	02/20/19
35BWW26-190212	K1901414-004DUP	0.50	0.20	0.07	2.81	2.60	2.71	8	10	02/20/19

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:**	K1901414
Project:	HS19020648	**Date Collected:**	N/A
Sample Matrix:	Ground Water	**Date Received:**	N/A
		Date Analyzed:	02/20/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1901413-003	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1901413-003MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	3.81	29.6	25.0	103	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:**	K1901414
Project:	HS19020648	**Date Collected:**	02/12/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
		Date Analyzed:	02/20/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	35BWW23-190212	**Units:**	mg/L
Lab Code:	K1901414-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1901414-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.47	27.6	25.0	104	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:**	K1901414
Project:	HS19020648	**Date Analyzed:**	02/20/19
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:	625676

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1901414-LCS	24.6	25.0	99	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1901414
Project: HS19020648

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	625676	KQ1902128-06	02/20/19 09:49	25.0	25.4	102	90-110
CCV2	625676	KQ1902128-07	02/20/19 20:07	25.0	25.2	101	90-110
CCV3	625676	KQ1902128-08	02/21/19 01:15	25.0	24.8	99	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1901414
Project: HS19020648

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	625676	KQ1902128-03	02/20/19 10:06	0.50	0.20	0.07	0.39	J
CCB2	625676	KQ1902128-04	02/20/19 20:24	0.50	0.20	0.07	ND	U
CCB3	625676	KQ1902128-05	02/21/19 01:32	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

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Work Request # Original ( ) K1901413, 1414

Tier: IV IV

Date Analyzed: 3/7/19 TIC: 627738

Analyst: BCD Run # _____

Analysis: TIC

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: K1901414-3 is overdiluted. However these are turbid samples when shaken that require a minimum dilution upon mfg RAs

Final Approved by: _____ Date: 03/08/19 TH

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627738 **Method/Testcode:** SM 5310 C/TIC

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1901413-001	Carbon, Total Inorganic	N/A		Ground Water	4.13 mg/L	10 ml	103 mg/L	25	25	50			3/8/19 21:49	N	IV
K1901413-002	Carbon, Total Inorganic	N/A		Ground Water	5.30 mg/L	10 ml	132 mg/L	25	25	50			3/8/19 22:07	N	IV
K1901413-003	Carbon, Total Inorganic	N/A		Ground Water	4.92 mg/L	10 ml	123 mg/L	25	25	50			3/8/19 22:25	Y	IV
K1901414-001	Carbon, Total Inorganic	N/A		Ground Water	5.64 mg/L	10 ml	141 mg/L	25	25	50			3/8/19 23:05	N	IV
K1901414-002	Carbon, Total Inorganic	N/A		Ground Water	5.46 mg/L	10 ml	137 mg/L	25	25	50			3/8/19 23:18	N	IV
K1901414-003	Carbon, Total Inorganic	N/A		Ground Water	1.32 mg/L	10 ml	50 mg/L U	25	25	50			3/8/19 23:58	N	IV
K1901414-004	Carbon, Total Inorganic	N/A		Ground Water	4.49 mg/L	10 ml	112 mg/L	25	25	50			3/9/19 00:11	N	IV
KQ1903025-01	Carbon, Total Inorganic	CCB		Ground Water	0.00 mg/L	10 ml	2.0 mg/L U	1	1.0	2.0			3/8/19 21:20	N	IV
KQ1903025-02	Carbon, Total Inorganic	CCB		Ground Water	3.52999999999998E	10 ml	2.0 mg/L U	1	1.0	2.0			3/8/19 23:51	N	IV
KQ1903025-03	Carbon, Total Inorganic	CCB		Ground Water	3.29999999999997E	10 ml	2.0 mg/L U	1	1.0	2.0			3/9/19 00:44	N	IV
KQ1903025-04	Carbon, Total Inorganic	CCV		Ground Water	24.62 mg/L	10 ml	24.6 mg/L	1					3/8/19 21:10	N	IV
KQ1903025-05	Carbon, Total Inorganic	CCV		Ground Water	24.40 mg/L	10 ml	24.4 mg/L	1					3/8/19 23:44	N	IV
KQ1903025-06	Carbon, Total Inorganic	CCV		Ground Water	24.27 mg/L	10 ml	24.3 mg/L	1					3/9/19 00:37	N	IV
KQ1903025-07	Carbon, Total Inorganic	LCS		Ground Water	25.28 mg/L	10 ml	25.3 mg/L	1	1.0	2.0	101		3/8/19 21:39	N	IV
KQ1903025-08	Carbon, Total Inorganic	MB		Ground Water	0.04 mg/L	10 ml	2.0 mg/L U	1	1.0	2.0			3/8/19 21:30	N	IV
KQ1903025-09	Carbon, Total Inorganic	MS	K1901413-003	Ground Water	30.34 mg/L	0.4 ml	758 mg/L	1	25	50	102		3/8/19 22:43	N	IV
KQ1903025-10	Carbon, Total Inorganic	DUP	K1901413-003	Ground Water	4.81 mg/L	10 ml	120 mg/L	25	25	50		2	3/8/19 22:25	N	IV
KQ1903025-11	Carbon, Total Inorganic	DUP	K1901413-001	Ground Water	4.04 mg/L	10 ml	101 mg/L	25	25	50		2	3/8/19 21:49	N	IV
KQ1903025-12	Carbon, Total Inorganic	DUP	K1901413-002	Ground Water	5.18 mg/L	10 ml	129 mg/L	25	25	50		2	3/8/19 22:07	N	IV
KQ1903025-13	Carbon, Total Inorganic	DUP	K1901414-001	Ground Water	5.60 mg/L	10 ml	140 mg/L	25	25	50		<1	3/8/19 23:05	N	IV
KQ1903025-14	Carbon, Total Inorganic	DUP	K1901414-002	Ground Water	5.40 mg/L	10 ml	135 mg/L	25	25	50		1	3/8/19 23:18	N	IV
KQ1903025-15	Carbon, Total Inorganic	DUP	K1901414-003	Ground Water	1.38 mg/L	10 ml	35 mg/L J	25	25	50		NC	3/8/19 23:58	N	IV
KQ1903025-16	Carbon, Total Inorganic	DUP	K1901414-004	Ground Water	4.41 mg/L	10 ml	110 mg/L	25	25	50		2	3/9/19 00:11	N	IV

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

03/11/19

TIC: 627738

Schedule: 03082019B

Version: 4
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/03/08 19:12 - 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
D	Sample	RB	IC 030411 (IC 030411)	1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	IC 030411 (IC 030411)	1	True	Ready
A	Check Standard	[IC] CCV 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
D	Check Standard	[IC] CCB 030411 [0.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
1	Sample	MB1	IC 030411 (IC 030411)	1	True	Ready
2	Check Standard	[IC] LCS 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
3	Sample	K1901413-001.03 25x	IC 030411 (IC 030411)	2	True	Ready
4	Sample	K1901413-002.03 25x	IC 030411 (IC 030411)	2	True	Ready
5	Sample	K1901413-003.07 25x	IC 030411 (IC 030411)	2	True	Ready
6	Sample	K1901413-003.07 ms 25x	IC 030411 (IC 030411)	1	True	Ready
7	Sample	RB	IC 030411 (IC 030411)	2	True	Ready
8	Sample	K1901414-001.03 25x	IC 030411 (IC 030411)	2	True	Ready
9	Sample	K1901414-002.03 25x	IC 030411 (IC 030411)	2	True	Ready
10	Sample	RB	IC 030411 (IC 030411)	2	True	Ready
A	Check Standard	[IC] CCV 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
D	Check Standard	[IC] CCB 030411 [0.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
11	Sample	K1901414-003.03 25x	IC 030411 (IC 030411)	2	True	Ready
12	Sample	K1901414-004.03 25x	IC 030411 (IC 030411)	2	True	Ready
13	Sample	RB	IC 030411 (IC 030411)	2	True	Ready
A	Check Standard	[IC] CCV 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
D	Check Standard	[IC] CCB 030411 [0.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
					False	

03/11/19

Fusion Report - 03082019B
Friday, March 08, 2019 06:37 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/03/09 08:59 - Saturday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	03082019B	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

03/11/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/03/08 18:37

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	17.32	20.30	2.98	49.55	05:22
2	TC Clean	6.36	9.20	2.85	49.99	04:03
3	TC Clean	3.34	6.03	2.69	50.02	03:48
4	TC Clean	2.40	5.36	2.96	50.03	03:58

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/03/08 18:59

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.79	4.61	2.82	49.66	05:25
2	TC Clean	5.01	7.85	2.85	50.02	04:05
3	TC Clean	2.48	5.39	2.91	49.79	06:59
4	TC Clean	2.62	5.32	2.70	49.79	07:02

Sample Type: Clean

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/03/08 19:27

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.35	4.10	2.75	49.72	05:16
2	TC Clean	5.31	8.09	2.78	49.77	07:17
3	TC Clean	2.72	5.66	2.94	49.77	07:04
4	TC Clean	2.50	5.31	2.81	49.75	07:03

Sample Type: Sample

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	IC	RB	0.2867 ppm	0.0000 ppm	0.0000%	2019/03/08 19:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.2867	1.1469	5.71	8.78	3.07	49.87	07:29

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.4894 (IC) (v1230)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Blank (Creating v1231)

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/03/08 20:08

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.82	16.64	2.82	49.86	07:57
2	TC Clean	5.28	8.14	2.86	49.72	07:17
3	TC Clean	2.22	4.94	2.72	49.73	07:00
4	TC Clean	1.67	4.51	2.84	49.73	07:03
5	Reagent Blank	3.27	6.14	2.87	49.69	08:14
6	Acid Blank	1.22	4.06	2.84	49.85	08:04

Sample Type: Sample

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	IC	RB	0.1854 ppm	0.0000 ppm	0.0000%	2019/03/08 21:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.1854	0.7417	4.50	8.00	3.50	49.87	07:30

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Check Standard --> CCV 030411

From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	A	IC	25.0000	1:1	[IC] CCV 030411 [25.0 ppm]	0 / infinity (NA / NA)	24.8796 ppm (PASS)	0.0000 ppm	0%	2019/03/08 21:10

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
A	IC	25.0 ppm	1	24.8796	99.5183	368.40	371.77	3.37	49.86	07:26

Completion State	Success Action	Method	Calibration	STD Conc - Pos A
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	25 ppmC

Sample Type: Check Standard --> CCB 030411

From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	IC	DI Water [0]	DI	[IC] CCB 030411 [0.0 ppm]	0 / infinity (NA / NA)	0.2528 ppm (PASS)	0.0000 ppm	0%	2019/03/08 21:20

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	IC	0.0 ppm	1	0.2528	1.0114	6.05	9.65	3.60	49.87	07:07

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	0 ppmC

Sample Type: Sample

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	IC	MB1	0.2940 ppm	0.0000 ppm	0.0000%	2019/03/08 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.2940	1.1761	6.10	9.48	3.38	49.85	07:30

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Check Standard --> LCS 030411 — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	IC	25.0000	1:1	[IC] LCS 030411 [25.0 ppm]	0 / infinity (NA / NA)	25.5364 ppm (PASS)	0.0000 ppm	0%	2019/03/08 21:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	IC	25.0 ppm	1	25.5364	102.1455	378.07	381.44	3.37	49.83	07:26

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	25 ppmC

Sample Type: Sample — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	IC	K1901413-001.03 25x	4.3457 ppm	0.0643 ppm	1.4800%	2019/03/08 21:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	4.3912	17.5649	66.38	69.95	3.57	49.83	07:28
2	IC	4.3002	17.2009	65.05	68.08	3.03	49.86	07:25

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	IC	K1901413-002.03 25x	5.4960 ppm	0.0846 ppm	1.5400%	2019/03/08 22:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	5.5558	22.2231	83.52	86.98	3.46	49.84	07:29
2	IC	5.4362	21.7447	81.76	84.81	3.05	49.83	07:22

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	IC	K1901413-003.07 25x	5.1200 ppm	0.0761 ppm	1.4900%	2019/03/08 22:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	5.1738	20.6953	77.90	81.34	3.44	49.87	07:30

2	IC	5.0662	20.2650	76.32	79.47	3.15	49.86	07:28

Dilution 1:2 | **Blank Contribution** (TC) 1.7739 (IC) (v1231) | **Method** IC 030411 (v3) | **Calibration** IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	IC	K1901413-003.07 ms 25x	30.5962 ppm	0.0000 ppm	0.0000%	2019/03/08 22:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	30.5962	122.3848	451.96	455.36	3.40	50.05	07:27

Dilution 1:2 | **Blank Contribution** (TC) 1.7739 (IC) (v1231) | **Method** IC 030411 (v3) | **Calibration** IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	IC	RB	0.5949 ppm	0.0017 ppm	0.2800%	2019/03/08 22:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.5961	2.3845	10.54	13.89	3.34	49.77	04:55
2	IC	0.5937	2.3750	10.51	13.42	2.91	49.64	04:56

Dilution 1:2 | **Blank Contribution** (TC) 1.7739 (IC) (v1231) | **Method** IC 030411 (v3) | **Calibration** IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	IC	K1901414-001.03 25x	5.8762 ppm	0.0267 ppm	0.4500%	2019/03/08 23:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	5.8951	23.5805	88.51	91.82	3.31	49.64	04:56
2	IC	5.8573	23.4294	87.96	91.10	3.14	49.65	04:56

Dilution 1:2 | **Blank Contribution** (TC) 1.7739 (IC) (v1231) | **Method** IC 030411 (v3) | **Calibration** IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	IC	K1901414-002.03 25x	5.6888 ppm	0.0462 ppm	0.8100%	2019/03/08 23:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	5.7214	22.8857	85.96	89.44	3.48	49.63	04:55
2	IC	5.6561	22.6244	85.00	88.00	3.00	49.64	04:53

Dilution 1:2 | **Blank Contribution** (TC) 1.7739 (IC) (v1231) | **Method** IC 030411 (v3) | **Calibration** IC 030411 (v13)

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

◈ 10	IC	RB	0.5104 ppm	0.0621 ppm	12.1600%	2019/03/08 23:31	

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.4665	1.8661	8.64	12.12	3.48	49.64	04:53
2	IC	0.5543	2.2173	9.93	12.79	2.86	49.63	04:53

Dilution: 1:2

Blank Contribution: (TC) 1.7739 (IC) (v1231)

Method: IC 030411 (v3)

Calibration: IC 030411 (v13)

Sample Type: Check Standard --> CCV 030411

From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	A	IC	25.0000	1:1	[IC] CCV 030411 [25.0 ppm]	0 / infinity (NA / NA)	24.6575 ppm (PASS)	0.0000 ppm	0%	2019/03/08 23:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
A	IC	25.0 ppm	1	24.6575	98.6301	365.14	368.56	3.43	49.63	04:54

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: IC 030411 (v3)

Calibration: IC 030411 (v13)

STD Conc - Pos A: 25 ppmC

Sample Type: Check Standard --> CCB 030411

From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	IC	DI Water [0]	DI	[IC] CCB 030411 [0.0 ppm]	0 / infinity (NA / NA)	0.2602 ppm (PASS)	0.0000 ppm	0%	2019/03/08 23:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	IC	0.0 ppm	1	0.2602	1.0407	6.16	9.69	3.53	49.65	04:32

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: IC 030411 (v3)

Calibration: IC 030411 (v13)

STD Conc - Pos D: 0 ppmC

Sample Type: Sample

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	IC	K1901414-003.03 25x	1.6100 ppm	0.0408 ppm	2.5400%	2019/03/08 23:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	1.5811	6.3245	25.04	28.44	3.40	49.70	04:55
2	IC	1.6389	6.5556	25.89	28.89	3.00	49.62	04:52

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	IC	K1901414-004.03 25x	4.7082 ppm	0.0553 ppm	1.1700%	2019/03/09 00:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	4.7474	18.9894	71.62	75.06	3.44	49.64	04:57
2	IC	4.6691	18.6765	70.47	73.68	3.20	49.62	04:50

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	IC	RB	0.7180 ppm	0.0579 ppm	8.0600%	2019/03/09 00:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.6771	2.7085	11.74	15.39	3.65	49.65	04:58
2	IC	0.7590	3.0358	12.94	15.84	2.89	49.62	04:56

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Check Standard --> CCV 030411 — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	A	IC	25.0000	1:1	[IC] CCV 030411 [25.0 ppm]	0 / infinity (NA / NA)	24.5306 ppm (PASS)	0.0000 ppm	0%	2019/03/09 00:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
A	IC	25.0 ppm	1	24.5306	98.1223	363.27	366.74	3.47	49.62	04:58

Completion State	Success Action	Method	Calibration	STD Conc - Pos A
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	25 ppmC

Sample Type: Check Standard --> CCB 030411 — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	IC	DI Water [0]	DI	[IC] CCB 030411 [0.0 ppm]	0 / infinity (NA / NA)	0.2570 ppm (PASS)	0.0000 ppm	0%	2019/03/09 00:44

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

	Type									
D	IC	0.0 ppm	1	0.2570	1.0280	6.11	9.64	3.52	49.64	04:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	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
v1230	0.9720	0.6470	0.0000	0.0000	0.0000	2019/03/08 16:04	Fusion1 (Fusion1)
v1231	1.0907	1.2160	0.0000	0.0000	0.0000	2019/03/08 21:00	Fusion1 (Fusion1)

Calibrations

Name: IC 030411 (IC)

Version: v13

Ver Creation: 2018/11/20 15:25

Comment:

Operator: Fusion1 (Fusion1)

Basic Analysis Type: IC

Calibration curve formula: IC: y = 14.714x + 2.332

r^2 value: IC: r^2 = 0.99968

Basic Analysis Type: IC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	4.3260	0.0000		2018/11/20 14:40
0.50 ppm	12.5220	0.5000		2018/11/20 14:47
1.00 ppm	20.0790	1.0000		2018/11/20 14:54
5.00 ppm	74.7040	5.0000		2018/11/20 15:02
10.0 ppm	146.8910	10.0000		2018/11/20 15:09
25.0 ppm	360.9070	25.0000		2018/11/20 15:16
50.0 ppm	743.1960	50.0000		2018/11/20 15:24

Methods

Name: IC 030411 (IC)

Version: v3

Ver Creation: 2013/02/04 11:47

Comment:

Operator: Gen Chem Lab (Fusion1)

Parameter	Value
SampleVolume	4.0 mL
Dilution	1:2
AcidVolume	1.0 ml
DetectorSweepFlow	500 ml/min
PreSpargeTime	0.00 mins
SystemFlow	200 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	300 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	50 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	7
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	7
SyringeSpeedICAspirate	5
NDIRPressureStabilize	0.50 min
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	2019/03/09 00:52

StarLIMS Run: 627738

Analysis: TIC

Method: SM 5310 C

CCV: 11-GEN-05-73O 25 ppm LCS: 11-GEN-05-74A 25 ppm

ICAL Date: 11/20/18

ICAL ID: 11-GEN-05-72D

Spike ID: 11-GEN-05-73M 0.25 ml of 1000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

21 % H3PO4: 11-GEN-05-76G

Equipment ID: K-TOC-03

PIPETTE ID: N11314F, Marge , 129001F

FILTER ID: NA

Analyzed By: BCD	Date Analyzed: 3/8/19
Reviewed By: [signature]	Date Reviewed: 03/11/19

Work Request # Original ( ) K1900868, 1013, 1154, 1230, 1246, 1258, 1286, 1293, 1342, 1343, 1382, 1413, 1414, 799, 865, 1015, 1312, 657

Tier: IV II I II I II IV II II II II I IV II I II II

Date Analyzed: 2/19/19

Analyst: RCD

Analysis: TOC Water

Run # 625673, 625674, 625676, 625678

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: K1900799-44 RPH.
K1900865-2 overdiluted, sent for SA.
K1901258-1, 865-4, have a high RPD, but are less than 5x the MRL.
K1900799-44 MS and K1900652-2 MS's have a low %Rec due to suspected matrix interference.

Final Approved by: [signature] Date: 02/25/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 625673 **Method/Testcode:** 9060/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
K1900657-001	Carbon, Total Organic	N/A		Elutriate, Liquid	1.31 mg/L	10 ml	1.31 mg/L	1	0.07	0.50			2/21/19 10:41	N	II
K1900657-002	Carbon, Total Organic	N/A		Elutriate, Liquid	1.03 mg/L	10 ml	1.03 mg/L	1	0.07	0.50			2/21/19 11:44	N	II
KQ1902121-01	Carbon, Total Organic	DUP	K1900657-001	Elutriate, Liquid	1.20 mg/L	10 ml	1.20 mg/L	1	0.07	0.50		8	2/21/19 10:41	N	II
KQ1902121-02	Carbon, Total Organic	TRP	K1900657-001	Elutriate, Liquid	1.22 mg/L	10 ml	1.22 mg/L	1	0.07	0.50		5	2/21/19 10:41	N	II
KQ1902121-03	Carbon, Total Organic	QUAD	K1900657-001	Elutriate, Liquid	1.18 mg/L	10 ml	1.18 mg/L	1	0.07	0.50		5	2/21/19 10:41	N	II
KQ1902121-04	Carbon, Total Organic	DUP	K1900657-002	Elutriate, Liquid	0.92 mg/L	10 ml	0.92 mg/L	1	0.07	0.50		11	2/21/19 11:44	N	II
KQ1902121-05	Carbon, Total Organic	TRP	K1900657-002	Elutriate, Liquid	0.82 mg/L	10 ml	0.82 mg/L	1	0.07	0.50		11	2/21/19 11:44	N	II
KQ1902121-06	Carbon, Total Organic	QUAD	K1900657-002	Elutriate, Liquid	0.84 mg/L	10 ml	0.84 mg/L	1	0.07	0.50		10	2/21/19 11:44	N	II
KQ1902121-07	Carbon, Total Organic	MS	K1900657-002	Elutriate, Liquid	12.17 mg/L	10 ml	12.2 mg/L	1	0.07	0.50	45*		2/21/19 12:48	N	II
KQ1902121-08	Carbon, Total Organic	MS	K1900657-002	Elutriate, Liquid	12.19 mg/L	10 ml	12.2 mg/L	1	0.07	0.50	45*		2/21/19 12:48	N	II
KQ1902121-09	Carbon, Total Organic	MS	K1900657-002	Elutriate, Liquid	12.11 mg/L	10 ml	12.1 mg/L	1	0.07	0.50	44*		2/21/19 12:48	N	II
KQ1902121-10	Carbon, Total Organic	MS	K1900657-002	Elutriate, Liquid	12.33 mg/L	10 ml	12.3 mg/L	1	0.07	0.50	45*		2/21/19 12:48	N	II
KQ1902121-15	Carbon, Total Organic	CCB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 07:59	N	II
KQ1902121-16	Carbon, Total Organic	CCB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 14:40	N	II
KQ1902121-17	Carbon, Total Organic	CCV		Elutriate, Liquid	24.67 mg/L	10 ml	24.7 mg/L	1					2/21/19 07:42	N	II
KQ1902121-18	Carbon, Total Organic	CCV		Elutriate, Liquid	24.30 mg/L	10 ml	24.3 mg/L	1					2/21/19 14:24	N	II
KQ1902121-19	Carbon, Total Organic	LCS		Elutriate, Liquid	24.65 mg/L	10 ml	24.6 mg/L	1	0.07	0.50	99		2/21/19 02:52	N	II
KQ1902121-20	Carbon, Total Organic	LCS		Elutriate, Liquid	24.29 mg/L	10 ml	24.3 mg/L	1	0.07	0.50	97		2/21/19 02:52	N	II
KQ1902121-21	Carbon, Total Organic	LCS		Elutriate, Liquid	24.51 mg/L	10 ml	24.5 mg/L	1	0.07	0.50	98		2/21/19 02:52	N	II
KQ1902121-22	Carbon, Total Organic	LCS		Elutriate, Liquid	24.50 mg/L	10 ml	24.5 mg/L	1	0.07	0.50	98		2/21/19 02:52	N	II
KQ1902121-23	Carbon, Total Organic	MB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:48	N	II
KQ1902121-24	Carbon, Total Organic	MB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:48	N	II
KQ1902121-25	Carbon, Total Organic	MB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:48	N	II
KQ1902121-26	Carbon, Total Organic	MB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:48	N	II

02/25/19

# 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:** 625674 **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?	T
K1900868-002	Carbon, Total Organic	N/A		Water	4.06 mg/L	10 ml	4.06 mg/L	1	0.07	0.50			2/19/19 16:46	N	I
K1900868-003	Carbon, Total Organic	N/A		Water	10.93 mg/L	10 ml	10.9 mg/L	1	0.07	0.50			2/19/19 17:18	N	I
K1900868-004	Carbon, Total Organic	N/A		Water	8.83 mg/L	10 ml	8.83 mg/L	1	0.07	0.50			2/19/19 17:50	N	I
K1900868-005	Carbon, Total Organic	N/A		Water	7.98 mg/L	10 ml	7.98 mg/L	1	0.07	0.50			2/19/19 18:22	N	I
K1900868-007	Carbon, Total Organic	N/A		Water	14.34 mg/L	10 ml	28.7 mg/L	2	0.2	1.0			2/19/19 18:54	Y	I
K1900868-009	Carbon, Total Organic	N/A		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/19/19 20:33	N	I
K1901013-003	Carbon, Total Organic	N/A		Water	12.88 mg/L	10 ml	644 mg/L	50	4	25			2/19/19 22:11	N	II
K1901154-003	Carbon, Total Organic	N/A		Drinking Water	0.90 mg/L	10 ml	0.90 mg/L	1	0.07	0.50			2/19/19 23:31	N	I
K1901230-001	Carbon, Total Organic	N/A		Water	1.95 mg/L	10 ml	1.95 mg/L	1	0.07	0.50			2/20/19 01:43	N	II
K1901246-002	Carbon, Total Organic	N/A		Drinking Water	0.56 mg/L	10 ml	0.56 mg/L	1	0.07	0.50			2/20/19 02:48	N	I
K1901258-001	Carbon, Total Organic	N/A		Drinking Water	0.59 mg/L	10 ml	0.59 mg/L	1	0.07	0.50			2/20/19 03:20	N	I
K1901286-001	Carbon, Total Organic	N/A		Water	4.26 mg/L	10 ml	4.26 mg/L	1	0.07	0.50			2/19/19 21:05	N	I
K1901293-001	Carbon, Total Organic	N/A		Water	22.77 mg/L	10 ml	1140 mg/L	50	4	25			2/20/19 06:36	N	II
K1901293-002	Carbon, Total Organic	N/A		Water	15.50 mg/L	10 ml	775 mg/L	50	4	25			2/20/19 07:41	N	II
K1901293-003	Carbon, Total Organic	N/A		Water	10.61 mg/L	10 ml	531 mg/L	50	4	25			2/20/19 08:13	N	II
K1901342-001	Carbon, Total Organic	N/A		Water	1.91 mg/L	10 ml	1.91 mg/L	1	0.07	0.50			2/20/19 03:52	N	II
K1901343-001	Carbon, Total Organic	N/A		Water	0.66 mg/L	10 ml	0.66 mg/L	1	0.07	0.50			2/20/19 05:31	N	II
K1901382-001	Carbon, Total Organic	N/A		Water	20.04 mg/L	10 ml	20.0 mg/L	1	0.07	0.50			2/20/19 09:17	N	II
K1901382-002	Carbon, Total Organic	N/A		Water	0.74 mg/L	10 mL	0.74 mg/L	1	0.07	0.50			2/20/19 17:26:00	N	II
KQ1902122-01	Carbon, Total Organic	MS	K1900868-007	Water	40.42 mg/L	10 ml	80.8 mg/L	2	0.2	1.0	104		2/19/19 19:26	N	I
KQ1902122-02	Carbon, Total Organic	DUP	K1900868-007	Water	14.73 mg/L	10 ml	29.5 mg/L	2	0.2	1.0		3	2/19/19 18:54	N	IV
KQ1902122-03	Carbon, Total Organic	DUP	K1900868-002	Water	3.93 mg/L	10 ml	3.93 mg/L	1	0.07	0.50		3	2/19/19 16:46	N	I
KQ1902122-04	Carbon, Total Organic	DUP	K1900868-003	Water	10.95 mg/L	10 ml	11.0 mg/L	1	0.07	0.50		<1	2/19/19 17:18	N	I
KQ1902122-05	Carbon, Total Organic	DUP	K1900868-004	Water	8.73 mg/L	10 ml	8.73 mg/L	1	0.07	0.50		1	2/19/19 17:50	N	I
KQ1902122-06	Carbon, Total Organic	DUP	K1900868-005	Water	8.10 mg/L	10 ml	8.10 mg/L	1	0.07	0.50		1	2/19/19 18:22	N	I
KQ1902122-07	Carbon, Total Organic	DUP	K1900868-009	Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	2/19/19 20:33	N	IV
KQ1902122-08	Carbon, Total Organic	DUP	K1901286-001	Water	4.08 mg/L	10 ml	4.08 mg/L	1	0.07	0.50		4	2/19/19 21:05	N	IV
KQ1902122-09	Carbon, Total Organic	DUP	K1901013-003	Water	12.91 mg/L	10 ml	645 mg/L	50	4	25		<1	2/19/19 22:11	N	II
KQ1902122-10	Carbon, Total Organic	DUP	K1901154-003	Drinking Water	0.89 mg/L	10 ml	0.89 mg/L	1	0.07	0.50		2	2/19/19 23:31	N	I
KQ1902122-11	Carbon, Total Organic	DUP	K1901230-001	Water	1.88 mg/L	10 ml	1.88 mg/L	1	0.07	0.50		4	2/20/19 01:43	N	II
KQ1902122-12	Carbon, Total Organic	DUP	K1901246-002	Drinking Water	0.52 mg/L	10 ml	0.52 mg/L	1	0.07	0.50		8	2/20/19 02:48	N	I
KQ1902122-13	Carbon, Total Organic	DUP	K1901258-001	Drinking Water	0.52 mg/L	10 ml	0.52 mg/L	1	0.07	0.50		12*	2/20/19 03:20	N	I
KQ1902122-14	Carbon, Total Organic	DUP	K1901342-001	Water	1.89 mg/L	10 ml	1.89 mg/L	1	0.07	0.50		1	2/20/19 03:52	N	II
KQ1902122-15	Carbon, Total Organic	DUP	K1901343-001	Water	0.62 mg/L	10 ml	0.62 mg/L	1	0.07	0.50		6	2/20/19 05:31	N	II

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

02/25/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 625674 **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
KQ1902122-16	Carbon, Total Organic	DUP	K1901293-001	Water	22.81 mg/L	10 ml	1140 mg/L	50	4	25		<1	2/20/19 06:36	N	II
KQ1902122-17	Carbon, Total Organic	DUP	K1901293-002	Water	15.53 mg/L	10 ml	777 mg/L	50	4	25		<1	2/20/19 07:41	N	II
KQ1902122-18	Carbon, Total Organic	DUP	K1901293-003	Water	10.67 mg/L	10 ml	533 mg/L	50	4	25		<1	2/20/19 08:13	N	II
KQ1902122-19	Carbon, Total Organic	DUP	K1901382-001	Water	20.48 mg/L	10 ml	20.5 mg/L	1	0.07	0.50		2	2/20/19 09:17	N	II
KQ1902122-20	Carbon, Total Organic	DUP	K1901382-002	Water	0.73 mg/L	10 mL	0.73 mg/L	1	0.07	0.50		<1	2/20/19 17:26:00	N	II
KQ1902122-21	Carbon, Total Organic	MS	K1901286-001	Water	28.20 mg/L	10 ml	28.2 mg/L	1	0.07	0.50	96		2/19/19 21:37	N	IV
KQ1902122-22	Carbon, Total Organic	MS	K1901013-003	Water	39.43 mg/L	10 ml	1970 mg/L	50	4	25	106		2/19/19 22:43	N	II
KQ1902122-23	Carbon, Total Organic	MS	K1901154-003	Drinking Water	26.69 mg/L	10 ml	26.7 mg/L	1	0.07	0.50	103		2/20/19 00:03	N	I
KQ1902122-24	Carbon, Total Organic	MS	K1901230-001	Water	28.15 mg/L	10 ml	28.1 mg/L	1	0.07	0.50	105		2/20/19 02:15	N	II
KQ1902122-26	Carbon, Total Organic	MS	K1901342-001	Water	27.98 mg/L	10 ml	28.0 mg/L	1	0.07	0.50	104		2/20/19 04:24	N	II
KQ1902122-27	Carbon, Total Organic	MS	K1901343-001	Water	26.96 mg/L	10 ml	27.0 mg/L	1	0.07	0.50	105		2/20/19 06:03	N	II
KQ1902122-28	Carbon, Total Organic	MS	K1901293-001	Water	43.55 mg/L	10 ml	2180 mg/L	50	4	25	83		2/20/19 07:08	N	II
KQ1902122-29	Carbon, Total Organic	MS	K1901382-001	Water	43.15 mg/L	10 mL	43.1 mg/L	1	0.07	0.50	92		2/20/19 16:06:00	N	II
KQ1902122-30	Carbon, Total Organic	MB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/19/19 15:56	N	IV
KQ1902122-31	Carbon, Total Organic	LCS		Water	24.64 mg/L	10 ml	24.6 mg/L	1	0.07	0.50	99		2/19/19 16:13	N	IV
KQ1902122-32	Carbon, Total Organic	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/19/19 15:39	N	IV
KQ1902122-33	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/19/19 20:16	N	IV
KQ1902122-34	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/20/19 00:53	N	IV
KQ1902122-35	Carbon, Total Organic	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/20/19 05:14	N	IV
KQ1902122-36	Carbon, Total Organic	CCB		Water	0.32 mg/L	10 ml	0.32 mg/L J	1	0.07	0.50			2/20/19 10:06	N	IV
KQ1902122-37	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			2/20/19 20:07:00	N	IV
KQ1902122-38	Carbon, Total Organic	CCV		Water	24.97 mg/L	10 ml	25.0 mg/L	1					2/19/19 15:23	N	IV
KQ1902122-39	Carbon, Total Organic	CCV		Water	25.05 mg/L	10 ml	25.0 mg/L	1					2/19/19 19:59	N	IV
KQ1902122-40	Carbon, Total Organic	CCV		Water	25.03 mg/L	10 ml	25.0 mg/L	1					2/20/19 00:36	N	IV
KQ1902122-41	Carbon, Total Organic	CCV		Water	24.96 mg/L	10 ml	25.0 mg/L	1					2/20/19 04:57	N	IV
KQ1902122-42	Carbon, Total Organic	CCV		Water	25.34 mg/L	10 ml	25.3 mg/L	1					2/20/19 09:49	N	IV
KQ1902122-43	Carbon, Total Organic	CCV		Water	25.23 mg/L	10 mL	25.2 mg/L	1					2/20/19 20:24:00	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:** 625676 **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
K1901413-001	Carbon, Total Organic	N/A		Ground Water	1.63 mg/L	10 ml	1.63 mg/L	1	0.07	0.50			2/20/19 17:58	N	
K1901413-002	Carbon, Total Organic	N/A		Ground Water	2.48 mg/L	10 ml	2.48 mg/L	1	0.07	0.50			2/20/19 18:30	N	IV
K1901413-003	Carbon, Total Organic	N/A		Ground Water	3.81 mg/L	10 ml	3.81 mg/L	1	0.07	0.50			2/20/19 19:02	Y	IV
K1901414-001	Carbon, Total Organic	N/A		Ground Water	1.47 mg/L	10 ml	1.47 mg/L	1	0.07	0.50			2/20/19 20:41	N	IV
K1901414-002	Carbon, Total Organic	N/A		Ground Water	3.25 mg/L	10 ml	3.25 mg/L	1	0.07	0.50			2/20/19 21:46	N	
K1901414-003	Carbon, Total Organic	N/A		Ground Water	0.86 mg/L	10 ml	0.86 mg/L	1	0.07	0.50			2/20/19 22:18	N	IV
K1901414-004	Carbon, Total Organic	N/A		Ground Water	2.81 mg/L	10 ml	2.81 mg/L	1	0.07	0.50			2/20/19 22:50	N	IV
KQ1902128-01	Carbon, Total Organic	MS	K1901413-003	Ground Water	29.58 mg/L	10 ml	29.6 mg/L	1	0.07	0.50	103		2/20/19 19:34	N	IV
KQ1902128-02	Carbon, Total Organic	MS	K1901414-001	Ground Water	27.55 mg/L	10 ml	27.6 mg/L	1	0.07	0.50	104		2/20/19 21:13	N	IV
KQ1902128-03	Carbon, Total Organic	CCB		Ground Water	0.39 mg/L	10 mL	0.39 mg/L J	1	0.07	0.50			2/20/19 10:06:00	N	I
KQ1902128-04	Carbon, Total Organic	CCB		Ground Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/20/19 20:24	N	IV
KQ1902128-05	Carbon, Total Organic	CCB		Ground Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:32	N	IV
KQ1902128-06	Carbon, Total Organic	CCV		Ground Water	25.41 mg/L	10 mL	25.4 mg/L	1					2/20/19 09:49:00	N	IV
KQ1902128-07	Carbon, Total Organic	CCV		Ground Water	25.16 mg/L	10 ml	25.2 mg/L	1					2/20/19 20:07	N	IV
KQ1902128-08	Carbon, Total Organic	CCV		Ground Water	24.78 mg/L	10 ml	24.8 mg/L	1					2/21/19 01:15	N	IV
KQ1902128-09	Carbon, Total Organic	MB		Ground Water	0.04 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			2/20/19 01:10:00	N	IV
KQ1902128-10	Carbon, Total Organic	LCS		Ground Water	24.64 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	99		2/20/19 01:26:00	N	IV
KQ1902128-11	Carbon, Total Organic	DUP	K1901413-001	Ground Water	1.54 mg/L	10 ml	1.54 mg/L	1	0.07	0.50		6	2/20/19 17:58	N	IV
KQ1902128-12	Carbon, Total Organic	DUP	K1901413-002	Ground Water	2.44 mg/L	10 ml	2.44 mg/L	1	0.07	0.50		2	2/20/19 18:30	N	IV
KQ1902128-13	Carbon, Total Organic	DUP	K1901413-003	Ground Water	3.84 mg/L	10 ml	3.84 mg/L	1	0.07	0.50		<1	2/20/19 19:02	N	IV
KQ1902128-14	Carbon, Total Organic	DUP	K1901414-001	Ground Water	1.41 mg/L	10 ml	1.41 mg/L	1	0.07	0.50		4	2/20/19 20:41	N	IV
KQ1902128-15	Carbon, Total Organic	DUP	K1901414-002	Ground Water	3.02 mg/L	10 ml	3.02 mg/L	1	0.07	0.50		7	2/20/19 21:46	N	IV
KQ1902128-16	Carbon, Total Organic	DUP	K1901414-003	Ground Water	0.84 mg/L	10 ml	0.84 mg/L	1	0.07	0.50		3	2/20/19 22:18	N	IV

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

~~02/26~~ 02/25/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 625676 **Method/Testcode:** SM 531 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
KQ1902128-17	Carbon, Total Organic	DUP	K1901414-004	Ground Water	2.60 mg/L	10 ml	2.60 mg/L	1	0.07	0.50		8	2/20/19 22:50	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:** 625678 **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
K1900799-044	Carbon, Dissolved Organic (DOC)	N/A		Water	1.92 mg/L	10 ml	1.92 mg/L	1	0.07	0.50			2/20/19 23:22	N	II
K1900865-001	Carbon, Dissolved Organic (DOC)	N/A		Water	1.00 mg/L	10 ml	1.00 mg/L	1	0.07	0.50			2/21/19 03:56	N	I
K1900865-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.31 mg/L	10 ml	31 mg/L J	100	7	50			2/21/19 05:17	N	I
K1901075-001	Carbon, Dissolved Organic (DOC)	N/A		Water	3.48 mg/L	10 ml	3.48 mg/L	1	0.07	0.50			2/21/19 08:16	N	II
K1901075-002	Carbon, Dissolved Organic (DOC)	N/A		Water	5.11 mg/L	10 ml	5.11 mg/L	1	0.07	0.50			2/21/19 06:21	N	II
K1901312-002	Carbon, Dissolved Organic (DOC)	N/A		Water	2.92 mg/L	10 ml	2.92 mg/L	1	0.07	0.50			2/21/19 08:48	N	II
K1901312-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.07 mg/L	10 ml	2.07 mg/L	1	0.07	0.50			2/21/19 10:08	N	II
KQ1902132-01	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/20/19 20:24	N	II
KQ1902132-02	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:32	N	II
KQ1902132-03	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 07:59	N	II
KQ1902132-04	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 14:40	N	II
KQ1902132-05	Carbon, Dissolved Organic (DOC)	CCV		Water	25.16 mg/L	10 ml	25.2 mg/L	1					2/20/19 20:07	N	II
KQ1902132-06	Carbon, Dissolved Organic (DOC)	CCV		Water	24.78 mg/L	10 ml	24.8 mg/L	1					2/21/19 01:15	N	II
KQ1902132-07	Carbon, Dissolved Organic (DOC)	CCV		Water	24.67 mg/L	10 ml	24.7 mg/L	1					2/21/19 07:42	N	II
KQ1902132-08	Carbon, Dissolved Organic (DOC)	CCV		Water	24.30 mg/L	10 ml	24.3 mg/L	1					2/21/19 14:24	N	II
KQ1902132-09	Carbon, Dissolved Organic (DOC)	MB		Water	0.14 mg/L	10 mL	0.14 mg/L J	1	0.07	0.50			2/20/19 10:23:00	N	II
KQ1902132-10	Carbon, Dissolved Organic (DOC)	LCS		Water	23.44 mg/L	10 ml	23.4 mg/L	1	0.07	0.50	94		2/20/19 12:08	N	II
KQ1902132-11	Carbon, Dissolved Organic (DOC)	MS	K1900799-044	Water	21.39 mg/L	10 ml	21.4 mg/L	1	0.07	0.50	78*		2/20/19 23:54	N	II
KQ1902132-12	Carbon, Dissolved Organic (DOC)	MS	K1900865-001	Water	27.19 mg/L	10 ml	27.2 mg/L	1	0.07	0.50	105		2/21/19 04:28	N	I
KQ1902132-13	Carbon, Dissolved Organic (DOC)	MS	K1901075-002	Water	31.36 mg/L	10 ml	31.4 mg/L	1	0.07	0.50	105		2/21/19 06:53	N	II
KQ1902132-14	Carbon, Dissolved Organic (DOC)	MS	K1901312-002	Water	28.47 mg/L	10 ml	28.5 mg/L	1	0.07	0.50	102		2/21/19 09:20	N	II
KQ1902132-15	Carbon, Dissolved Organic (DOC)	DUP	K1900799-044	Water	1.87 mg/L	10 mL	1.87 mg/L	1	0.07	0.50		3	2/20/19 23:22:00	N	II
KQ1902132-16	Carbon, Dissolved Organic (DOC)	DUP	K1900865-001	Water	0.85 mg/L	10 ml	0.85 mg/L	1	0.07	0.50		15*	2/21/19 03:56	N	I

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

02/25/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 625678 **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
KQ1902132-17	Carbon, Dissolved Organic (DOC)	DUP	K1900865-002	Water	0.23 mg/L	10 ml	23 mg/L J	100	7	50		29*	2/21/19 05:17	N	I
KQ1902132-18	Carbon, Dissolved Organic (DOC)	DUP	K1901075-002	Water	5.12 mg/L	10 ml	5.12 mg/L	1	0.07	0.50		<1	2/21/19 06:21	N	II
KQ1902132-19	Carbon, Dissolved Organic (DOC)	DUP	K1901075-001	Water	3.54 mg/L	10 ml	3.54 mg/L	1	0.07	0.50		2	2/21/19 08:16	N	II
KQ1902132-20	Carbon, Dissolved Organic (DOC)	DUP	K1901312-002	Water	2.80 mg/L	10 ml	2.80 mg/L	1	0.07	0.50		4	2/21/19 08:48	N	II
KQ1902132-21	Carbon, Dissolved Organic (DOC)	DUP	K1901312-004	Water	2.03 mg/L	10 ml	2.03 mg/L	1	0.07	0.50		2	2/21/19 10:08	N	II

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TOC: 625673, 625674, 625676
DOC: 625678

Schedule: 02192019

Version: 12
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/02/20 12:08 - Wednesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Blank)	Blank	Reagent/Acid Blank		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Sample	MB1	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Sample	ICS	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Sample	K1900868-002.21	Extended Reaction 021711 (Extended Reaction 021711)	2
4	Sample	K1900868-003.21	Extended Reaction 021711 (Extended Reaction 021711)	2
5	Sample	K1900868-004.21	Extended Reaction 021711 (Extended Reaction 021711)	2
6	Sample	K1900868-005.21	Extended Reaction 021711 (Extended Reaction 021711)	2
7	Sample	K1900868-007.43 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
8	Sample	K1900868-007.43 ms 2x	Extended Reaction 021711 (Extended Reaction 021711)	1
9	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	6
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	K1900868-009.21	Extended Reaction 021711 (Extended Reaction 021711)	2
11	Sample	K1901286-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
12	Sample	K1901286-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
13	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
14	Sample	K1901013-003.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
15	Sample	K1901013-003.01 ms 50x	Extended Reaction 021711 (Extended Reaction 021711)	1
16	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
17	Sample	K1901154-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
18	Sample	K1901154-003.02 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
19	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	MB2	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Sample	K1901230-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
22	Sample	K1901230-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
23	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
24	Sample	K1901246-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
25	Sample	K1901258-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
26	Sample	K1901342-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
27	Sample	K1901342-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
28	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Sample	K1901343-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
30	Sample	K1901343-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
31	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
32	Sample	K1901293-001.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
33	Sample	K1901293-001.01 ms 50x	Extended Reaction 021711 (Extended Reaction 021711)	1
34	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
35	Sample	K1901293-002.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
36	Sample	K1901293-003.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
37	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
38	Sample	K1901382-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

02/25/19

Schedule: 02192019

Position	Sample Type	Sample ID	Method ID (Calibration ID)		Reps
39	Check Standard	TOC CCB 021711 [0.0 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
40	Blank	Blank	Extended Reaction 021711	Extended Reaction 021711	1
41	Check Standard	TOC LCS 021711 [25.0 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
42	Sample	K1902415-001.01 rep	Extended Reaction 021711	Extended Reaction 021711	1
43	Sample	PBS	Extended Reaction 021711	Extended Reaction 021711	4
44	Sample	K1902415-001.01	Extended Reaction 021711	Extended Reaction 021711	1
45	Sample	K1902415-001.01	Extended Reaction 021711	Extended Reaction 021711	2
46	Sample	K1902415-001.01 rep	Extended Reaction 021711	Extended Reaction 021711	1
47	Sample	K1902415-001.01	Extended Reaction 021711	Extended Reaction 021711	3
48	Sample	K1902415-001.01 rep	Extended Reaction 021711	Extended Reaction 021711	1
49	Sample	PBS	Extended Reaction 021711	Extended Reaction 021711	1
50	Check Standard	TOC CCV 021711 [25 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
51	Check Standard	TOC CCB 021711 [0.0 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
52	Sample	K1902414-001.01	Extended Reaction 021711	Extended Reaction 021711	1
53	Sample	K1902414-001.01 rep	Extended Reaction 021711	Extended Reaction 021711	1
54	Sample	PBS	Extended Reaction 021711	Extended Reaction 021711	1
55	Sample	K1902414-002.01	Extended Reaction 021711	Extended Reaction 021711	2
56	Sample	K1902414-002.01	Extended Reaction 021711	Extended Reaction 021711	2
57	Sample	K1902414-002.01 rep	Extended Reaction 021711	Extended Reaction 021711	1
58	Sample	K1902414-002.01 rep dup	Extended Reaction 021711	Extended Reaction 021711	1
59	Sample	PBS	Extended Reaction 021711	Extended Reaction 021711	2
60	Check Standard	TOC CCV 021711 [25 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
61	Check Standard	TOC CCB 021711 [0.0 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
62	Sample	K1902414-003.01	Extended Reaction 021711	Extended Reaction 021711	1
63	Check Standard	TOC LCS 021711 [25.0 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
64	Sample	K1902414-003.01 rep	Extended Reaction 021711	Extended Reaction 021711	1
65	Sample	K1902414-003.01 rep dup	Extended Reaction 021711	Extended Reaction 021711	1
66	Sample	PBS	Extended Reaction 021711	Extended Reaction 021711	2
67	Check Standard	TOC CCV 021711 [25 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
68	Check Standard	TOC CCB 021711 [0.0 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
69	Sample	K1902414-004.01	Extended Reaction 021711	Extended Reaction 021711	1
70	Sample	K1902414-004.01 rep	Extended Reaction 021711	Extended Reaction 021711	1
71	Sample	PBS	Extended Reaction 021711	Extended Reaction 021711	2
72	Sample	K1902414-004.01	Extended Reaction 021711	Extended Reaction 021711	4
73	Sample	K1902414-004.01 rep	Extended Reaction 021711	Extended Reaction 021711	4
74	Sample	K1902414-004.01 rep dup	Extended Reaction 021711	Extended Reaction 021711	4
75	Sample	PBS	Extended Reaction 021711	Extended Reaction 021711	1
76	Check Standard	TOC CCV 021711 [25 ppm]	Extended Reaction 021711	Extended Reaction 021711	1
77	Check Standard	TOC CCB 021711 [0.0 ppm]	Extended Reaction 021711	Extended Reaction 021711	1

Fusion Report - 02192019
Tuesday, February 19, 2019 12:27 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/02/21 16:21 - Thursday

Report Summary Information

Company Location: Gen Chem Lab
Schedule Name: 02192019
Instrument Name: Fusion1
Report Version: 1 of 1
Report Creation by Operators (schedule version): Fusion1 (Fusion1) (v2), Fusion1 (Fusion1) (v3), Fusion1 (Fusion1) (v4), Fusion1 (Fusion1) (v7), Fusion1 (Fusion1) (v8), Fusion1 (Fusion1) (v9), Fusion1 (Fusion1) (v10)
Comment:

Engine Version: 1.1.5.1
Firmware Version: 1.2.0696
Connection: RS232 COM1

Report Results

02/25/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/02/19 12:27

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.80	16.90	3.10	47.10	07:59
2	TC Clean	21.07	24.16	3.10	49.92	07:16
3	TC Clean	3.20	6.14	2.95	49.87	07:02
4	TC Clean	2.09	5.06	2.97	50.00	03:48

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/02/19 13:01

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.08	14.91	2.83	47.05	08:00

2	TC Clean	5.92	8.87	2.96	50.02	04:06
3	TC Clean	2.31	5.35	3.04	50.02	03:55
4	TC Clean	1.77	4.81	3.03	50.03	03:57

Sample Type: Clean From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/02/19 13:26

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.69	14.78	3.08	47.09	08:00
2	TC Clean	5.18	8.32	3.13	50.02	04:02
3	TC Clean	2.21	5.29	3.09	49.99	03:44
4	TC Clean	1.75	4.67	2.92	50.00	03:43

Sample Type: Blank (Creating v1223) From Schedule Version 7

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/02/19 14:07

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.80	14.66	2.86	47.15	05:47
2	TC Clean	5.59	8.53	2.94	50.01	04:02
3	TC Clean	2.27	5.35	3.08	50.06	03:47
4	TC Clean	1.49	4.47	2.98	49.99	03:46
5	Reagent Blank	8.52	11.51	2.99	50.04	05:06
6	Acid Blank	1.85	4.72	2.87	47.33	06:00

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0099 ppm	0.0000 ppm	0.0000%	2019/02/19 15:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0099	0.0986	14.91	17.81	2.90	50.11	12:32

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

1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	25.0374 ppm (PASS)	0.0000 ppm	0%	2019/02/19 15:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0374	250.3741	203.91	206.98	3.07	50.12	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/19 15:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	15.48	18.54	3.07	50.15	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/19 15:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	14.33	17.32	2.99	50.17	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> LCS ER From Schedule Version 8

	Pos	BAT	Concentration	Dil	Sample ID	Min / Max	Result	Std. Dev.	RSD	Start Time

			(ppm)			(% dev)				
◈	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.7059 ppm (PASS)	0.0000 ppm	0%	2019/02/19 16:13

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7059	247.0590	201.42	204.42	3.00	50.20	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 ppmC

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.3227 ppm	0.0000 ppm	0.0000%	2019/02/19 16:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3227	3.2273	17.26	20.26	3.00	50.20	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1900868-002.21	4.0615 ppm	0.0902 ppm	2.2200%	2019/02/19 16:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1253	41.2530	45.82	48.77	2.95	50.24	12:25
2	TOC	3.9978	39.9776	44.86	47.70	2.84	50.26	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1900868-003.21	11.0138 ppm	0.0141 ppm	0.1300%	2019/02/19 17:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.0038	110.0379	97.48	100.48	3.00	50.28	12:29
2	TOC	11.0238	110.2376	97.64	100.58	2.94	50.29	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Sample

From Schedule Version 9

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	5	TOC	K1900868-004.21	8.8518 ppm	0.0704 ppm	0.8000%	2019/02/19 17:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9016	89.0161	81.70	84.61	2.92	50.32	12:27
2	TOC	8.8020	88.0202	80.95	83.70	2.75	50.24	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1900868-005.21	8.1137 ppm	0.0845 ppm	1.0400%	2019/02/19 18:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.0539	80.5395	75.33	78.41	3.08	50.24	12:29
2	TOC	8.1735	81.7350	76.23	79.19	2.96	50.24	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1900868-007.43 2x	14.6022 ppm	0.2727 ppm	1.8700%	2019/02/19 18:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.4094	144.0936	123.06	126.00	2.94	50.26	12:27
2	TOC	14.7950	147.9505	125.96	128.96	3.00	50.30	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1900868-007.43 ms 2x	40.4860 ppm	0.0000 ppm	0.0000%	2019/02/19 19:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	40.4860	404.8603	318.93	321.99	3.06	50.31	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	RB	0.7260 ppm	0.0000 ppm	0.0000%	2019/02/19 19:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7260	7.2599	20.29	23.30	3.01	50.28	12:33

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 — 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 021711 [25 ppm]	0 / infinity (NA / NA)	25.1182 ppm (PASS)	0.0000 ppm	0%	2019/02/19 19:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1182	251.1822	204.52	207.48	2.96	50.29	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 — From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0560 ppm (PASS)	0.0000 ppm	0%	2019/02/19 20:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0560	0.5603	16.27	19.25	2.98	50.30	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	0 ppmC

Sample Type: Sample — From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K1900868-009.21	0.0957 ppm	0.0006 ppm	0.5900%	2019/02/19 20:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0953	0.9533	15.55	18.58	3.03	50.28	12:30
2	TOC	0.0961	0.9613	15.56	18.43	2.87	50.29	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1901286-001.01	4.2419 ppm	0.1263 ppm	2.9800%	2019/02/19 21:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.3313	43.3126	47.37	50.32	2.95	50.30	12:27
2	TOC	4.1526	41.5259	46.02	48.99	2.97	50.29	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1901286-001.01 ms	28.2706 ppm	0.0000 ppm	0.0000%	2019/02/19 21:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2706	282.7059	227.18	230.08	2.90	50.27	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	RB	0.3649 ppm	0.0000 ppm	0.0000%	2019/02/19 21:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3649	3.6493	17.57	20.56	2.99	50.31	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1901013-003.01 50x	12.9632 ppm	0.0206 ppm	0.1600%	2019/02/19 22:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.9486	129.4861	112.09	114.98	2.89	50.25	12:24
2	TOC	12.9778	129.7777	112.31	115.22	2.90	50.25	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1901013-003.01 ms 50x	39.4978 ppm	0.0000 ppm	0.0000%	2019/02/19 22:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	39.4978	394.9777	311.51	314.10	2.59	50.23	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

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

		Type			(ppmC)		
◆	16	TOC	RB	0.4391 ppm	0.1559 ppm	35.5000%	2019/02/19 22:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5493	5.4932	18.96	21.93	2.97	50.20	12:27
2	TOC	0.3289	3.2885	17.30	20.15	2.84	50.19	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1901154-003.02	0.9648 ppm	0.0136 ppm	1.4100%	2019/02/19 23:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9744	9.7442	22.15	24.98	2.83	50.16	12:24
2	TOC	0.9552	9.5525	22.01	24.86	2.85	50.19	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1901154-003.02 ms	26.7579 ppm	0.0000 ppm	0.0000%	2019/02/20 00:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.7579	267.5792	215.82	218.87	3.05	50.12	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	RB	0.2066 ppm	0.0000 ppm	0.0000%	2019/02/20 00:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2066	2.0663	16.39	19.21	2.83	50.13	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	25.0965 ppm (PASS)	0.0000 ppm	0%	2019/02/20 00:36

	Base		Rep							Run

Pos	Analysis Type	ID	#	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Time
B	TOC	25 ppm	1	25.0965	250.9652	204.36	207.39	3.03	50.12	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0434 ppm (PASS)	0.0000 ppm	0%	2019/02/20 00:53

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0434	0.4338	16.18	19.11	2.93	50.11	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	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	0.0439 ppm	0.0000 ppm	0.0000%	2019/02/20 01:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0439	0.4395	15.16	18.09	2.93	50.11	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> LCS ER 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 ER [25.0 ppm]	0 / infinity (NA / NA)	24.6367 ppm (PASS)	0.0000 ppm	0%	2019/02/20 01:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.6367	246.3667	200.90	203.77	2.87	50.09	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1901230-001.01	1.9824 ppm	0.0499 ppm	2.5200%	2019/02/20 01:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0177	20.1765	29.99	32.84	2.85	50.07	12:29
2	TOC	1.9471	19.4709	29.46	32.37	2.91	50.09	12:26

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1901230-001.01 ms	28.2163 ppm	0.0000 ppm	0.0000%	2019/02/20 02:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2163	282.1627	226.77	229.70	2.93	50.09	12:30

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	RB	0.1186 ppm	0.0000 ppm	0.0000%	2019/02/20 02:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1186	1.1863	15.72	18.78	3.06	50.09	12:34

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1901246-002.01	0.6102 ppm	0.0315 ppm	5.1700%	2019/02/20 02:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6325	6.3253	19.58	22.45	2.87	50.08	12:30
2	TOC	0.5879	5.8793	19.25	22.17	2.92	50.07	12:24

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1901258-001.01	0.6268 ppm	0.0459 ppm	7.3300%	2019/02/20 03:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6593	6.5929	19.78	22.75	2.96	50.07	12:28

2	TOC	0.5943	5.9432	19.30	22.22	2.92	50.07	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1901342-001.01	1.9731 ppm	0.0146 ppm	0.7400%	2019/02/20 03:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9834	19.8344	29.73	32.59	2.86	50.07	12:30
2	TOC	1.9628	19.6280	29.58	32.54	2.96	50.06	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1901342-001.01 ms	28.0546 ppm	0.0000 ppm	0.0000%	2019/02/20 04:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.0546	280.5465	225.56	228.59	3.04	50.06	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	RB	0.1053 ppm	0.0000 ppm	0.0000%	2019/02/20 04:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1053	1.0532	15.62	18.65	3.03	50.05	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	25.0335 ppm (PASS)	0.0000 ppm	0%	2019/02/20 04:57

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0335	250.3355	203.88	206.98	3.09	50.05	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/20 05:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	15.23	18.14	2.90	50.03	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	0 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1901343-001.01	0.7080 ppm	0.0283 ppm	4.0000%	2019/02/20 05:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7280	7.2799	20.30	23.20	2.89	50.03	12:30
2	TOC	0.6879	6.8791	20.00	22.96	2.96	50.06	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1901343-001.01 ms	27.0258 ppm	0.0000 ppm	0.0000%	2019/02/20 06:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.0258	270.2579	217.83	220.69	2.86	50.05	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	RB	0.0402 ppm	0.0000 ppm	0.0000%	2019/02/20 06:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0402	0.4022	15.13	18.12	2.99	50.06	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

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

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1901293-001.01 50x	22.8634 ppm	0.0275 ppm	0.1200%	2019/02/20 06:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	22.8439	228.4392	186.42	189.52	3.10	50.07	12:29
2	TOC	22.8828	228.8280	186.71	189.81	3.10	50.07	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1901293-001.01 ms 50x	43.6149 ppm	0.0000 ppm	0.0000%	2019/02/20 07:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	43.6149	436.1494	342.44	345.24	2.81	50.08	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	RB	0.5702 ppm	0.0000 ppm	0.0000%	2019/02/20 07:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5702	5.7022	19.12	22.00	2.88	50.03	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1901293-002.01 50x	15.5854 ppm	0.0251 ppm	0.1600%	2019/02/20 07:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.5676	155.6762	131.76	134.86	3.10	50.05	12:26
2	TOC	15.6032	156.0317	132.03	135.02	2.99	50.06	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1901293-003.01 50x	10.7112 ppm	0.0384 ppm	0.3600%	2019/02/20 08:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.6840	106.8401	95.08	98.02	2.94	50.03	12:28
2	TOC	10.7383	107.3832	95.49	98.52	3.03	50.04	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC)	Extended Reaction	Extended Reaction

(v1223) 021711 (v4) 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	RB	0.2236 ppm	0.1259 ppm	56.2900%	2019/02/20 08:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3126	3.1261	17.18	20.07	2.88	50.03	12:28
2	TOC	0.1346	1.3461	15.84	18.88	3.04	50.03	12:25

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

Sample Type: Sample — From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1901382-001.01	20.3308 ppm	0.3091 ppm	1.5200%	2019/02/20 09:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.1123	201.1228	165.90	168.89	2.99	50.06	12:25
2	TOC	20.5494	205.4936	169.18	172.17	2.98	50.06	12:27

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 — 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 021711 [25 ppm]	0 / infinity (NA / NA)	25.4114 ppm (PASS)	0.0000 ppm	0%	2019/02/20 09:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4114	254.1138	206.72	209.73	3.01	50.07	12:28

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.3909 ppm (PASS)	0.0000 ppm	0%	2019/02/20 10:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.3909	3.9086	18.79	21.92	3.13	50.02	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	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	0.1354 ppm	0.0000 ppm	0.0000%	2019/02/20 10:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1354	1.3541	15.85	18.55	2.70	50.01	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

BCP 2/12/19

Sample Type: Check Standard --> LCS ER From Schedule Version 10

NK, Schedule aborted

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	ppm (FAIL)		%	2019/02/20 10:40

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

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 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
v1222	1.7273	1.7390	0.0000	0.0000	0.0000	2019/02/15 16:06	Fusion1 (Fusion1)
v1223	2.8390	1.8540	0.0000	0.0000	0.0000	2019/02/19 14:42	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version:	v26	Calibration curve formula:	TOC: y = 7.511x + 15.850
Ver Creation:	2019/01/31 18:04	r^2 value:	TOC: r^2 = 0.99984
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	14.6070	0.0000		2019/01/31 16:25
0.50 ppm	19.2770	0.5000		2019/01/31 16:42
1.00 ppm	21.9140	1.0000		2019/01/31 16:58
5.00 ppm	53.0870	5.0000		2019/01/31 17:14
10.0 ppm	94.7080	10.0000		2019/01/31 17:31
25.0 ppm	204.1870	25.0000		2019/01/31 17:47
50.0 ppm	390.4490	50.0000		2019/01/31 18:03

Methods

Name: Extended Reaction 021711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/01/31 11:21		
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	4.00 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	2019/02/20 10:43

Fusion Report - 02192019
Wednesday, February 20, 2019 12:08 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/02/21 16:21 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	02192019	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) (v12)		
Comment:			

Report Results

02/25/19

Sample Type: Check Standard --> LCS ER

From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	23.5061 ppm (PASS)	0.0000 ppm	0%	2019/02/20 12:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.5061	235.0610	192.41	195.10	2.69	50.00	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 ppmC

Sample Type: Sample

From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1901382-001.01 ms	43.1488 ppm	0.0000 ppm	0.0000%	2019/02/20 16:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	43.1488	431.4884	338.93	341.87	2.93	50.14	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◆	41	TOC	RB	0.0220 ppm	0.0440 ppm	200.0000%	2019/02/20 16:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0880	0.8801	15.49	18.54	3.04	50.04	12:26
2	TOC	0.0000	0.0000	13.84	16.84	3.00	50.01	12:30
3	TOC	0.0000	0.0000	13.36	16.17	2.81	50.01	12:27
4	TOC	0.0000	0.0000	13.73	16.59	2.86	50.08	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	42	TOC	K1901382-002.01	0.7357 ppm	0.0043 ppm	0.5900%	2019/02/20 17:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7388	7.3877	20.38	23.22	2.83	50.06	12:25
2	TOC	0.7326	7.3265	20.34	23.12	2.78	50.09	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	43	TOC	K1901413-001.01	1.6535 ppm	0.0631 ppm	3.8100%	2019/02/20 17:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6981	16.9813	27.59	30.44	2.86	50.09	12:29
2	TOC	1.6089	16.0893	26.92	29.96	3.04	50.08	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	44	TOC	K1901413-002.01	2.5284 ppm	0.0288 ppm	1.1400%	2019/02/20 18:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5487	25.4873	33.98	36.72	2.74	50.06	12:29
2	TOC	2.5080	25.0799	33.67	36.46	2.79	50.11	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	45	TOC	K1901413-003.01	3.8992 ppm	0.0216 ppm	0.5500%	2019/02/20 19:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	3.8839	38.8393	44.01	46.93	2.92	50.05	12:25
2	TOC	3.9144	39.1441	44.24	47.05	2.82	49.94	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	K1901413-003.01 ms	29.6501 ppm	0.0000 ppm	0.0000%	2019/02/20 19:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.6501	296.5013	237.54	240.30	2.75	49.95	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	RB	0.1703 ppm	0.0000 ppm	0.0000%	2019/02/20 19:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1703	1.7029	16.11	18.87	2.76	49.87	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	25.2273 ppm (PASS)	0.0000 ppm	0%	2019/02/20 20:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.2273	252.2726	205.34	207.97	2.63	49.78	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/20 20:24

	Base		Rep							Run

Pos	Analysis Type	ID	#	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Time
D	TOC	0.0 ppm	1	0.0000	0.0000	15.37	18.08	2.71	49.92	12:29

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample — From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1901414-001.01	1.5055 ppm	0.0422 ppm	2.8000%	2019/02/20 20:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5353	15.3531	26.36	29.09	2.73	49.96	12:30
2	TOC	1.4757	14.7567	25.92	28.75	2.83	49.95	12:30

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1901414-001.01 ms	27.6204 ppm	0.0000 ppm	0.0000%	2019/02/20 21:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.6204	276.2037	222.30	225.10	2.80	49.94	12:31

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	RB	0.1662 ppm	0.0000 ppm	0.0000%	2019/02/20 21:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1662	1.6616	16.08	19.00	2.92	49.91	12:29

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1901414-002.01	3.2049 ppm	0.1591 ppm	4.9600%	2019/02/20 21:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3174	33.1744	39.75	42.74	2.99	49.90	12:27
2	TOC	3.0924	30.9244	38.06	40.89	2.83	49.89	12:26

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC)
Method: Extended Reaction
Calibration: Extended Reaction

(v1223) 021711 (v4) 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1901414-003.01	0.9184 ppm	0.0177 ppm	1.9300%	2019/02/20 22:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9309	9.3088	21.83	24.48	2.66	49.90	12:29
2	TOC	0.9059	9.0585	21.64	24.47	2.83	49.84	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1901414-004.01	2.7753 ppm	0.1470 ppm	5.3000%	2019/02/20 22:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8793	28.7930	36.46	39.50	3.04	49.93	12:27
2	TOC	2.6713	26.7134	34.90	37.80	2.90	49.95	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1900799-044.03 doc	1.8956 ppm	0.0372 ppm	1.9600%	2019/02/20 23:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9219	19.2193	29.27	32.08	2.81	49.93	12:28
2	TOC	1.8693	18.6934	28.87	31.65	2.78	49.92	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1900799-044.03 ms doc	21.4591 ppm	0.0000 ppm	0.0000%	2019/02/20 23:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.4591	214.5906	176.02	178.79	2.78	49.89	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	RB	0.0358 ppm	0.0506 ppm	141.4200%	2019/02/21 00:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0715	0.7150	15.37	18.17	2.80	49.94	12:30
2	TOC	0.0000	0.0000	13.95	16.73	2.78	49.94	12:27

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	FB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 00:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.63	16.50	2.86	49.94	12:28
2	TOC	0.0000	0.0000	13.73	16.79	3.05	49.88	12:25

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711

From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.8477 ppm (PASS)	0.0000 ppm	0%	2019/02/21 01:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8477	248.4769	202.49	205.40	2.92	49.92	12:31

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711

From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/21 01:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	14.06	16.91	2.85	49.91	12:32

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

STD Conc - Pos D: 0 ppmC

Sample Type: Sample

From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 01:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.02	15.75	2.74	49.89	12:26
2	TOC	0.0000	0.0000	13.16	16.19	3.03	49.90	12:28
3	TOC	0.0000	0.0000	13.14	15.83	2.68	49.89	12:26
4	TOC	0.0000	0.0000	12.58	15.37	2.79	49.90	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> LCS ER From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.5559 ppm (PASS)	0.1476 ppm	0.60%	2019/02/21 02:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7160	247.1602	201.50	204.25	2.76	49.91	12:28
C	TOC	25.0 ppm	2	24.3586	243.5856	198.81	201.56	2.75	49.90	12:26
C	TOC	25.0 ppm	3	24.5821	245.8209	200.49	203.41	2.92	49.88	12:25
C	TOC	25.0 ppm	4	24.5669	245.6691	200.38	203.21	2.84	49.91	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1900865-001.03 doc	0.9951 ppm	0.1007 ppm	10.1200%	2019/02/21 03:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0663	10.6628	22.84	25.68	2.84	49.89	12:27
2	TOC	0.9238	9.2383	21.77	24.62	2.85	49.92	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1900865-001.03 ms doc	27.2617 ppm	0.0000 ppm	0.0000%	2019/02/21 04:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.2617	272.6170	219.60	222.25	2.64	49.89	12:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 04:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.62	16.54	2.92	49.88	12:27
2	TOC	0.0000	0.0000	13.48	16.19	2.71	49.89	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1900865-002.03 doc 100x	0.3389 ppm	0.0554 ppm	16.3600%	2019/02/21 05:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3781	3.7811	17.67	20.39	2.71	49.88	12:30
2	TOC	0.2997	2.9970	17.08	20.06	2.98	49.92	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 05:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	12.48	15.24	2.76	49.90	12:25
2	TOC	0.0000	0.0000	11.55	14.53	2.98	49.93	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1901075-002.02 doc	5.1862 ppm	0.0074 ppm	0.1400%	2019/02/21 06:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.1809	51.8092	53.75	56.78	3.03	49.91	12:30
2	TOC	5.1914	51.9143	53.83	56.76	2.93	49.91	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC)	Extended Reaction	Extended Reaction

(v1223) 021711 (v4) 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1901075-002.02 ms doc	31.4271 ppm	0.0000 ppm	0.0000%	2019/02/21 06:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.4271	314.2706	250.89	253.86	2.97	49.92	12:29

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 07:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	14.02	17.01	2.99	49.90	12:27
2	TOC	0.0000	0.0000	12.87	15.83	2.96	49.91	12:29

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.7412 ppm (PASS)	0.0000 ppm	0%	2019/02/21 07:42

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7412	247.4118	201.69	204.61	2.92	49.92	12:32

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/21 07:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	13.31	16.18	2.86	49.92	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	0 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	67	TOC	K1901075-001.02 doc	3.5784 ppm	0.0394 ppm	1.1000%	2019/02/21 08:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5506	35.5056	41.50	44.53	3.03	49.89	12:26
2	TOC	3.6063	36.0634	41.92	44.95	3.03	49.93	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	68	TOC	K1901312-002.02 doc	2.9288 ppm	0.0851 ppm	2.9100%	2019/02/21 08:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9890	29.8900	37.28	40.31	3.03	49.85	12:29
2	TOC	2.8686	28.6865	36.38	39.34	2.96	49.92	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	69	TOC	K1901312-002.02 ms doc	28.5389 ppm	0.0000 ppm	0.0000%	2019/02/21 09:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.5389	285.3886	229.20	232.23	3.03	49.89	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	70	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 09:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	12.86	15.92	3.06	49.89	12:26
2	TOC	0.0000	0.0000	12.14	15.05	2.91	49.87	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1901312-004.02 doc	2.1194 ppm	0.0324 ppm	1.5300%	2019/02/21 10:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1423	21.4227	30.92	33.84	2.92	49.88	12:30
2	TOC	2.0965	20.9647	30.58	33.55	2.97	49.88	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	K1900657-001.14	1.2982 ppm	0.0565 ppm	4.3500%	2019/02/21 10:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3797	13.7968	25.20	28.02	2.82	49.85	12:29
2	TOC	1.2733	12.7330	24.40	27.40	3.01	49.89	12:27
3	TOC	1.2890	12.8901	24.52	27.27	2.76	49.92	12:30
4	TOC	1.2509	12.5094	24.23	27.26	3.03	49.91	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1900657-002.04	0.9715 ppm	0.0923 ppm	9.5000%	2019/02/21 11:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0961	10.9610	23.07	26.05	2.98	49.94	12:27
2	TOC	0.9851	9.8507	22.23	25.16	2.93	49.92	12:29
3	TOC	0.8907	8.9068	21.52	24.54	3.02	50.01	12:28
4	TOC	0.9141	9.1411	21.70	24.48	2.78	50.00	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1900657-002.04 ms	12.2664 ppm	0.0924 ppm	0.7500%	2019/02/21 12:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.2407	122.4074	106.78	109.61	2.83	50.02	12:29
2	TOC	12.2553	122.5525	106.88	109.71	2.82	50.09	12:29
3	TOC	12.1750	121.7497	106.28	109.18	2.90	50.04	12:24
4	TOC	12.3948	123.9478	107.93	110.77	2.83	50.06	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	RB	0.0607 ppm	0.0859 ppm	141.4200%	2019/02/21 13:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1214	1.2143	15.74	18.59	2.84	50.03	12:27
2	TOC	0.0000	0.0000	14.14	17.12	2.99	50.06	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.3743 ppm (PASS)	0.0000 ppm	0%	2019/02/21 14:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3743	243.7427	198.93	201.76	2.83	50.02	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/21 14:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	12.99	15.97	2.98	50.02	12:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	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
v1223	2.8390	1.8540	0.0000	0.0000	0.0000	2019/02/19 14:42	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version: v26
Ver Creation: 2019/01/31 18:04
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 7.511x + 15.850
r^2 value: TOC: r^2 = 0.99984

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	14.6070	0.0000		2019/01/31 16:25
0.50 ppm	19.2770	0.5000		2019/01/31 16:42
1.00 ppm	21.9140	1.0000		2019/01/31 16:58
5.00 ppm	53.0870	5.0000		2019/01/31 17:14
10.0 ppm	94.7080	10.0000		2019/01/31 17:31
25.0 ppm	204.1870	25.0000		2019/01/31 17:47
50.0 ppm	390.4490	50.0000		2019/01/31 18:03

Methods

Name: Extended Reaction 021711 (TOC)

Version: v4
Ver Creation: 2019/01/31 11:21
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	4.00 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	2019/02/21 14:59

ALS Environmental

StarLIMS Run: 625673, 625674, 625676, 625678

Analysis: TOC

Method: 9060, 9060A, 415.1, SM 5310 C

CCV: 11-GEN-05-74N 50 ppm LCS: 11-GEN-05-74L 25.0 ppm

ICAL Date: 1/24/19

ICAL ID: 11-GEN-05-74O

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-70O 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-75H

21 % H3PO4: 11-GEN-05-75F

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F

FILTER ID: NA

Analyzed By: BCD	Date Analyzed: 2/19/19
Reviewed By:	Date Reviewed: 02/25/19

LABORATORY REPORT

February 26, 2019

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

RE: HS19020648

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on February 15, 2019. For your reference, these analyses have been assigned our service request number P1900793.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Kaneko

By Kate Kaneko at 11:56 am, 02/26/19

Kate Kaneko
Laboratory Director

Client: ALS Laboratory Group Service Request No: P1900793
Project: HS19020648

CASE NARRATIVE

The samples were received intact under chain of custody on February 15, 2019 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P1900793-003	Carbon Dioxide

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1521096
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Service Request: P1900793
Project ID: HS19020648

Date Received: 2/15/2019
Time Received: 09:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35BWW23-190212	P1900793-001	Water	2/12/2019	08:25	X	X
35BWW14-190212	P1900793-002	Water	2/12/2019	09:25	X	X
35BWW08-190212	P1900793-003	Water	2/12/2019	10:25	X	X
35BWW26-190212	P1900793-004	Water	2/12/2019	11:25	X	X

P1900793

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

COC ID: 10747

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065 **Phone:** +1 805 526 7161

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:	HS19020648
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19020648-01**	**35BWW23-190212**	**Groundwater**	**12 Feb 2019 08:25**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			27 Feb 2019 F
2.	**HS19020648-02**	**35BWW14-190212**	**Groundwater**	**12 Feb 2019 09:25**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			27 Feb 2019 F
3.	**HS19020648-03**	**35BWW08-190212**	**Groundwater**	**12 Feb 2019 10:25**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			27 Feb 2019
4.	**HS19020648-04**	**35BWW26-190212**	**Groundwater**	**12 Feb 2019 11:25**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			27 Feb 2019

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

USE NEAT VIALS FOR CO2 ANALYSES

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. MAKAWW Date/Time: 2/14/19 18:00

Received By: Date/Time: 2/15/19 0900

Cooler ID(s): Temperature(s): 2 @ 0.1 / 1.0

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1900793

Project: HS19020648

Sample(s) received on: 2/15/19 Date opened: 2/15/19 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C Thermometer ID CO907034581 Wet Ic			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1900793-001.01	40mL VOA NP		7		A	MR 02/20/19
P1900793-001.02	40mL VOA NP				A	
P1900793-001.03	40mL VOA NP				A	
P1900793-001.04	40ml VOA HCL		1		A	MR 02/19/19
P1900793-001.05	40ml VOA HCL				A	
P1900793-001.06	40ml VOA HCL				A	
P1900793-002.01	40mL VOA NP		6		A	MR 02/20/19
P1900793-002.02	40mL VOA NP				A	
P1900793-002.03	40mL VOA NP				A	
P1900793-002.04	40ml VOA HCL		1		A	MR 02/19/19
P1900793-002.05	40ml VOA HCL				A	
P1900793-002.06	40ml VOA HCL				A	
P1900793-003.01	40mL VOA NP		7		A	MR 02/20/19
P1900793-003.02	40mL VOA NP				A	
P1900793-003.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1900793

Project: HS19020648

Sample(s) received on: 2/15/19 Date opened: 2/15/19 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1900793-003.04	40ml VOA HCL		1		A	MR 02/19/19
P1900793-003.05	40ml VOA HCL				A	
P1900793-003.06	40ml VOA HCL				A	
P1900793-004.01	40mL VOA NP		6		A	MR 02/20/19
P1900793-004.02	40mL VOA NP				A	
P1900793-004.03	40mL VOA NP				A	
P1900793-004.04	40ml VOA HCL		1		A	MR 02/19/19
P1900793-004.05	40ml VOA HCL				A	
P1900793-004.06	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS19020648** ALS Project ID: P1900793

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date(s) Collected: 2/12/19
Date Received: 2/15/19
Date Analyzed: 2/20/19

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35BWW23-190212	P1900793-001	0.050	**740,000**	2,000	1,700	740	
35BWW14-190212	P1900793-002	0.050	**770,000**	2,000	1,700	740	
35BWW08-190212	P1900793-003	0.10	**390**	1,000	860	370	**J**
35BWW26-190212	P1900793-004	0.050	**630,000**	2,000	1,700	740	
Method Control Sample	P190220-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1900793
Client Project ID: **HS19020648** ALS Sample ID: P190220-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Magaly Rodriguez Date Analyzed: 2/20/19
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	18,600	18,900	**81**	**83**	80-122	2	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW23-190212**
Client Project ID: **HS19020648**

ALS Project ID: P1900793
ALS Sample ID: P1900793-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/12/19
Date Received: 2/15/19
Date Analyzed: 2/19/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW14-190212**
Client Project ID: **HS19020648**

ALS Project ID: P1900793
ALS Sample ID: P1900793-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/12/19
Date Received: 2/15/19
Date Analyzed: 2/19/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**6.8**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW08-190212**
Client Project ID: **HS19020648**

ALS Project ID: P1900793
ALS Sample ID: P1900793-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/12/19
Date Received: 2/15/19
Date Analyzed: 2/19/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW26-190212**
Client Project ID: **HS19020648**

ALS Project ID: P1900793
ALS Sample ID: P1900793-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/12/19
Date Received: 2/15/19
Date Analyzed: 2/19/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample** ALS Project ID: P1900793
Client Project ID: **HS19020648** ALS Sample ID: P190219-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Magaly Rodriguez Date Analyzed: 2/19/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.56**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS19020648**

ALS Project ID: P1900793
ALS Sample ID: P190219-LCS
P190219-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 2/19/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.44	2.50	**98**	**100**	73-125	2	26	
74-85-1	Ethene	4.37	4.51	4.52	**103**	**103**	72-133	0	11	
74-84-0	Ethane	4.69	4.75	4.76	**101**	**101**	74-131	0	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:35:37
Operator : MR
Sample : P1900793-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 14:57:25 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

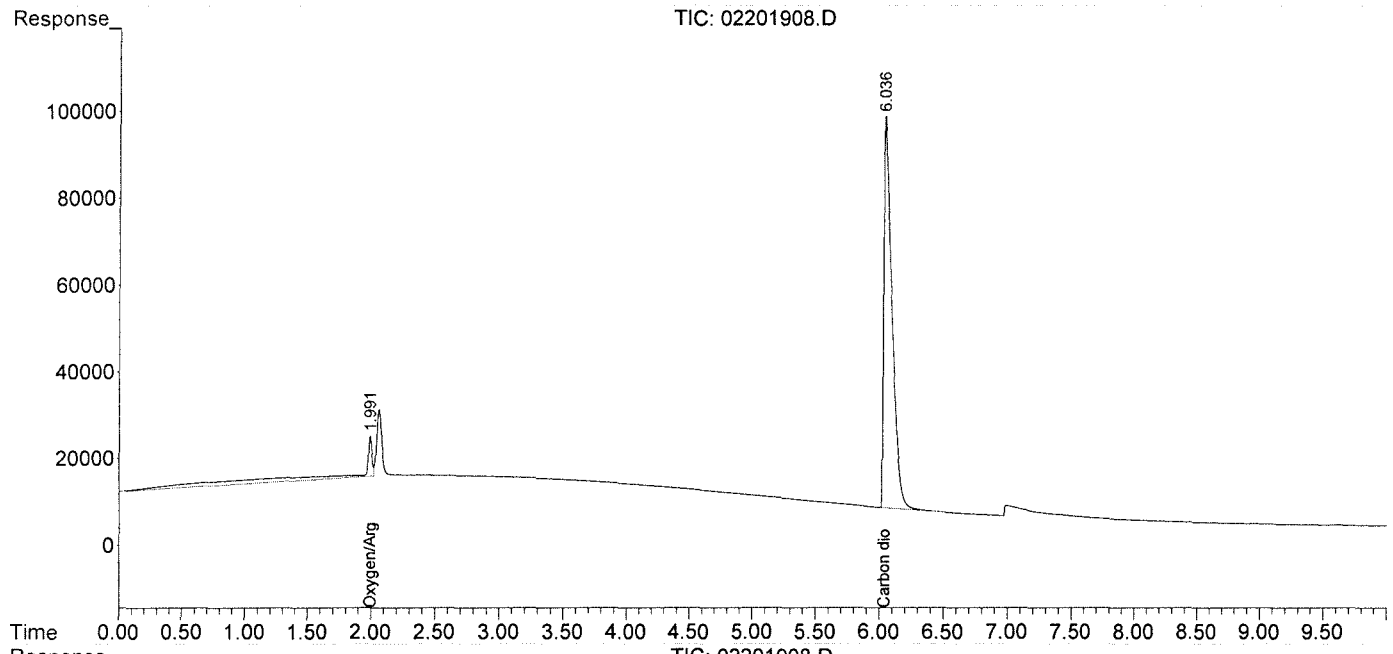
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.991f	924908	0.194	ppm
2)	Carbon monoxide	1.991f	924908	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.037	3986483	16983.331	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

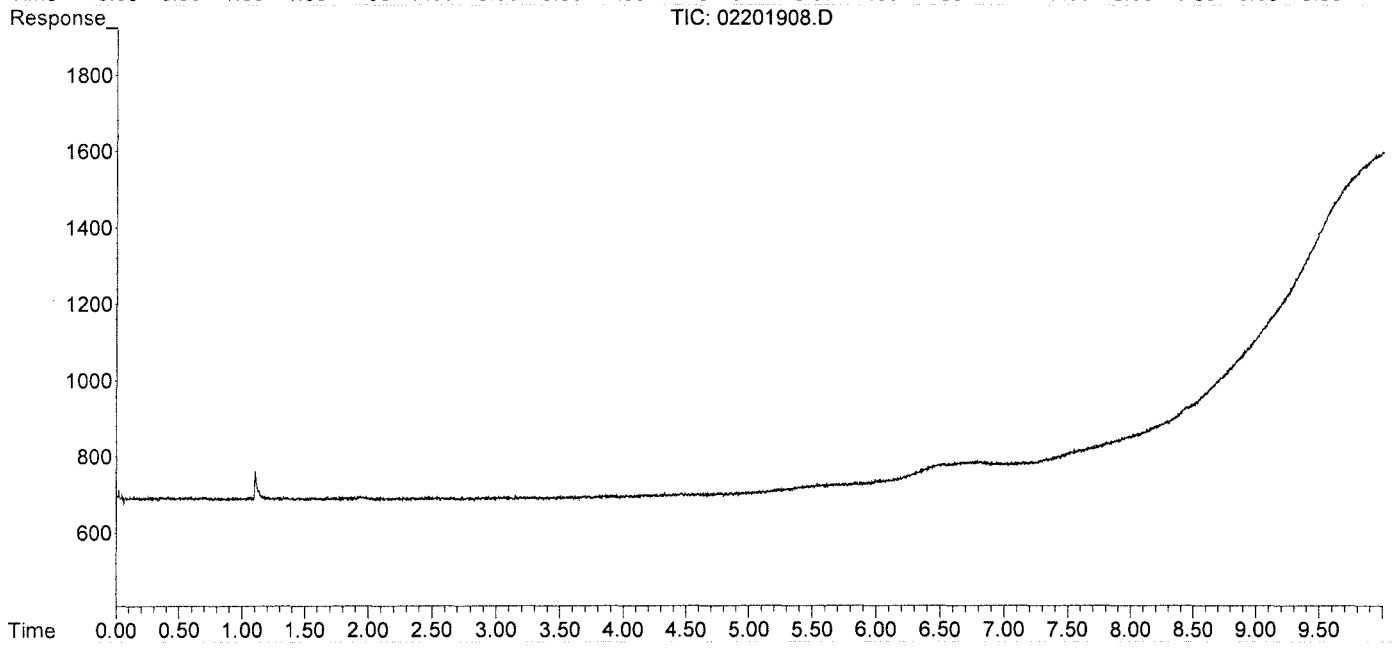
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:35:37
Operator : MR
Sample : P1900793-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 14:57:25 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:52:23
Operator : MR
Sample : P1900793-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 15:02:16 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

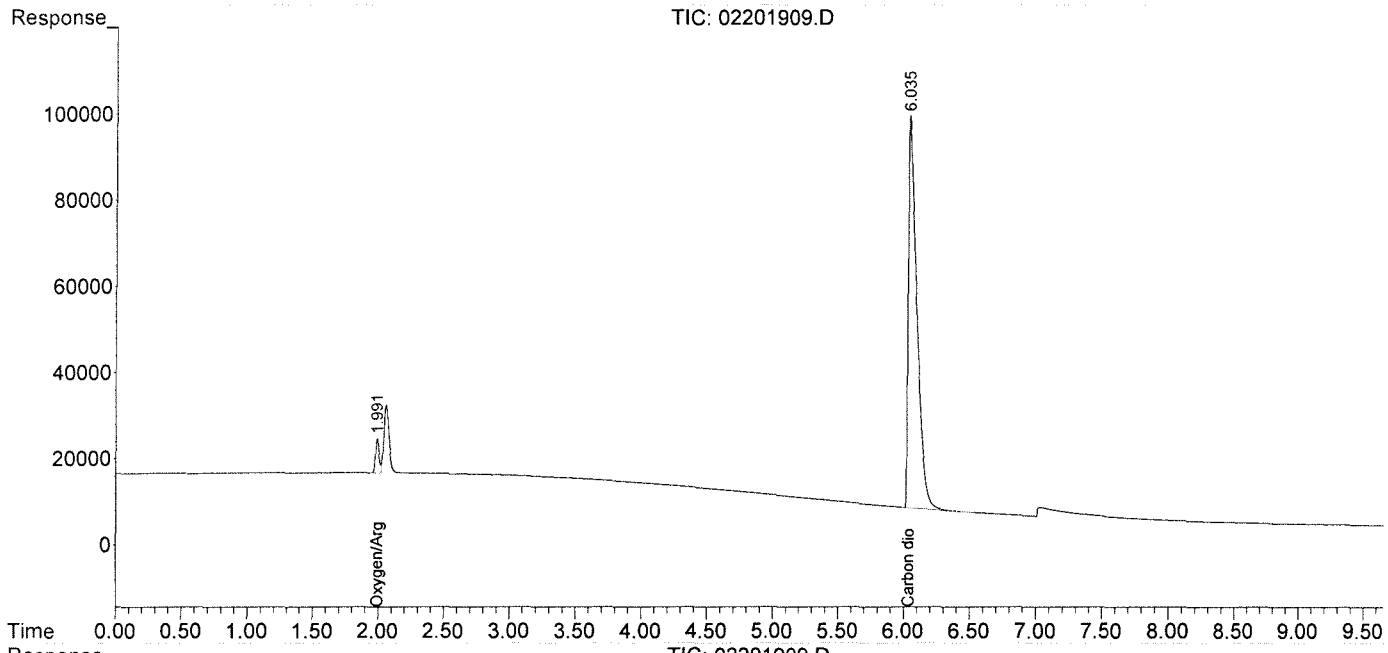
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Oxygen/Argon	1.991f	147108	0.031 ppm
2)	Carbon monoxide	1.991f	147108	N.D. ppm
3)	Methane (TCD)	0.000	0	N.D. ppm
4)	Carbon dioxide	6.037	4114968	17530.703 ppm
6)	Methane (FID)	1.118	19255	2.038 ppm
7)	Ethylene	0.000	0	N.D. ppm
8)	Ethane	0.000	0	N.D. ppm
9)	Propylene	0.000	0	N.D. ppm
10)	Propane	0.000	0	N.D. ppm
11)	Isobutylene	0.000	0	N.D. ppm
12)	Isobutane	0.000	0	N.D. ppm
13)	n-Butane	0.000	0	N.D. ppm

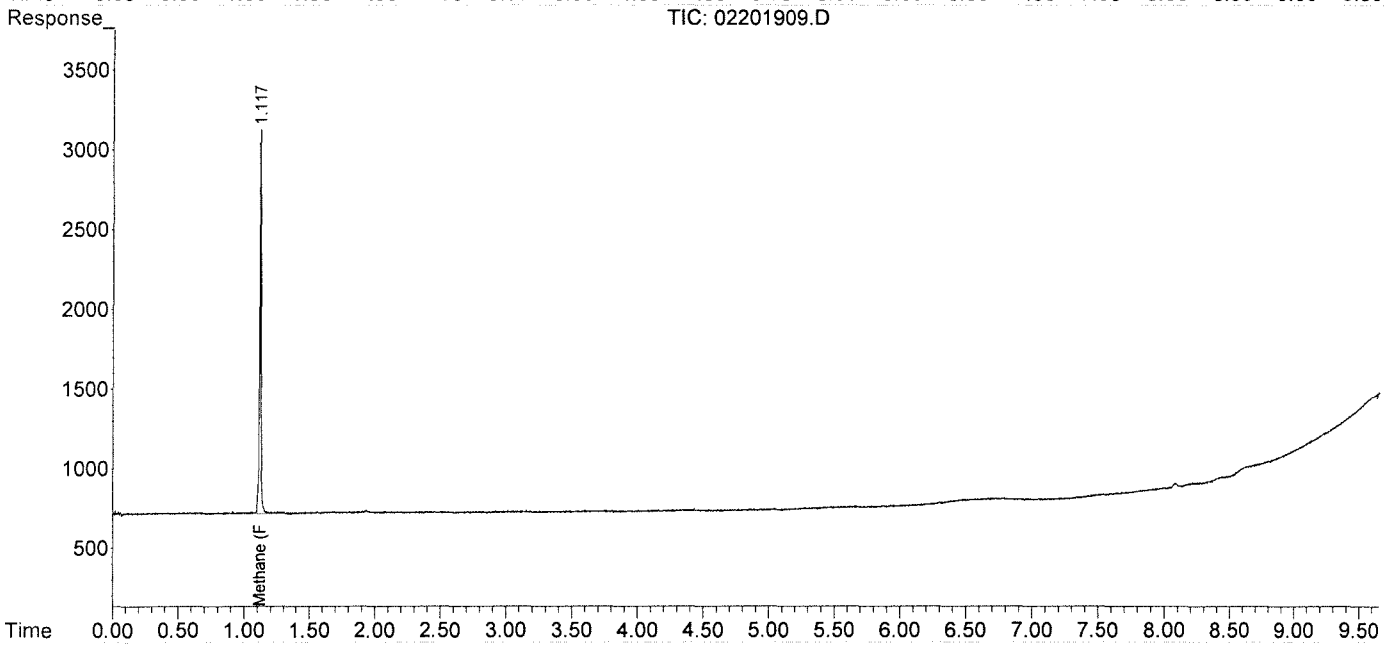
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:52:23
Operator : MR
Sample : P1900793-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 15:02:16 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:28:16
Operator : MR
Sample : P1900793-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:53:14 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

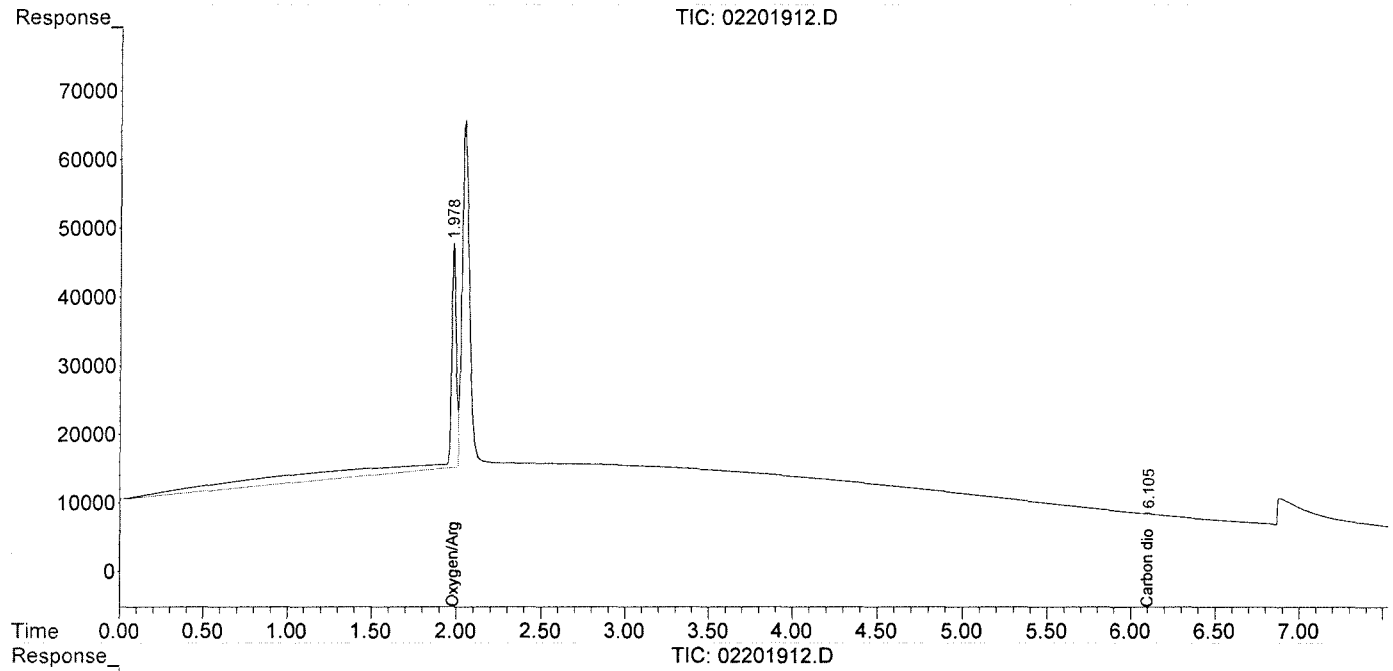
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.979f	1558238	0.327	ppm	
2)	Carbon monoxide	1.979f	1558238	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.105	4142	17.644	ppm	m
6)	Methane (FID)	1.098	2449	0.259	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

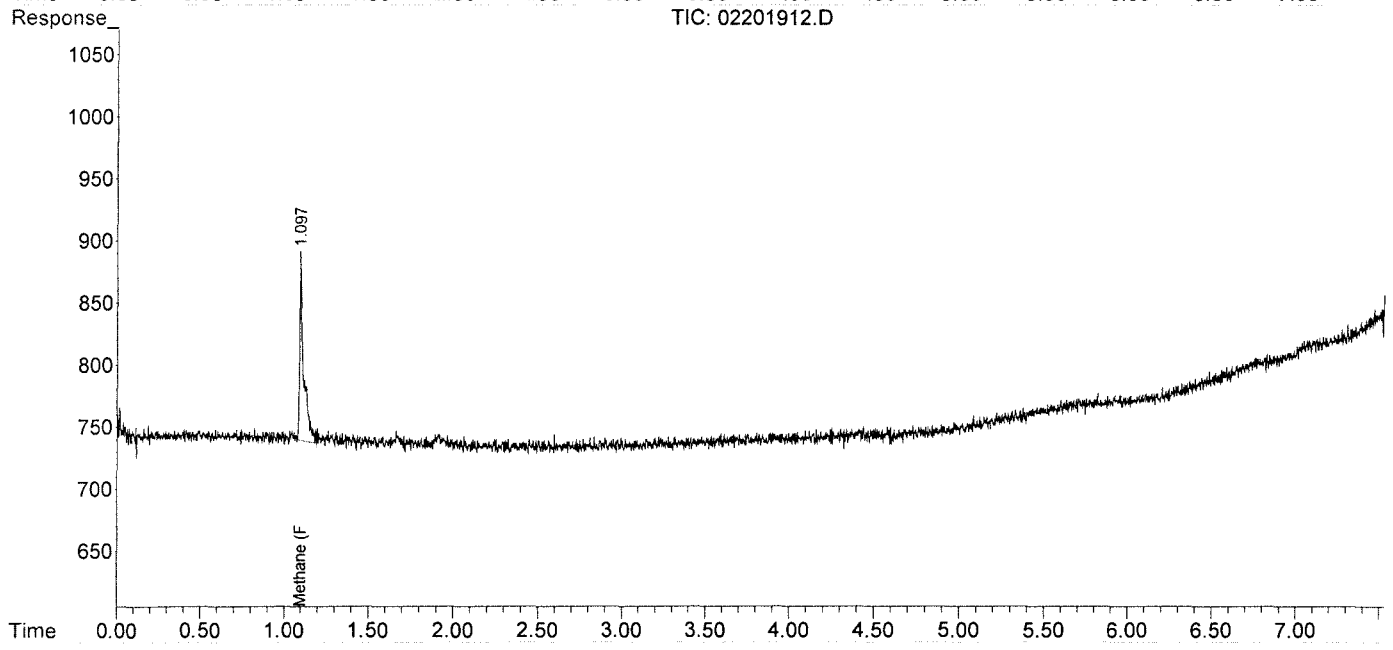
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:28:16
Operator : MR
Sample : P1900793-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:53:14 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

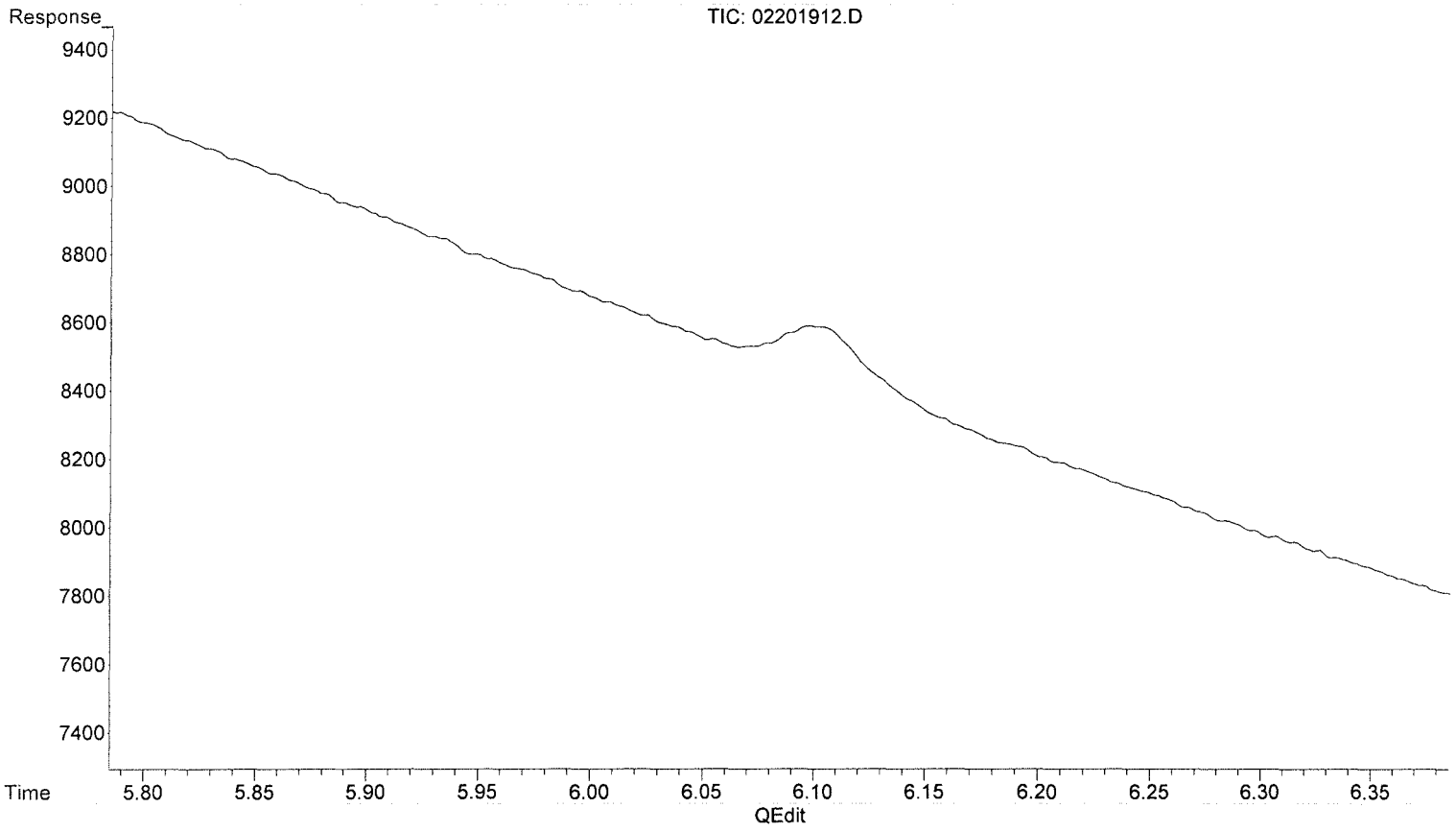




Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:28:16
Operator : MR
Sample : P1900793-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:53:14 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.039min 0.000 ppm

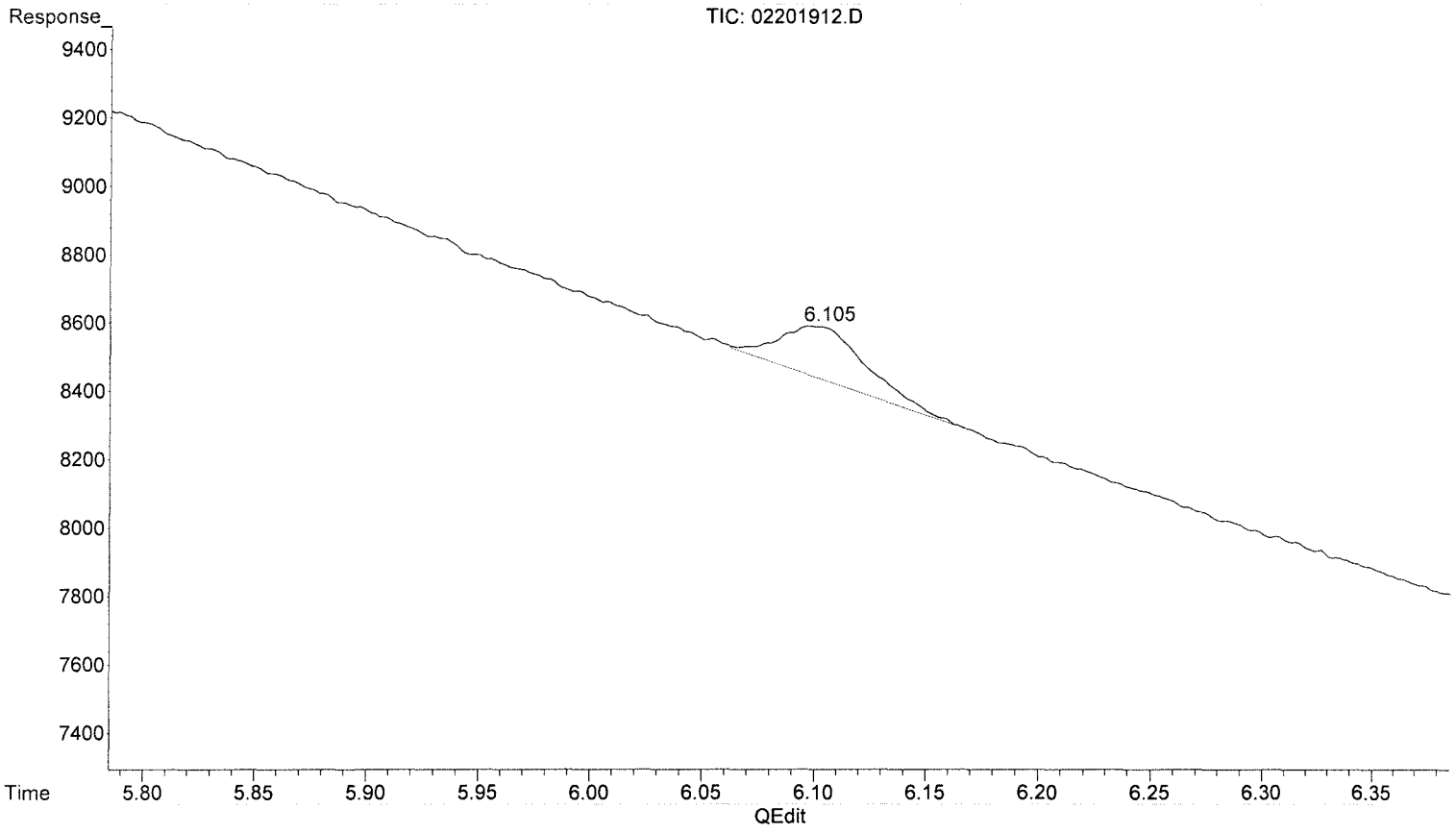
response 0

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:28:16
Operator : MR
Sample : P1900793-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:53:14 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.105min 17.644 ppm m

response 4142

MR 02/21/19
MP

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:19:09
Operator : MR
Sample : P1900793-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 15:26:05 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

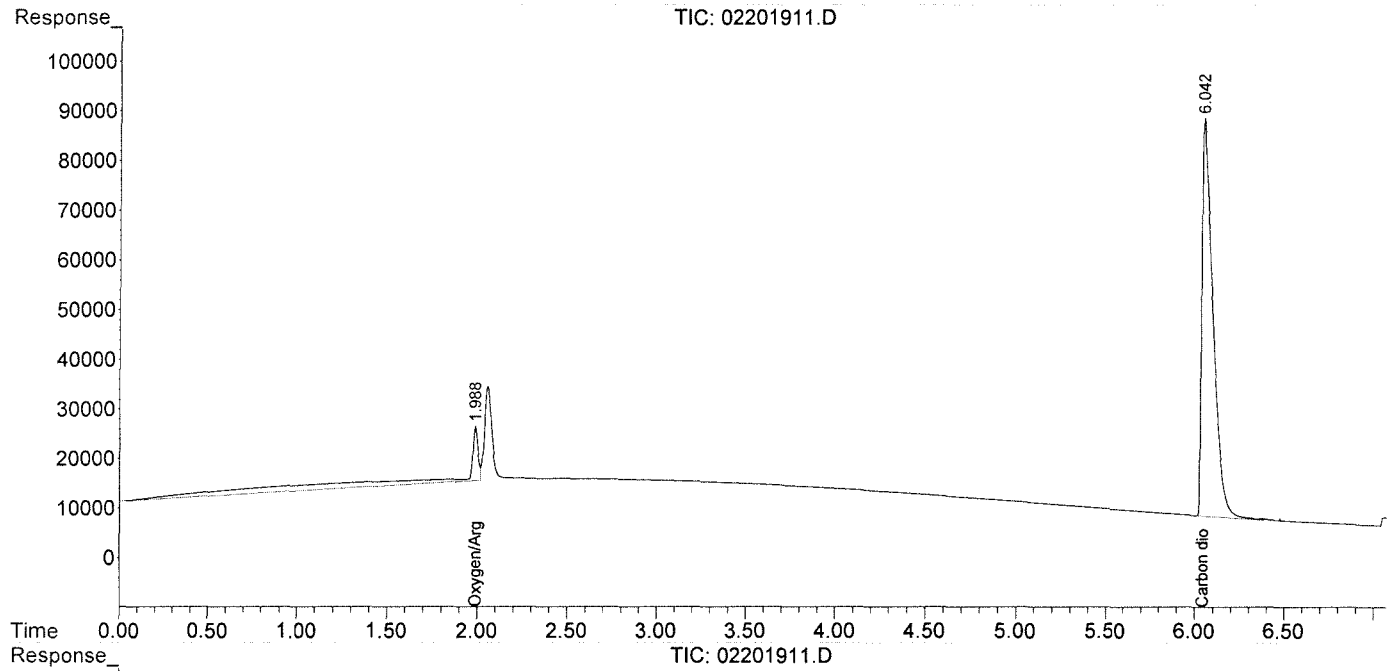
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.989f	1087840	0.229	ppm
2)	Carbon monoxide	1.989f	1087840	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.043	3370278	14358.154	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

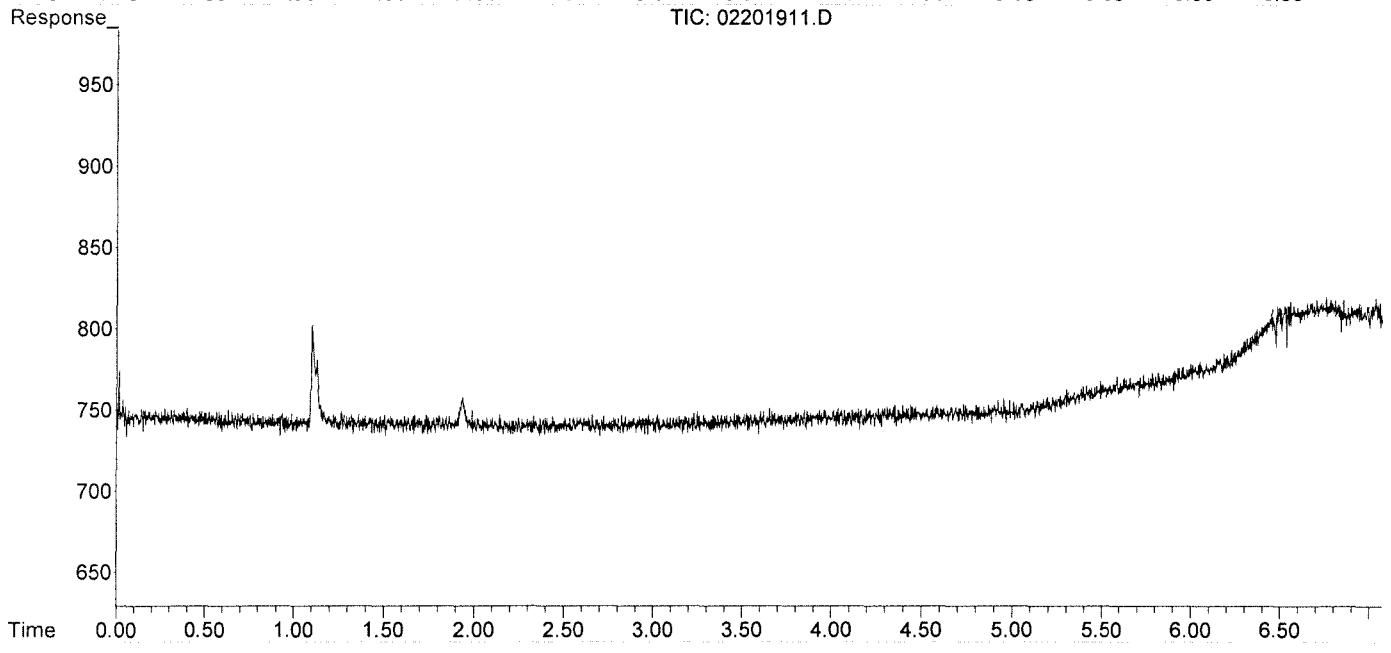
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:19:09
Operator : MR
Sample : P1900793-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 15:26:05 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 12:45:05
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 13:52:59 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

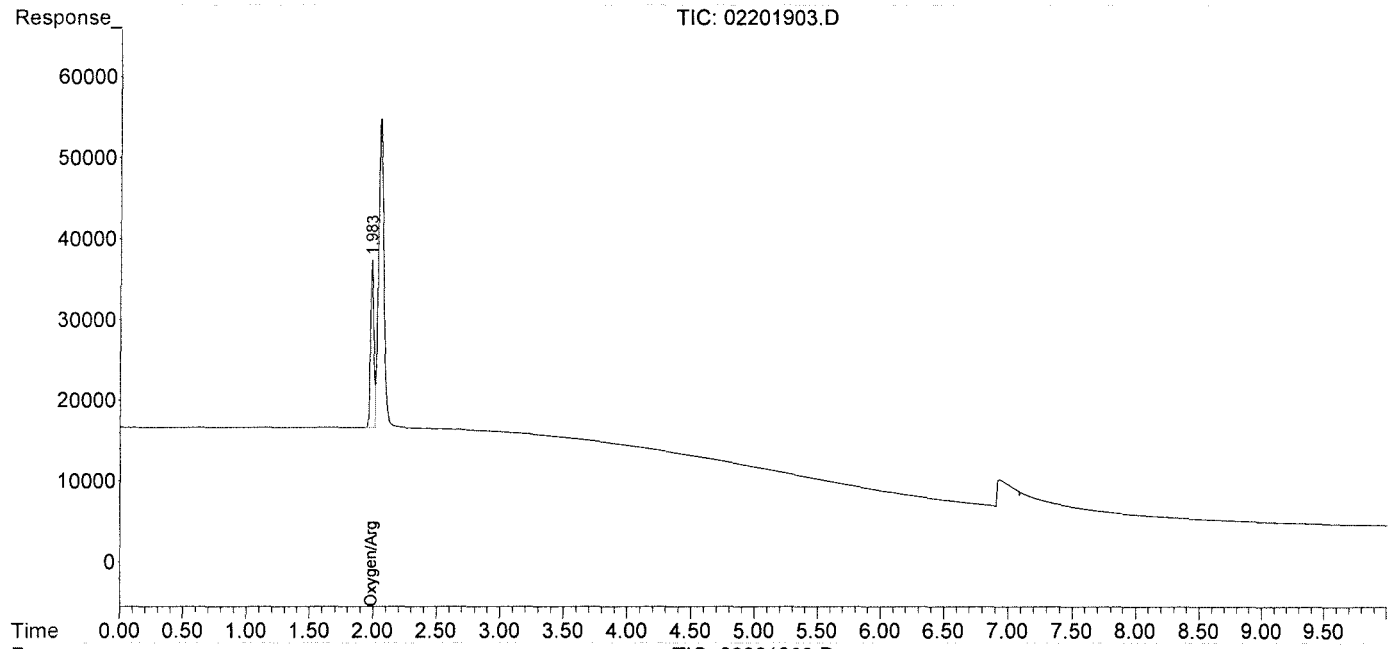
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.984f	377452	0.079	ppm
2)	Carbon monoxide	1.984f	377452	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

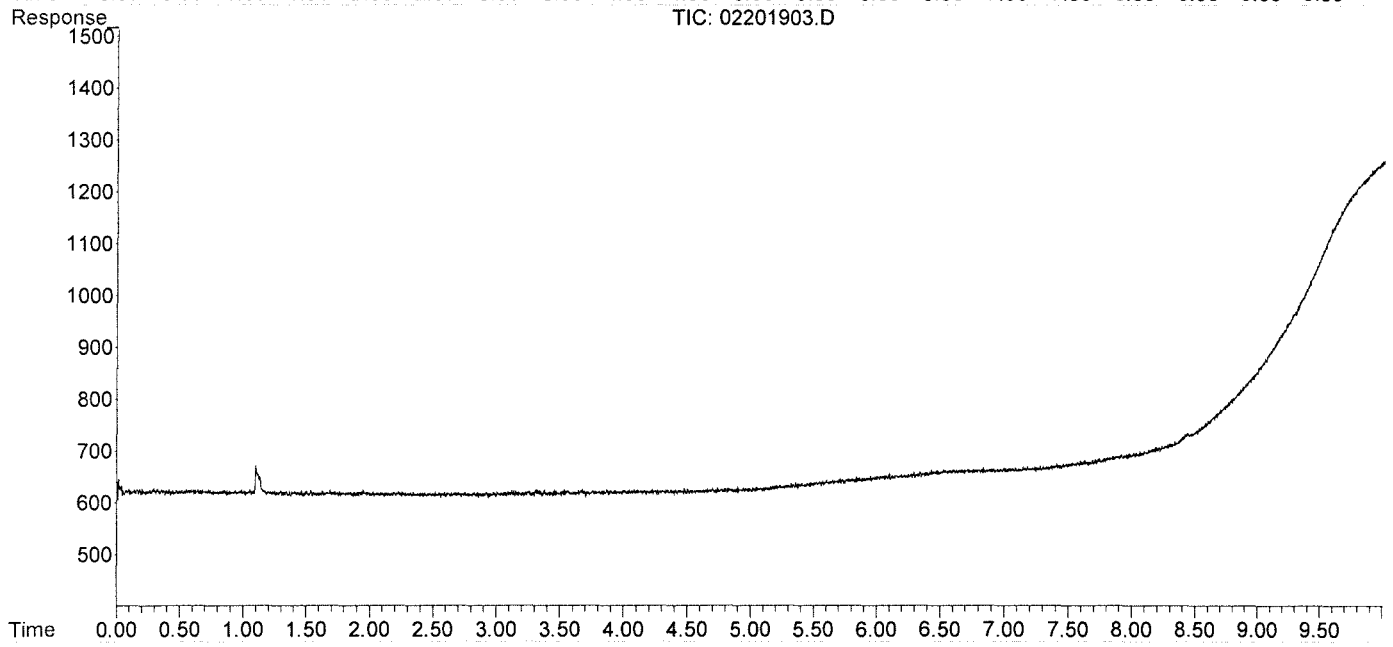
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 12:45:05
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 13:52:59 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 13:49:51
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:50:26 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

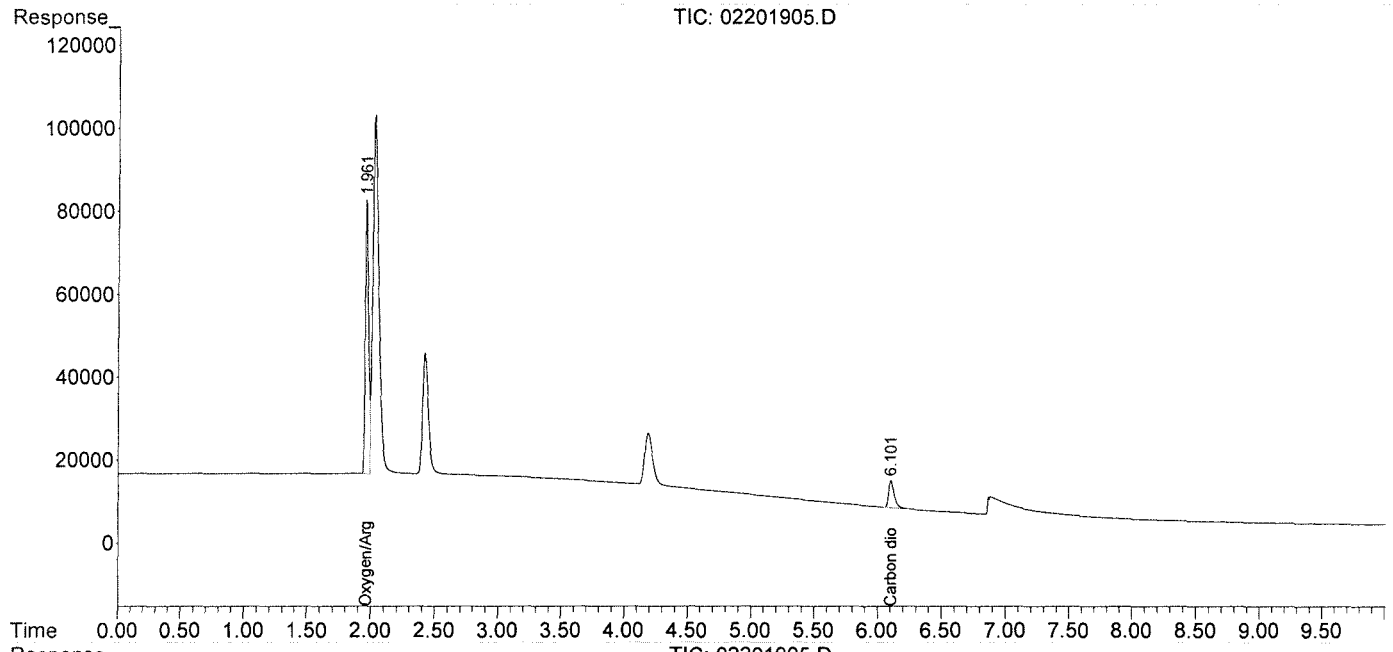
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.961f	1208789	0.254	ppm	
2)	Carbon monoxide	1.961f	1208789	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.101	200567	854.460	ppm	m
6)	Methane (FID)	1.105	33112115	3504.738	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

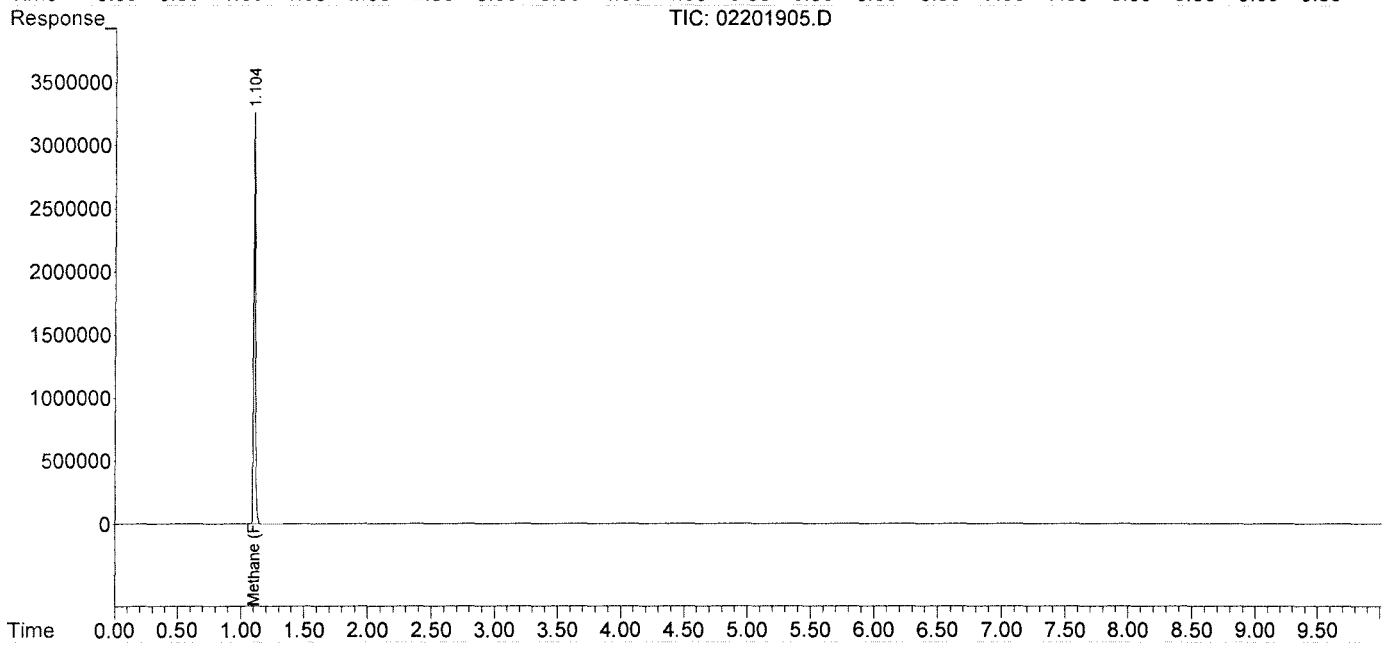
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 13:49:51
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:50:26 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

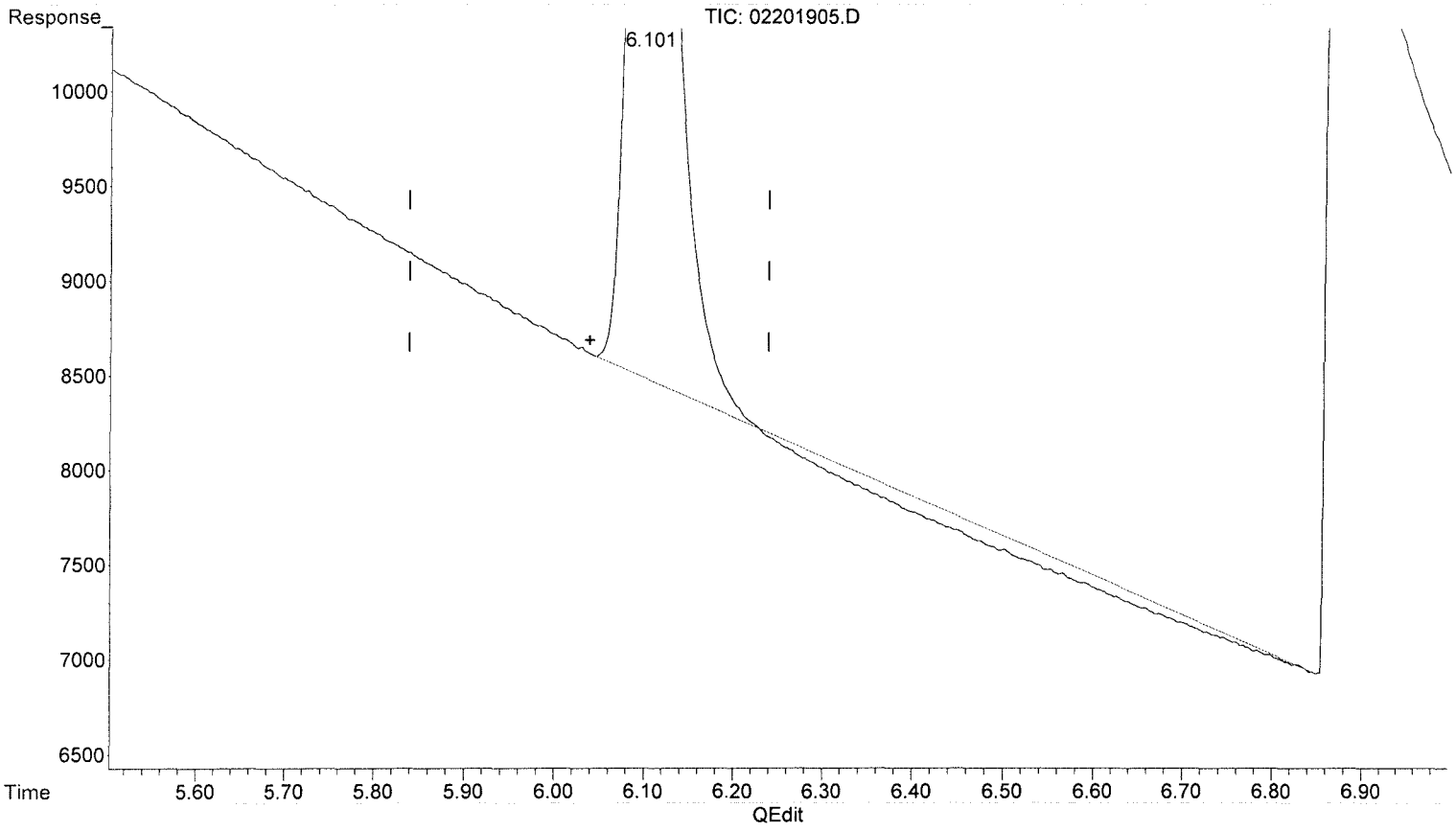




Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 13:49:51
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:50:26 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.102min 756.449 ppm

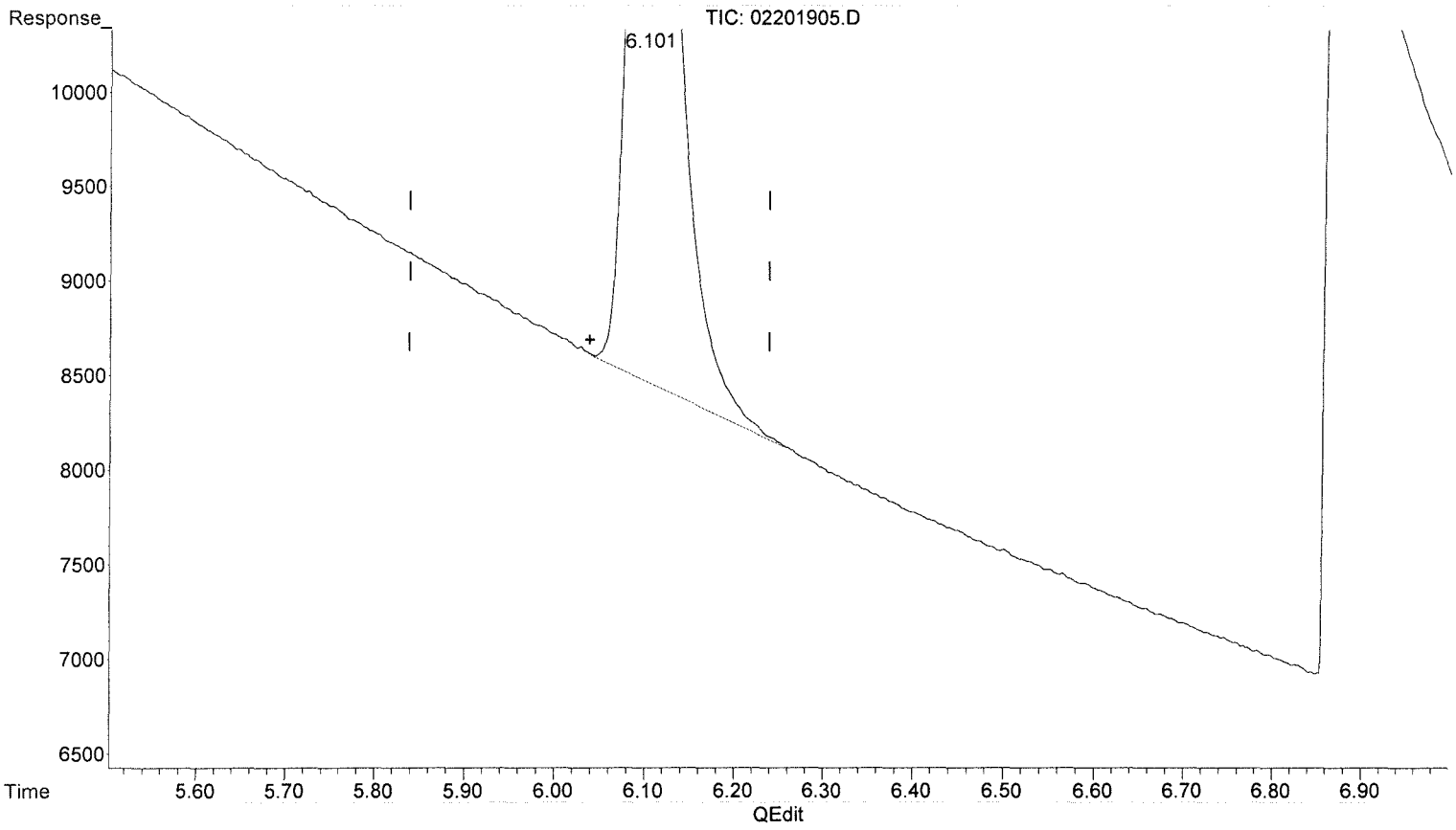
response 177561

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 13:49:51
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:50:26 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
6.101min 854.460 ppm m
response 200567

MR 02/21/19
BLC

(+) = Expected Retention Time
RS082817_CO2.M Thu Feb 21 13:50:49 2019 Page: 1

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:08:06
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:51:13 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

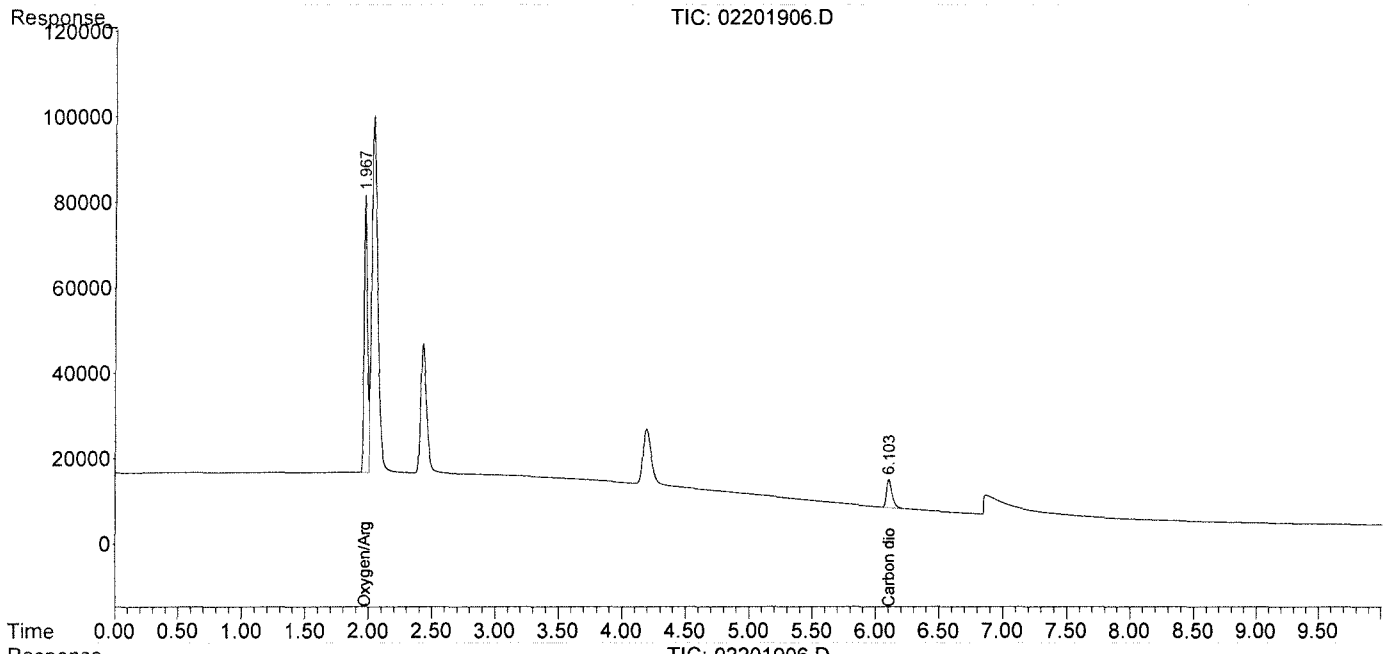
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.969f	1189819	0.250	ppm	
2)	Carbon monoxide	1.969f	1189819	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.103	203147	865.454	ppm	m
6)	Methane (FID)	1.112	34234890	3623.577	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

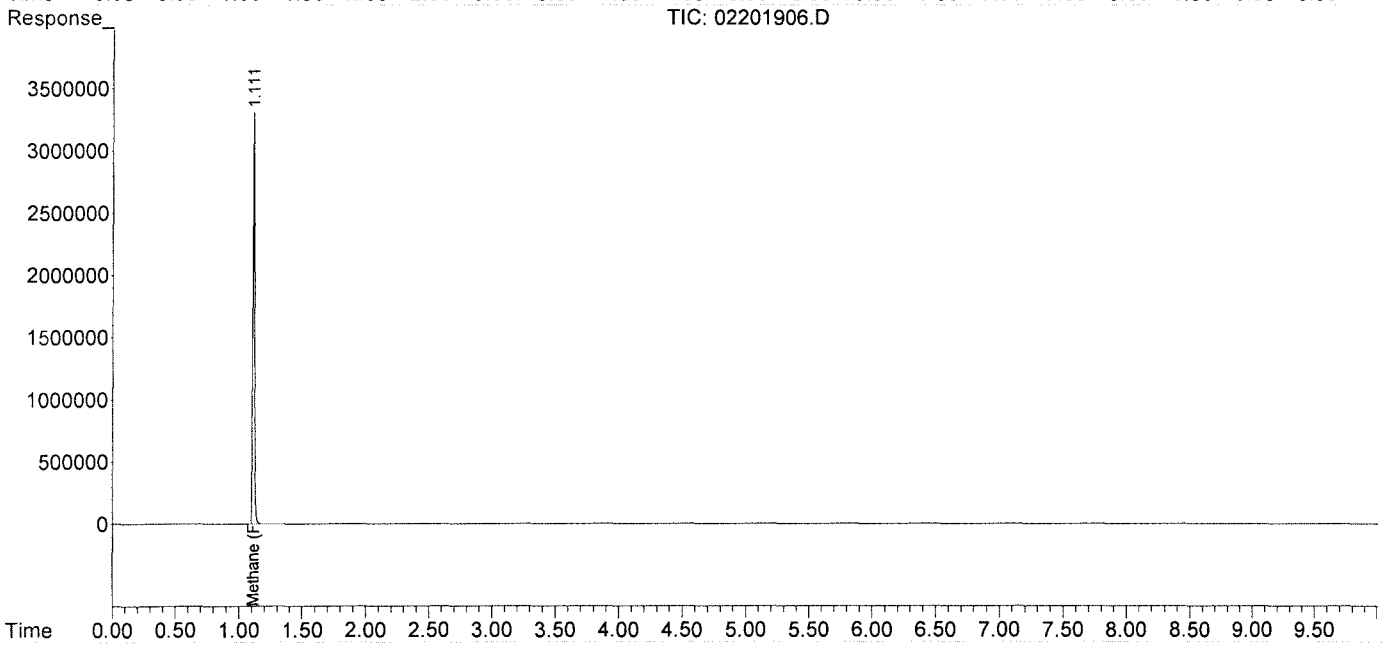
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:08:06
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:51:13 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

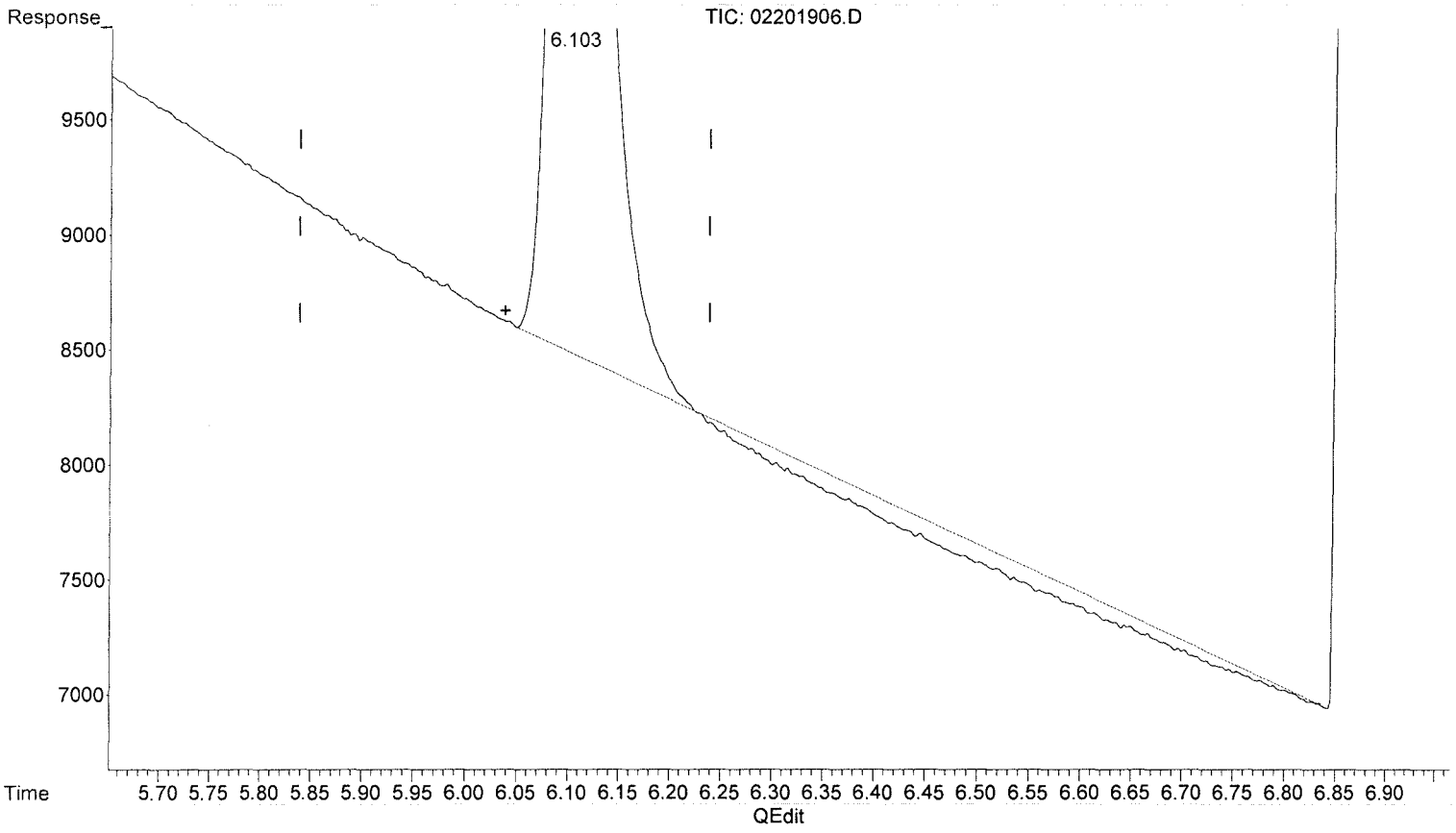




Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:08:06
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:51:13 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.103min 765.996 ppm

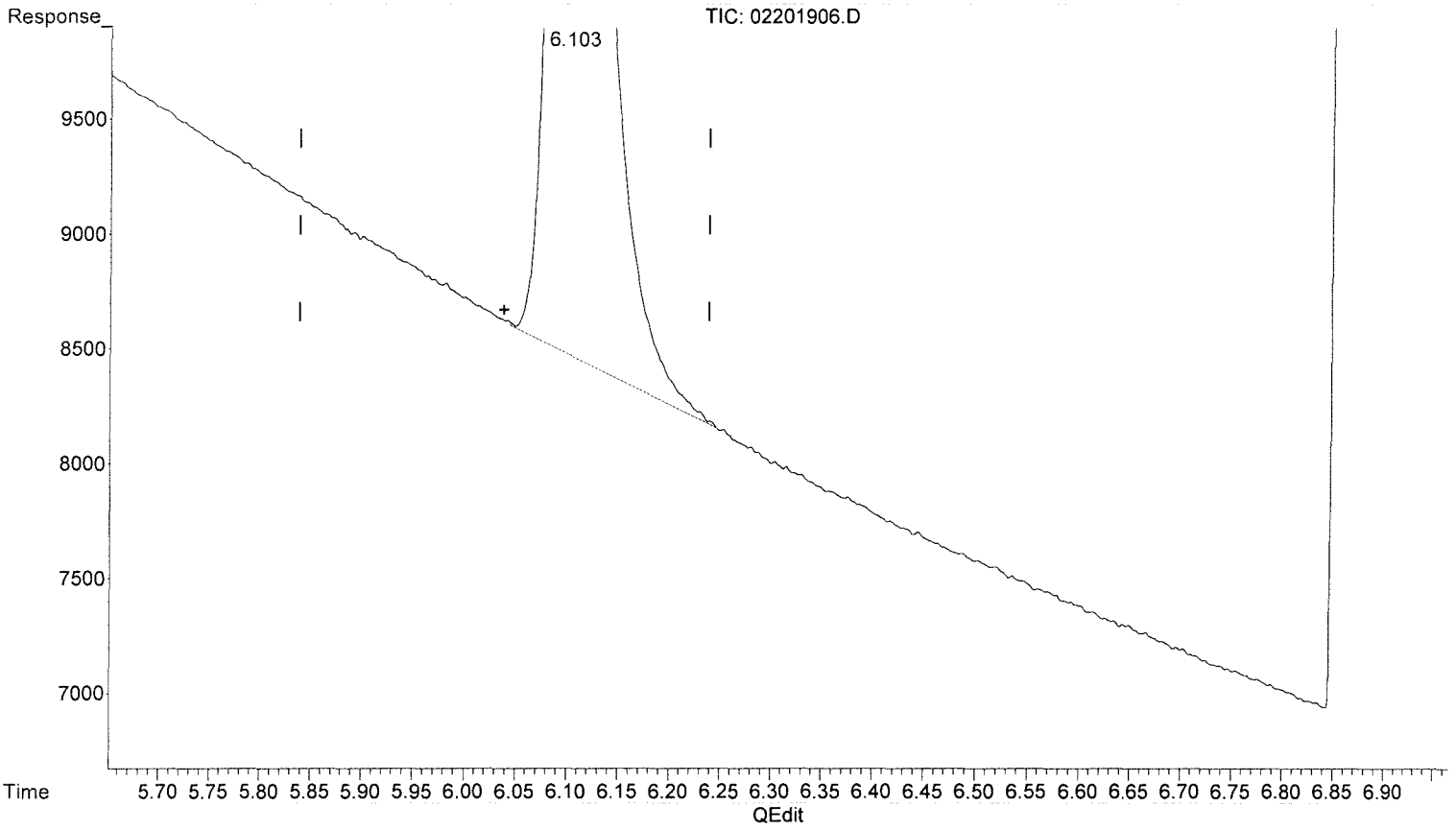
response 179802

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:08:06
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:51:13 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.103min 865.454 ppm m

response 203147

MR 02/21/19
BLC

(+) = Expected Retention Time

Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

dit Compounds -- Compound #4 -- Carbon dioxide

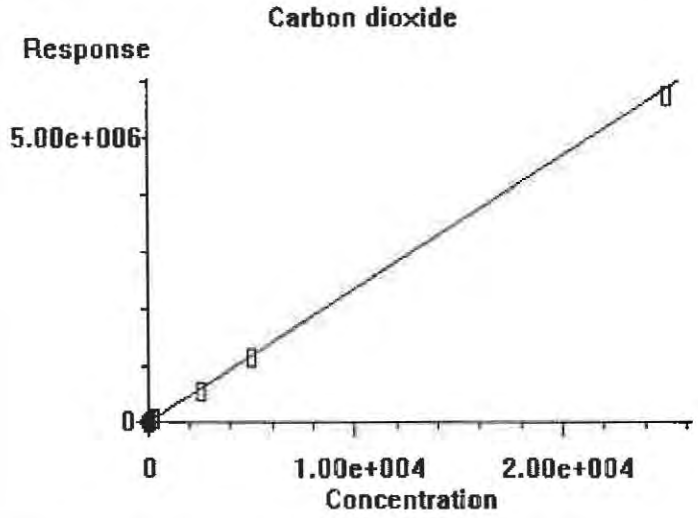
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

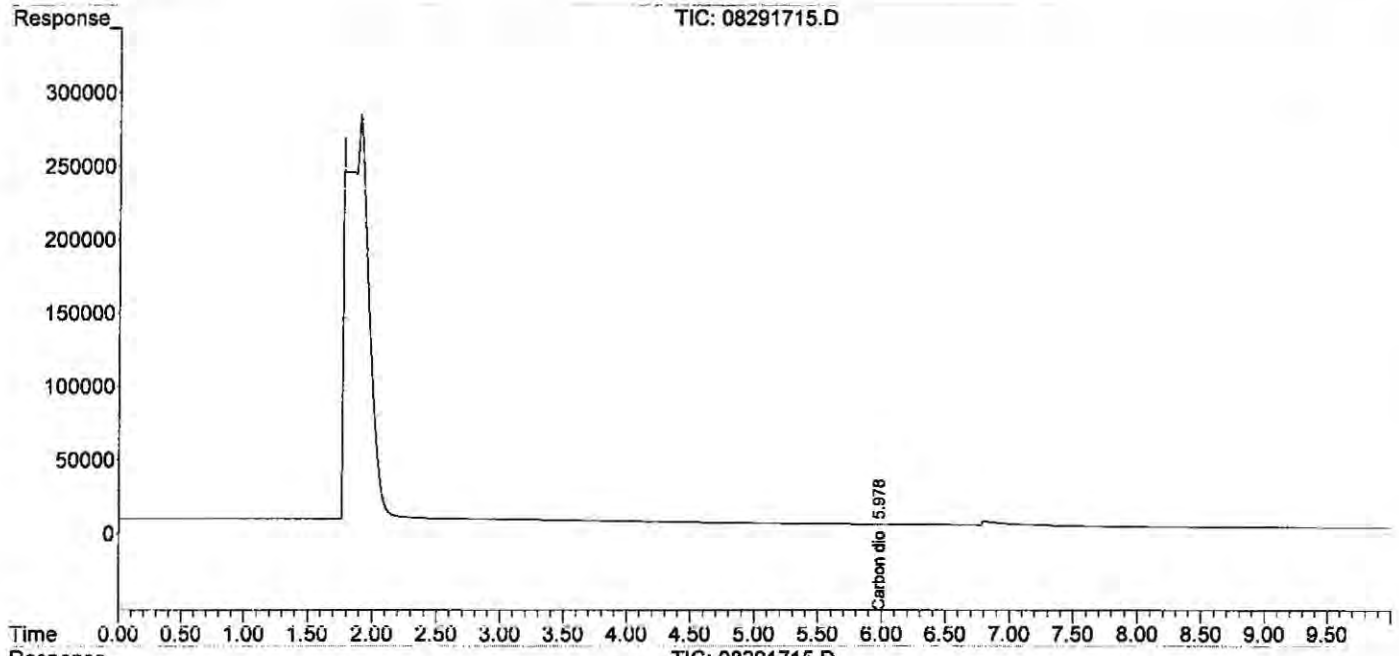
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

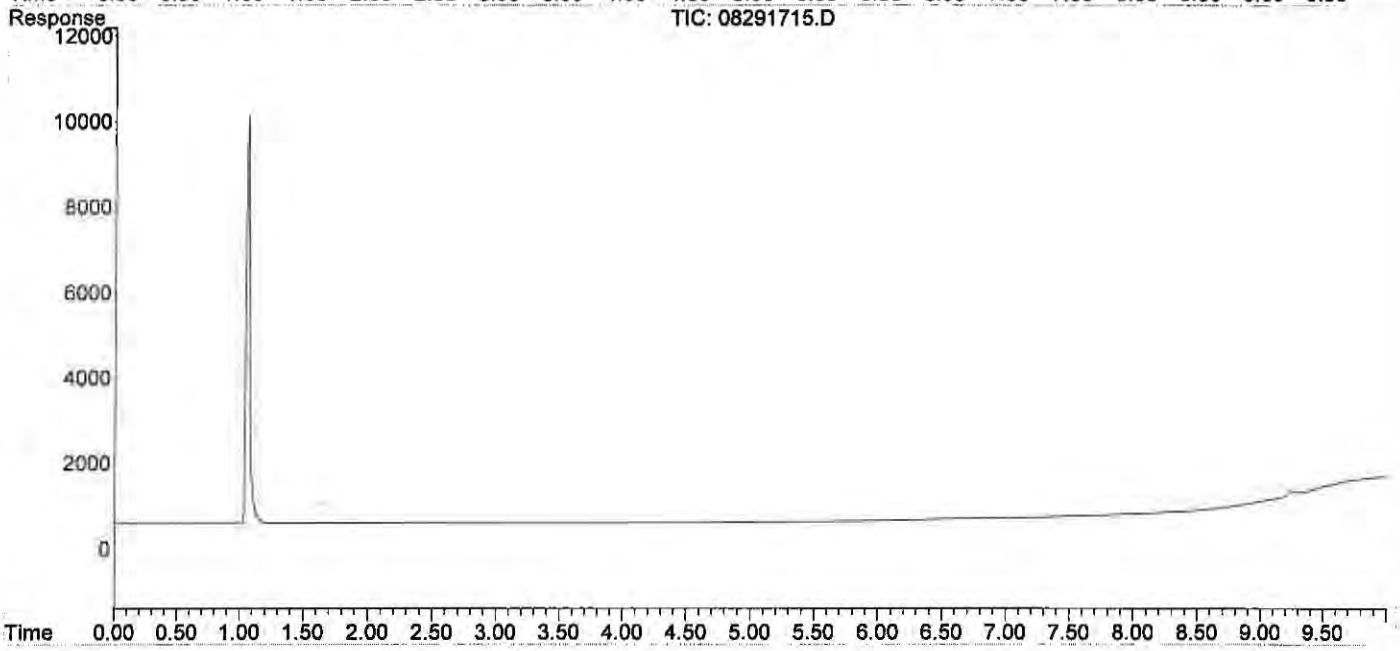
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

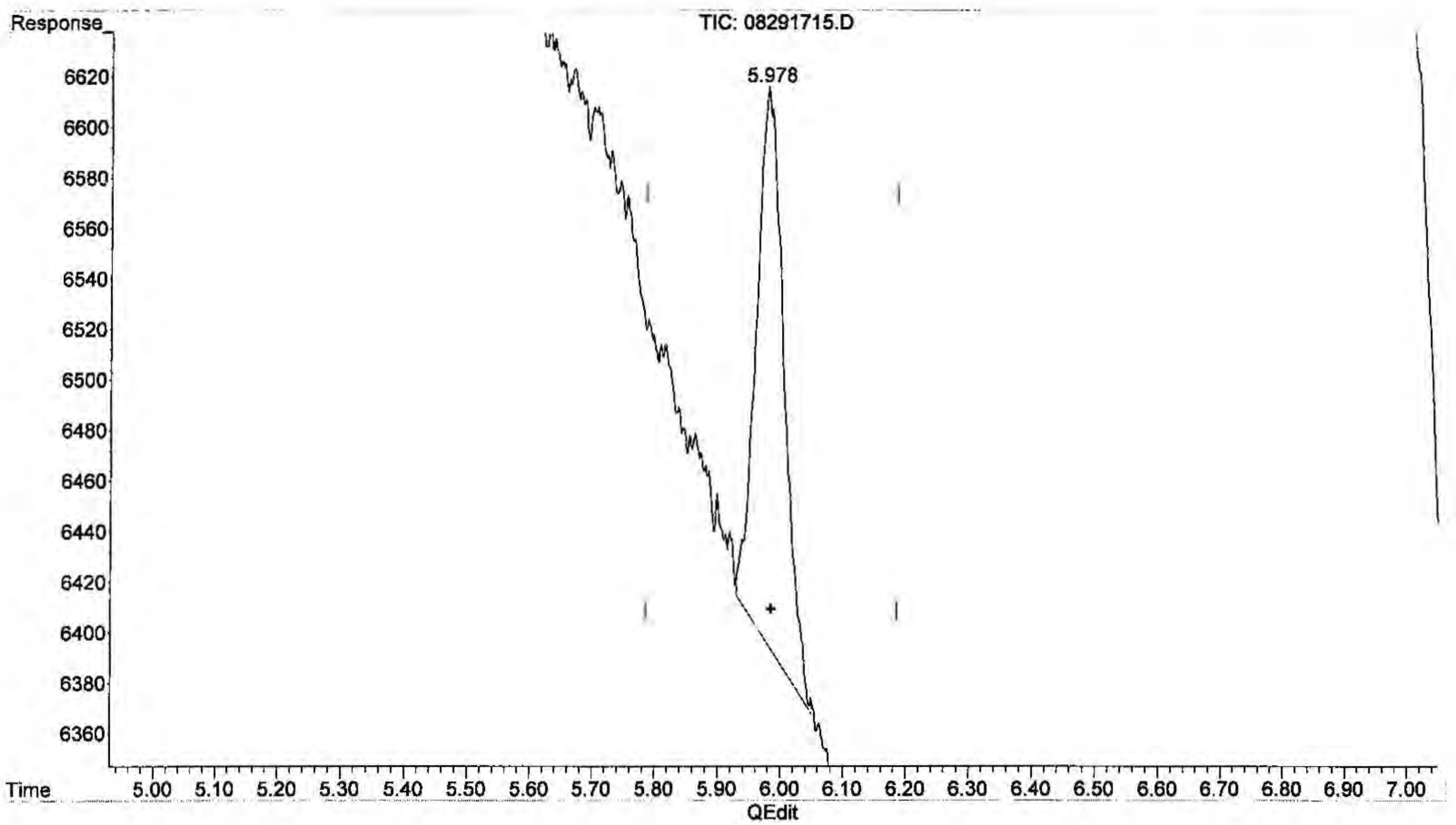




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
5.978min 27.870 ppm m
response 6794

MC 8/30/17
BLW
M
prevw

9/4/17

(+) = Expected Retention Time
RS082817_CO2.M Wed Aug 30 13:17:47 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

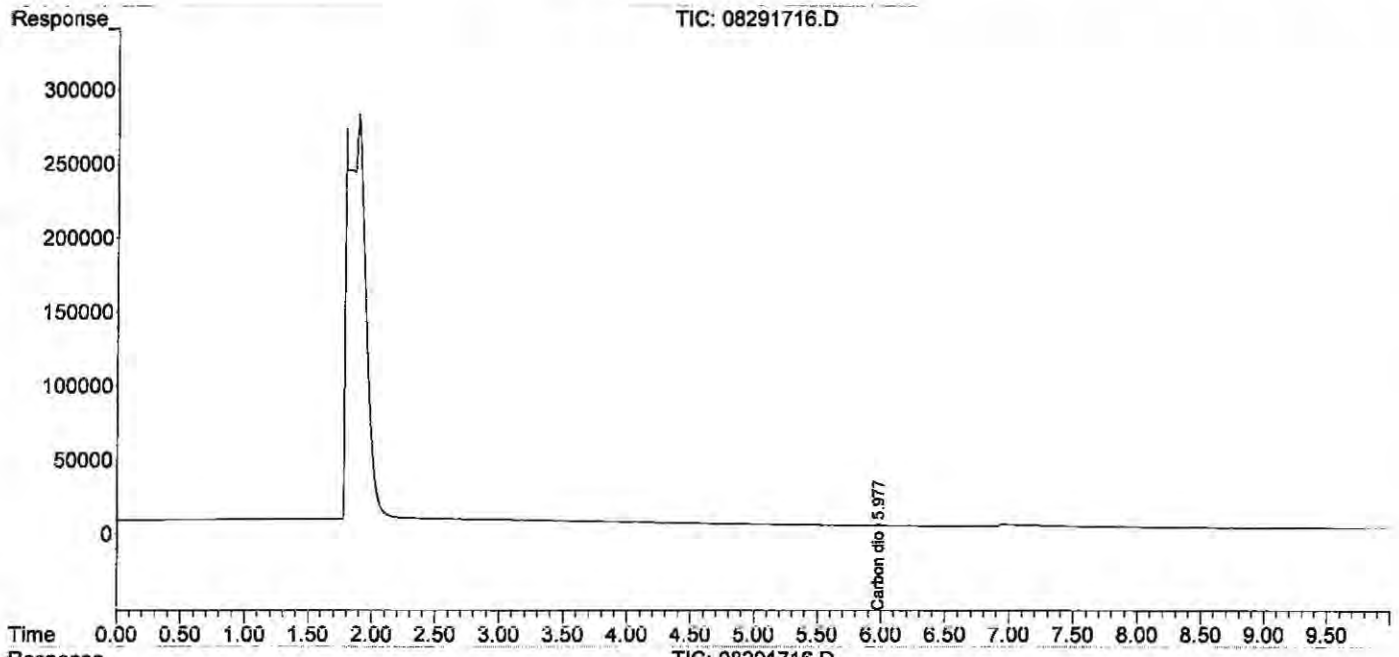
(f)=RT Delta > 1/2 Window (m)=manual int.

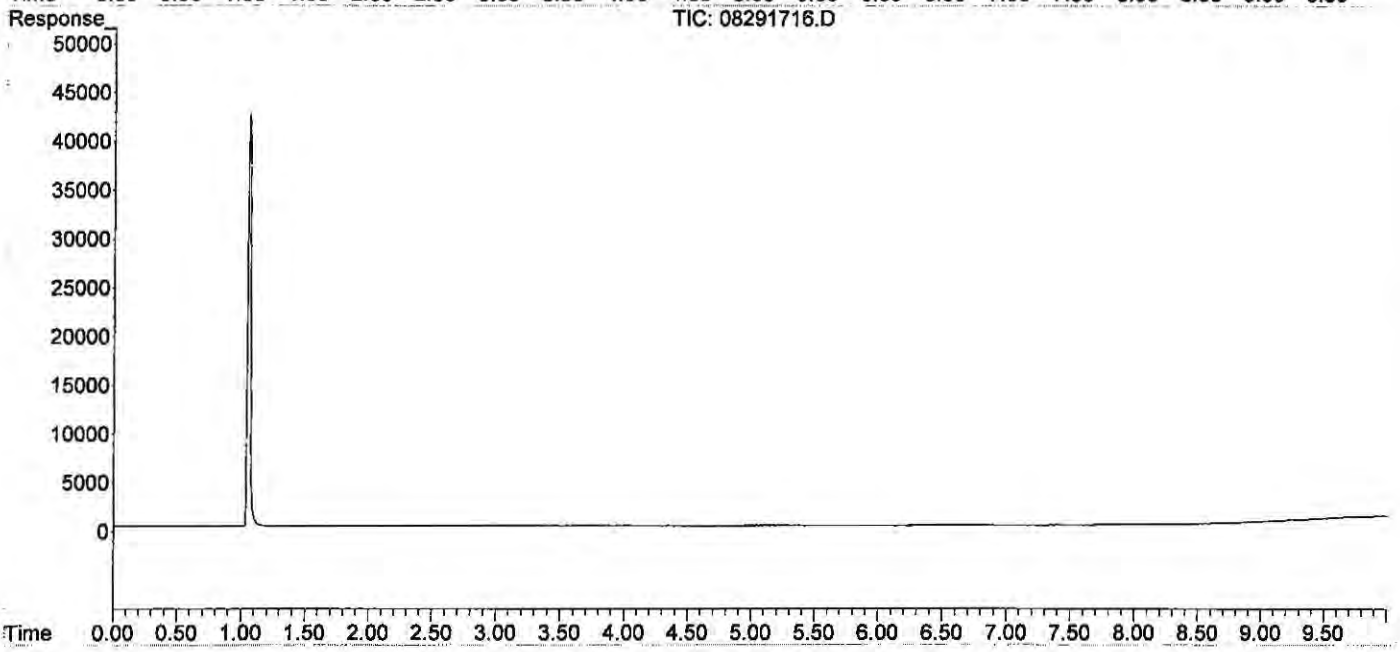
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

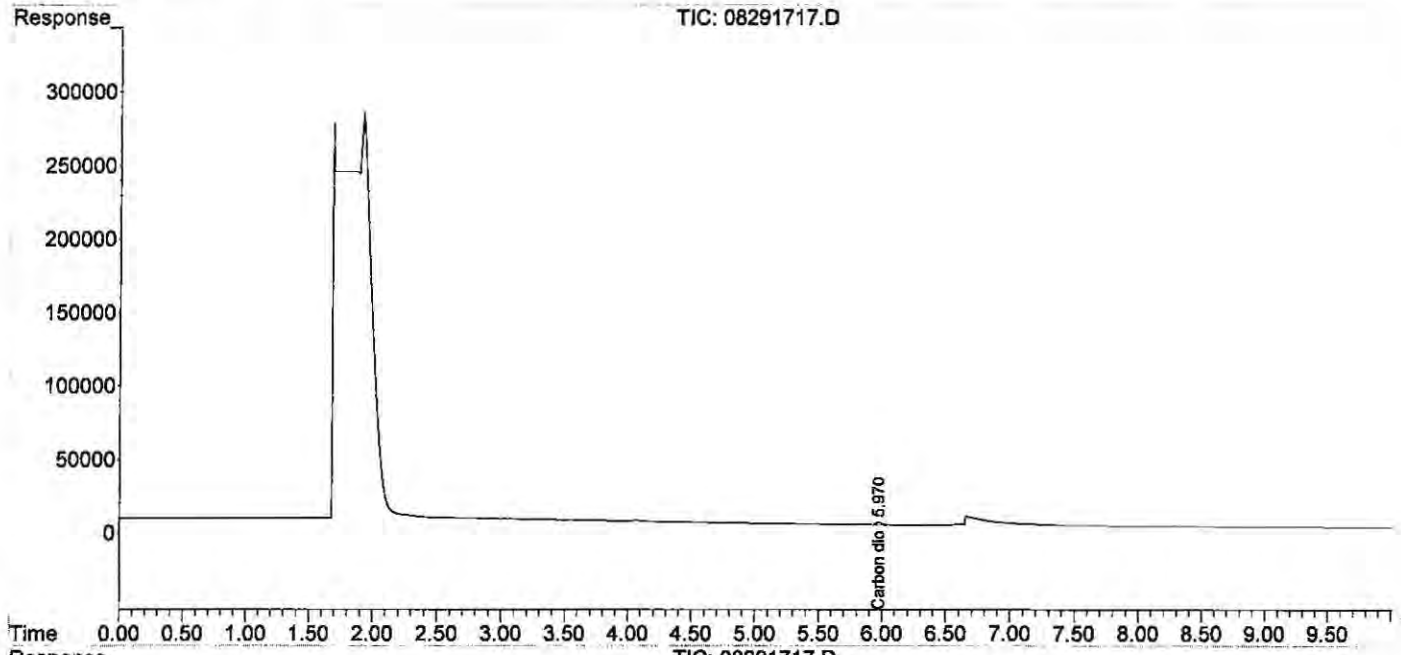
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

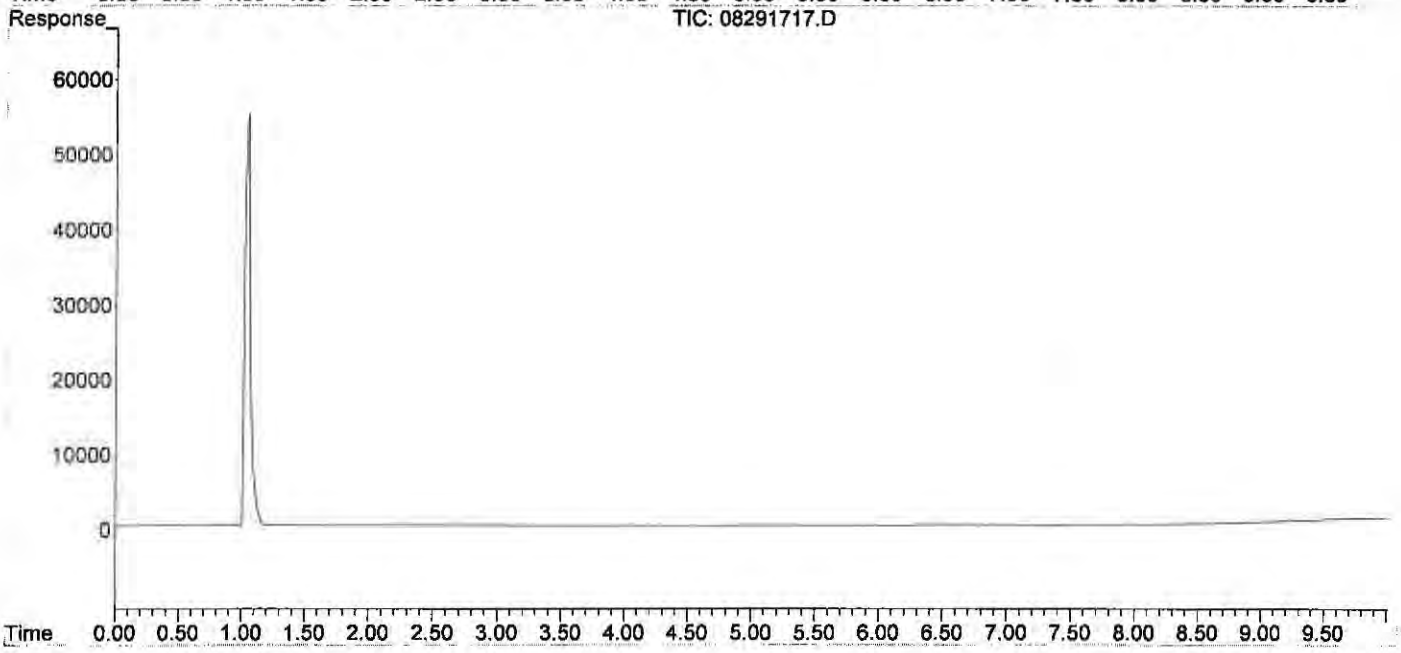
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



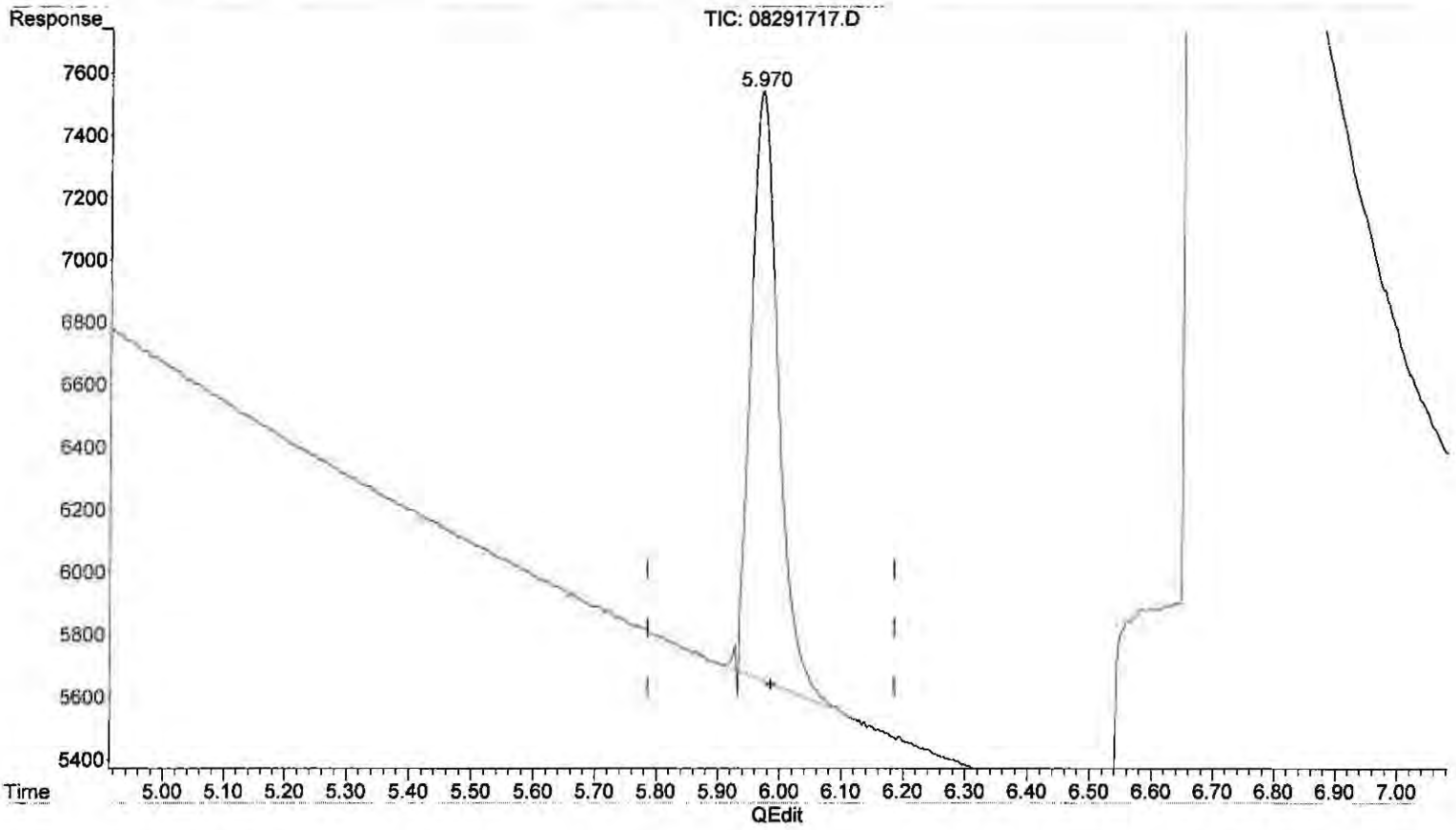


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

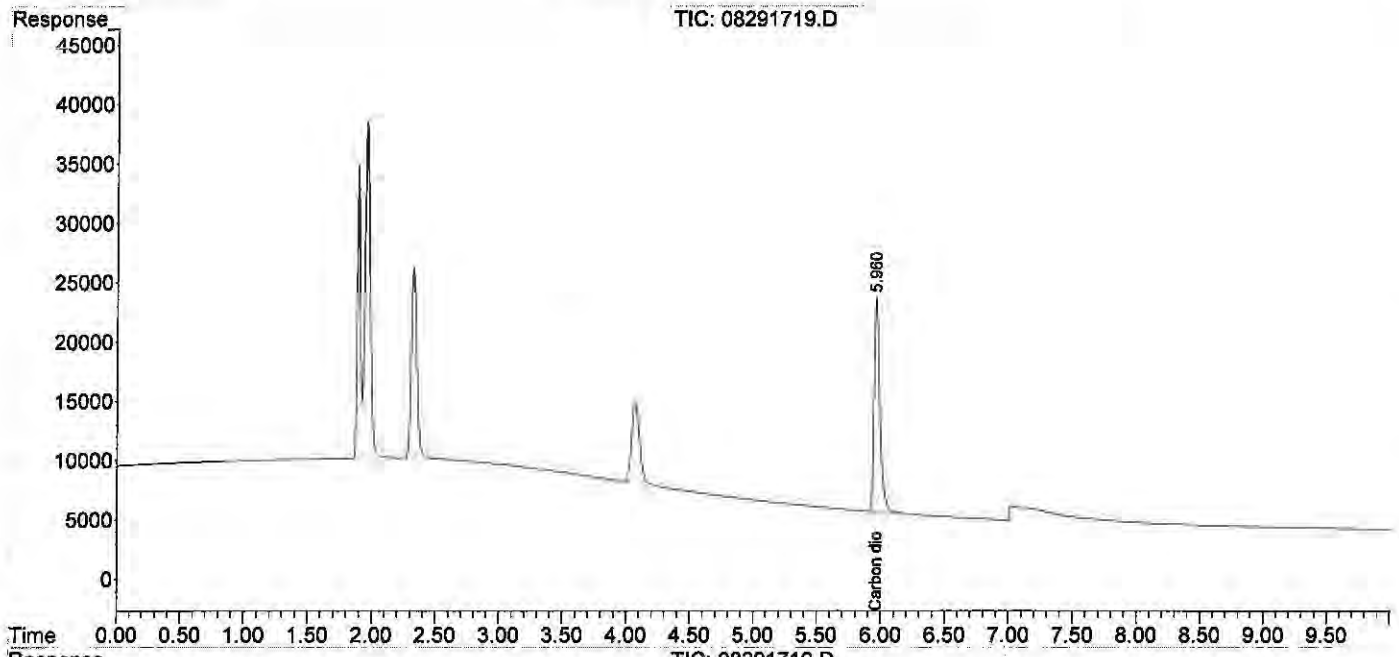
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

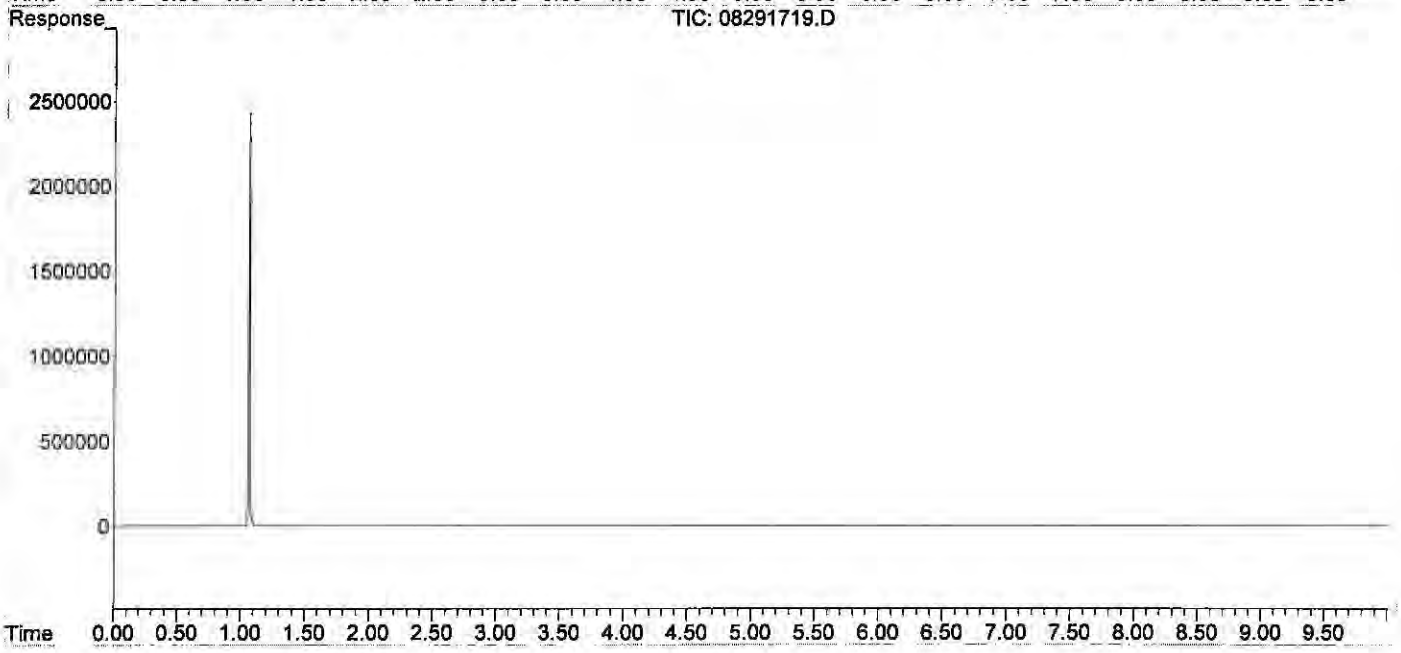
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

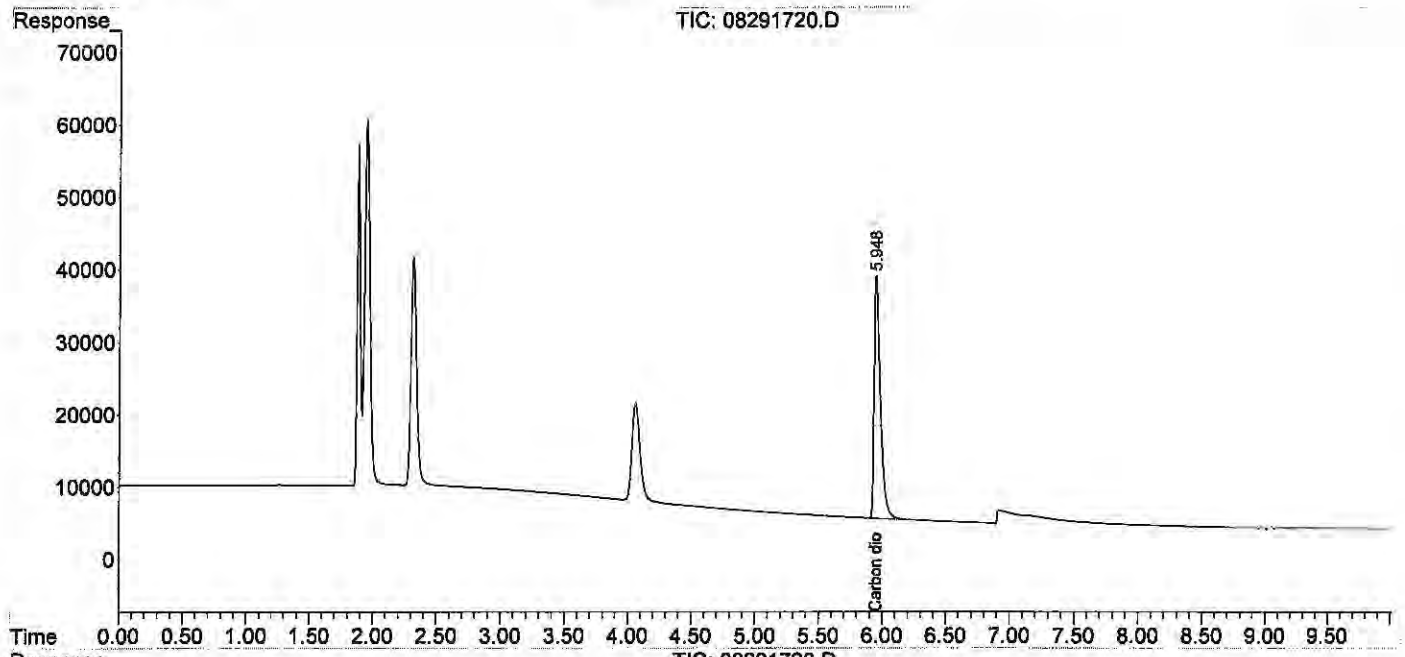
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

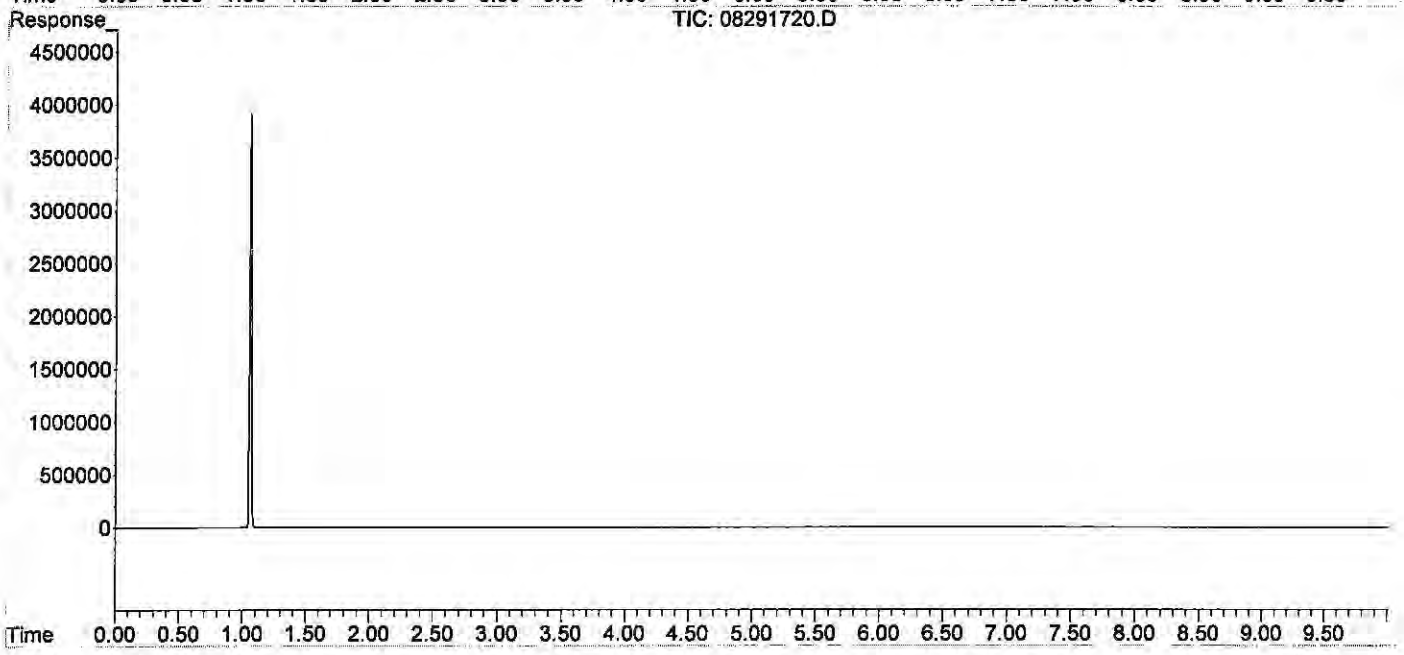
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

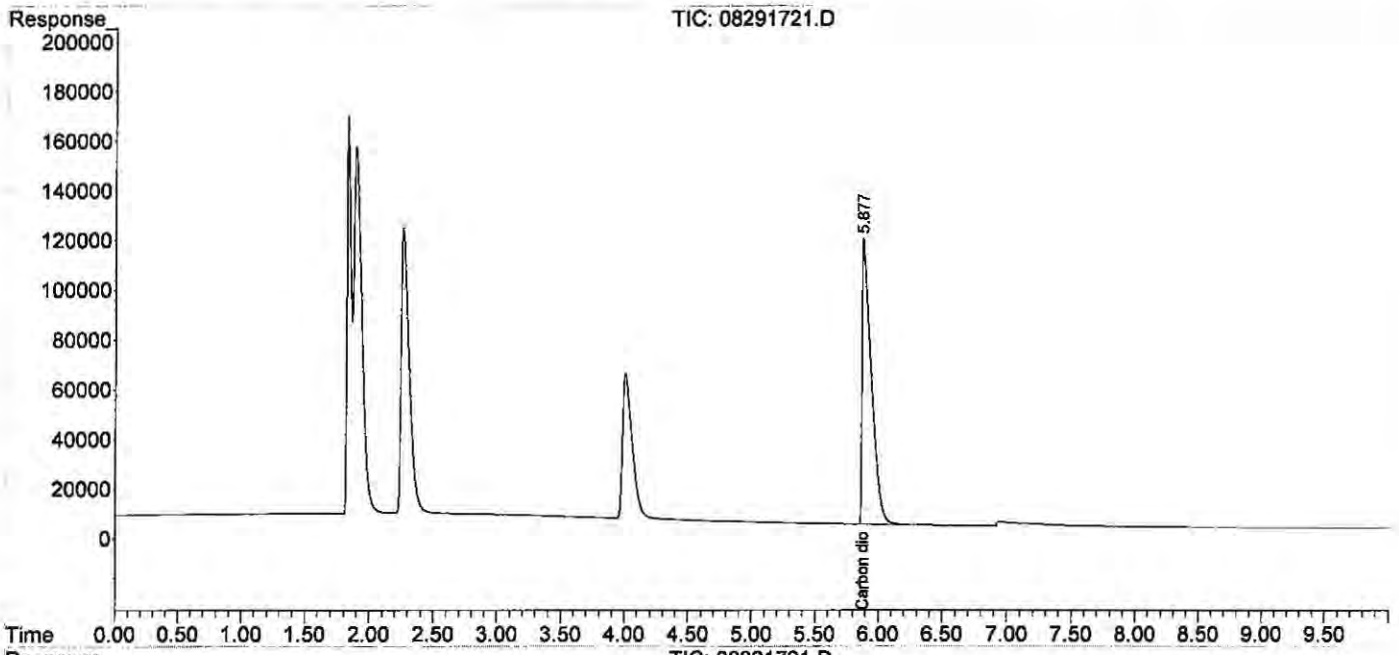
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

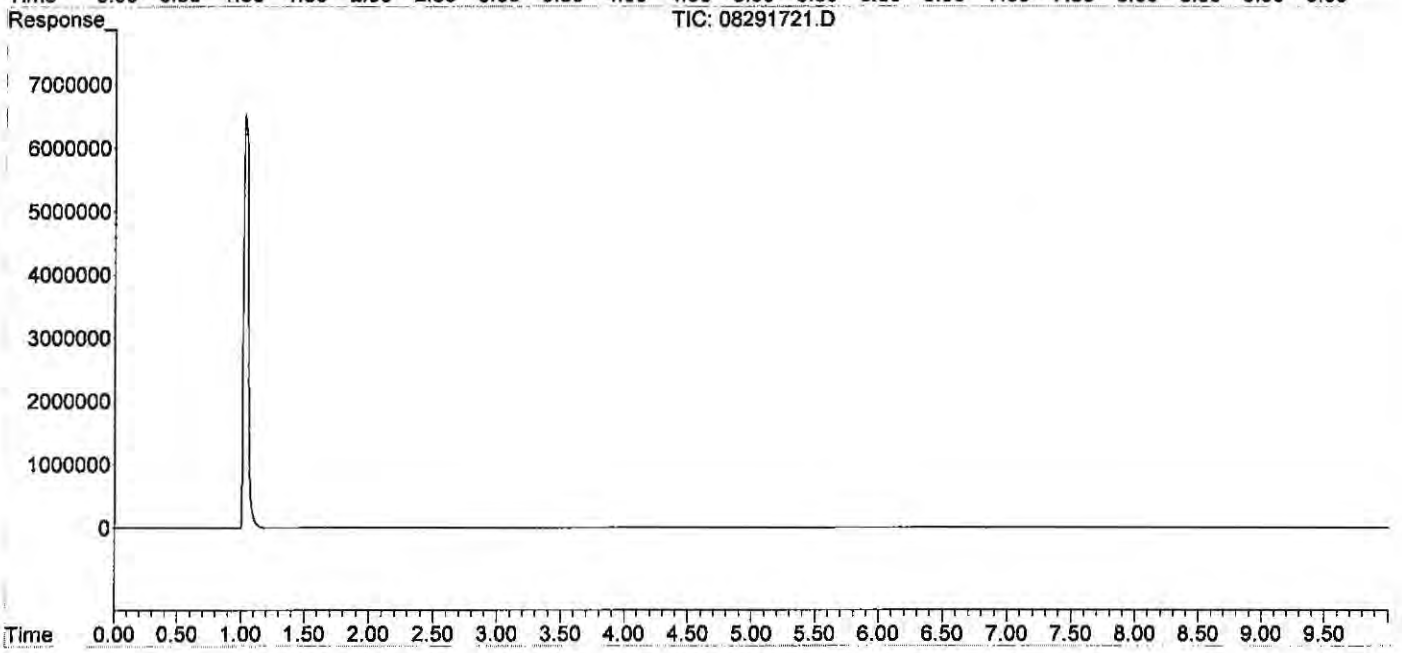
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.886	536422	0.113	ppm	actual %D
2)	Carbon monoxide	1.886	536422	N.D.	ppm	
3)	Methane (TCD)	4.059f	626500	66244.710	ppm	
4)	Carbon dioxide	5.947	1163775	4957.948	ppm	5000 99.16
6)	Methane (FID)	1.062	37290742	3947.023	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

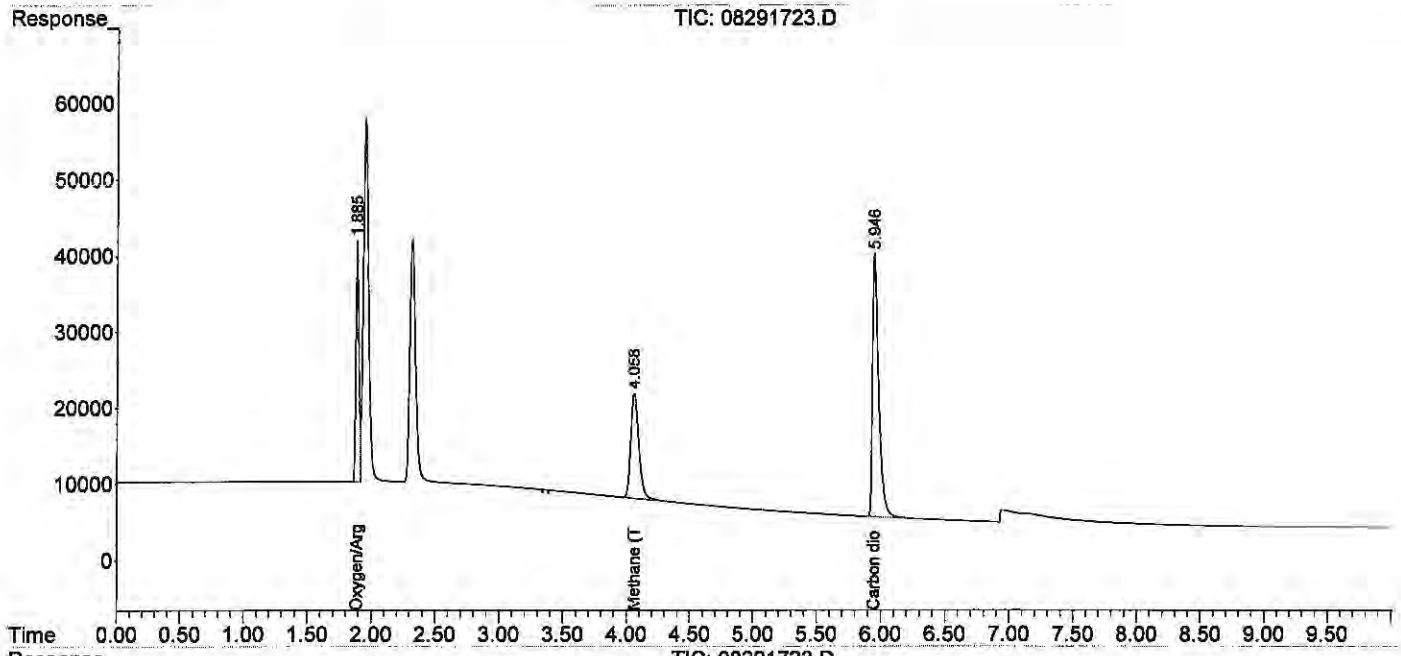
(f)=RT Delta > 1/2 Window (m)=manual int.

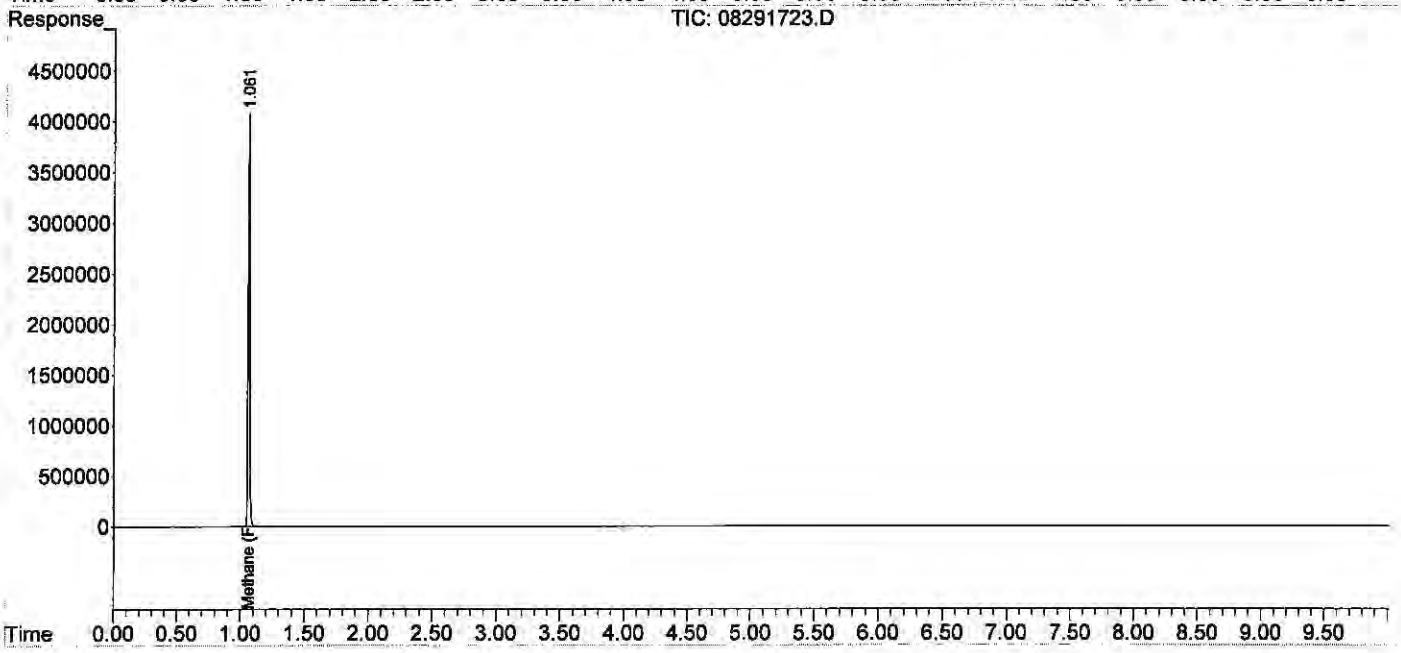
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : MR | Instrument : GC#10
Service Request: P1900793 | Date Analysis : 02/20/19 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-01311901	0.100	5029.130
ACTUAL		5000.00
%Difference		0.6%
mcs 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
tcd lcs s32-10081801	0.100	854.460
tcd lcsd s32-10081801	0.100	865.454
P1900793-001 50ul	0.050	16983.33
P1900793-002 50ul	0.050	17530.70
P1900793-003 0.1ml	0.100	17.644
P1900793-004 50ul	0.050	14358.15

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	0.000
tcd lcs s32-10081801	8544.600
tcd lcsd s32-10081801	8654.540
P1900793-001 50ul	339666.62
P1900793-002 50ul	350614.06
P1900793-003 0.1ml	176.440
P1900793-004 50ul	287163.08

std s32-01311901	4734.476
ACTUAL	5000.00
%Difference	5.3%

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 11:58:18
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:49:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.972f	623985	0.131	ppm	
2)	Carbon monoxide	1.972f	623985	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.075	1180484	5029.130	ppm	m
6)	Methane (FID)	1.107	37136893	3930.739	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

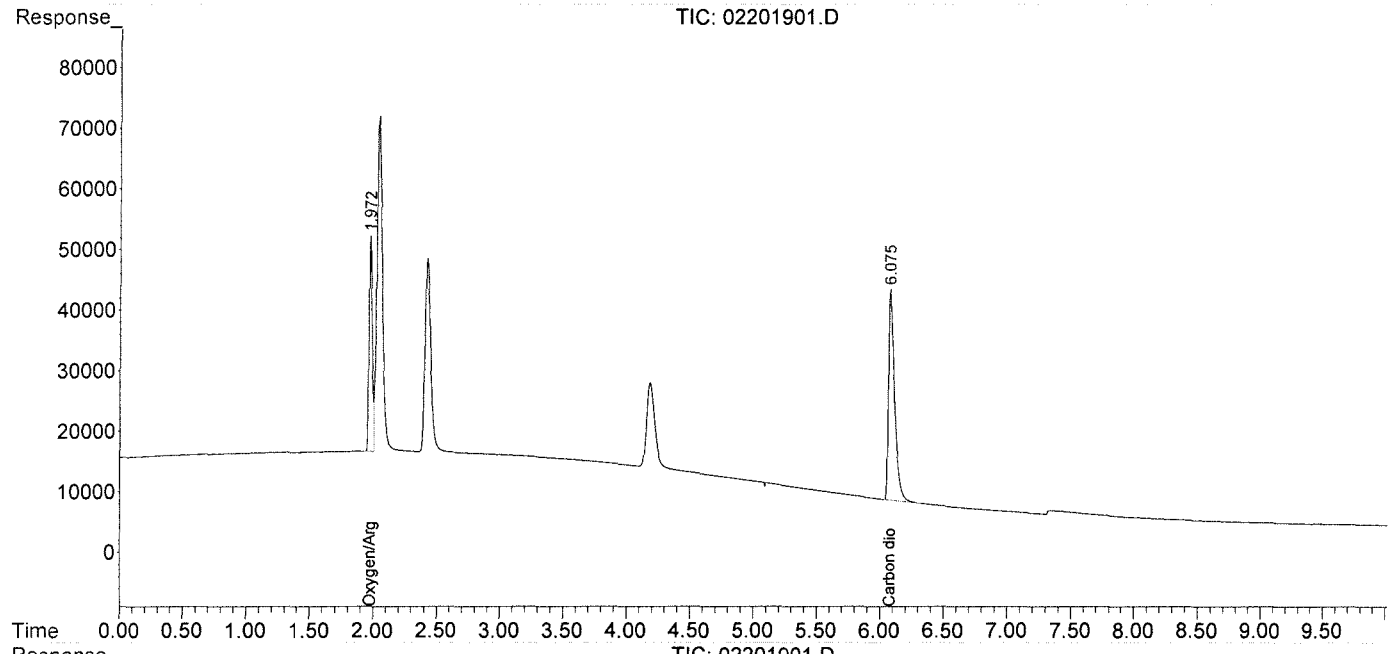
(f)=RT Delta > 1/2 Window (m)=manual int.

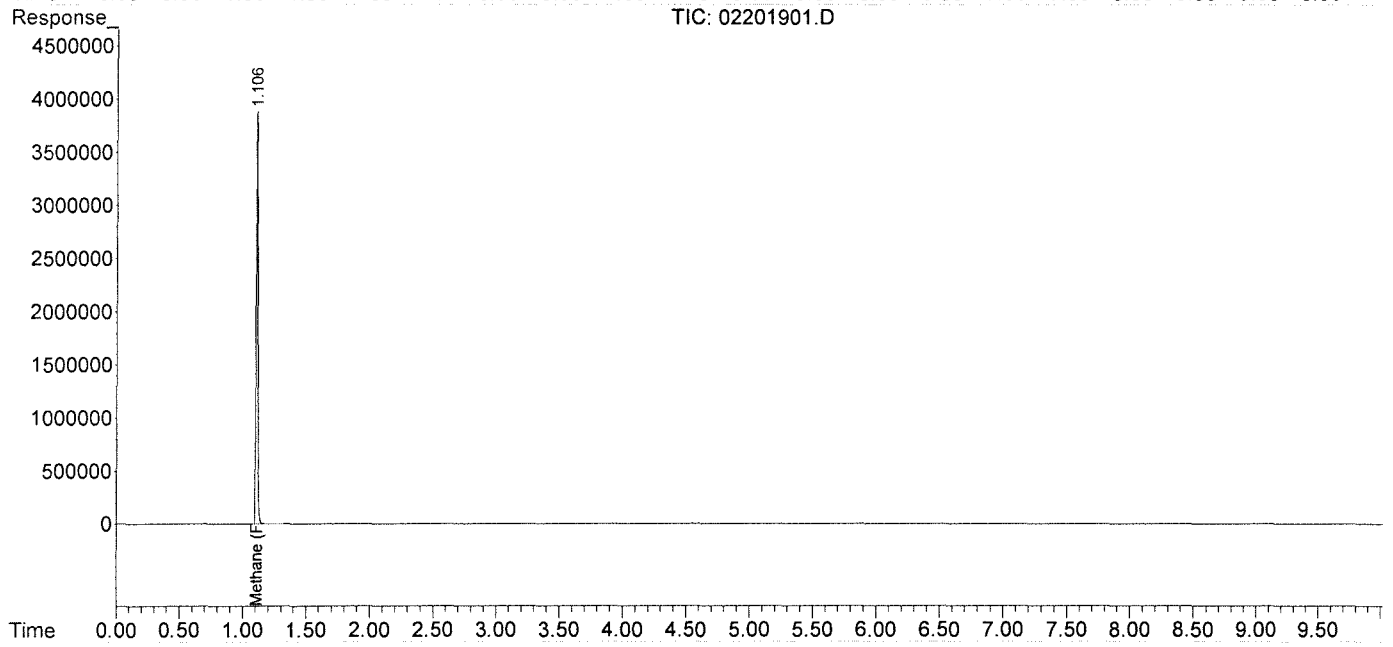
MR 02/21/19

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 11:58:18
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:49:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

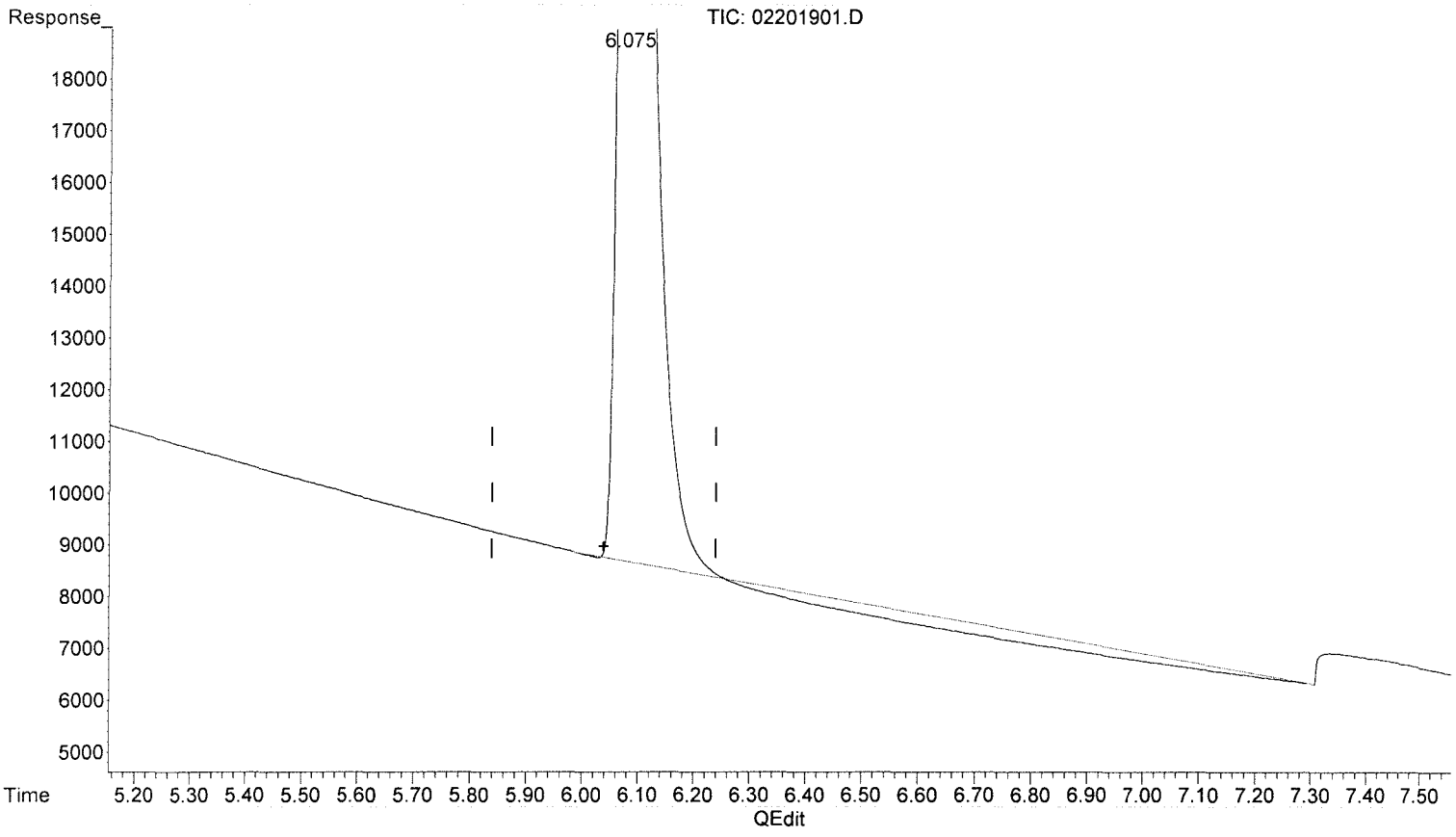




Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 11:58:18
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:49:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.077min 4580.731 ppm

response 1075231

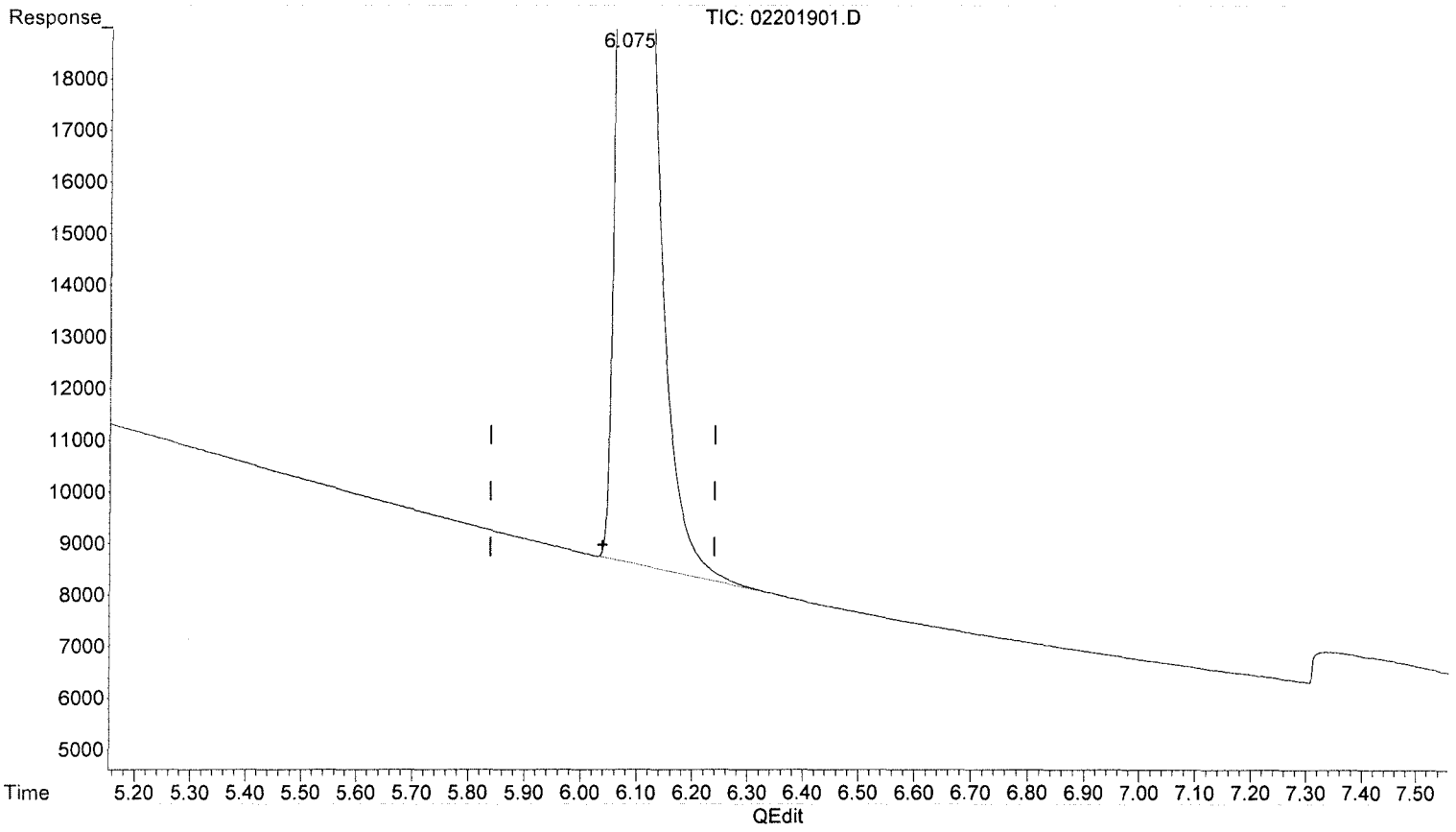
MR 02/21/19

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 11:58:18
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:49:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.075min 5029.130 ppm m

response 1180484

MR 02/21/19
BLC

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:38:00
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:53:50 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

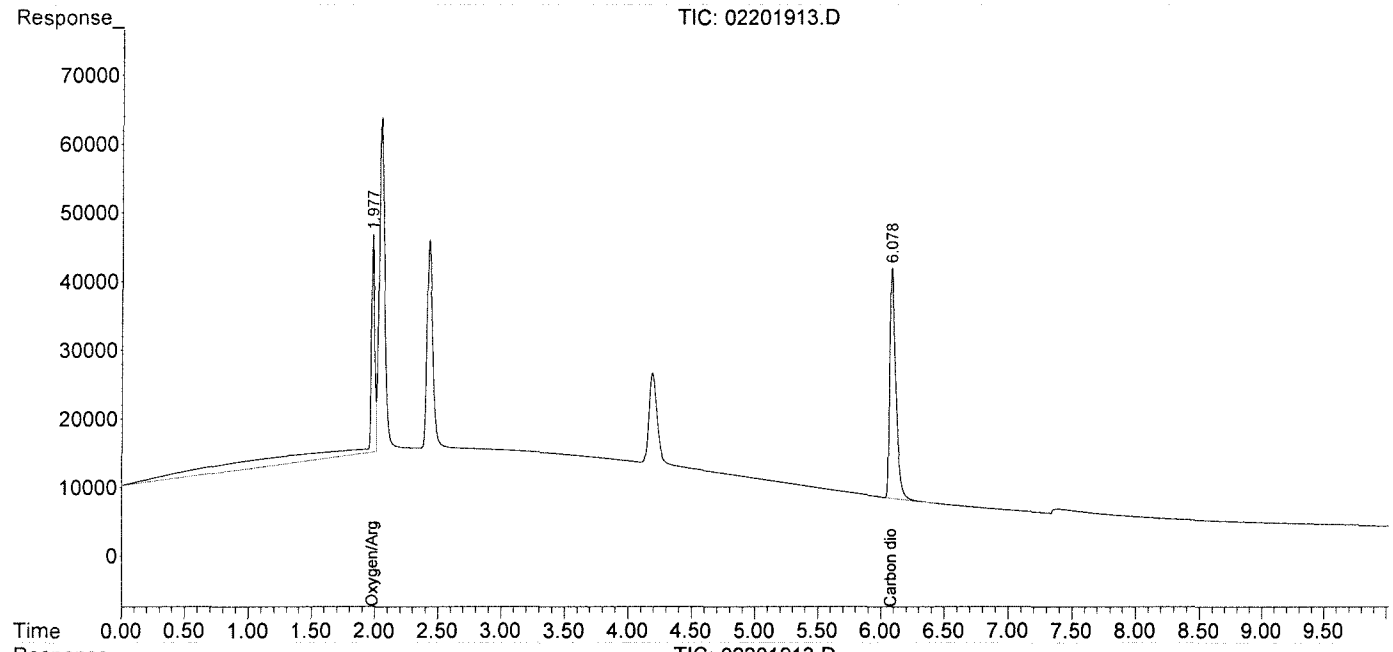
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.979f	1522159	0.320	ppm
2)	Carbon monoxide	1.979f	1522159	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.079	1111320	4734.476	ppm
6)	Methane (FID)	1.110	34160175	3615.669	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

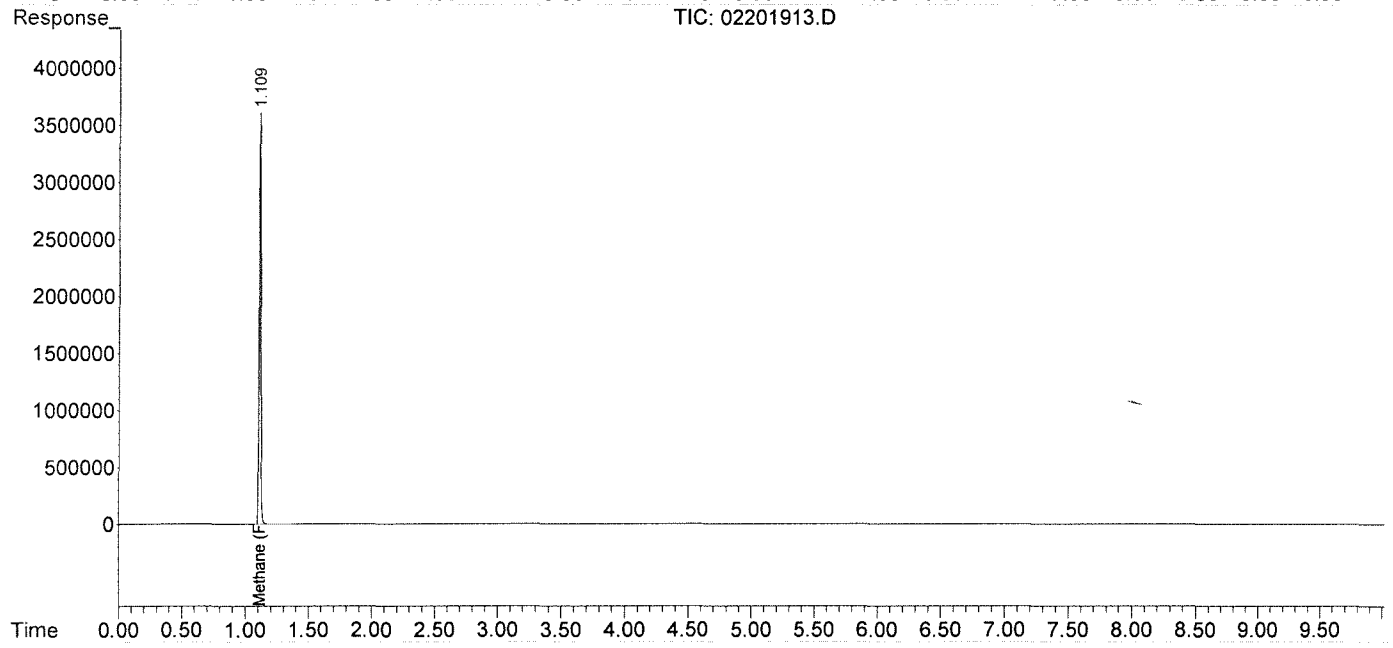
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:38:00
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:53:50 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2019_02\20\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	20-Feb-19, 11:58:18	02201901.D	std s32-01311901		MR	RSKBOTH.M	pass
2	20-Feb-19, 12:20:54	02201902.D	rb 0.1ml		MR	RSKBOTH.M	pass
3	20-Feb-19, 12:45:05	02201903.D	mcs 0.1ml		MR	RSKBOTH.M	pass
4	20-Feb-19, 13:30:12	02201904.D	XXtcd lcs		MR	RSKBOTH.M	
5	20-Feb-19, 13:49:51	02201905.D	tcd lcs s32-10081801		MR	RSKBOTH.M	pass
6	20-Feb-19, 14:08:06	02201906.D	tcd lcsd s32-10081801		MR	RSKBOTH.M	pass
7	20-Feb-19, 14:22:03	02201907.D	XXP1900793-001 0.1		MR	RSKBOTH.M	
8	20-Feb-19, 14:35:37	02201908.D	P1900793-001 50ul		MR	RSKBOTH.M	
9	20-Feb-19, 14:52:23	02201909.D	P1900793-002 50ul		MR	RSKBOTH.M	
10	20-Feb-19, 15:05:50	02201910.D	XXP1900793-003 50u		MR	RSKBOTH.M	
11	20-Feb-19, 15:19:09	02201911.D	P1900793-004 50ul		MR	RSKBOTH.M	
12	20-Feb-19, 15:28:16	02201912.D	P1900793-003 0.1ml		MR	RSKBOTH.M	
13	20-Feb-19, 15:38:00	02201913.D	std s32-01311901		MR	RSKBOTH.M	pass
14	20-Feb-19, 15:50:59	02201914.D	P1900794-001 50u		MR	RSKBOTH.M	
15	20-Feb-19, 16:00:35	02201915.D	P1900794-002 50u		MR	RSKBOTH.M	
16	20-Feb-19, 16:09:57	02201916.D	P1900794-003 50u		MR	RSKBOTH.M	
17	20-Feb-19, 16:21:27	02201917.D	P1900794-003ms		MR	RSKBOTH.M	
18	20-Feb-19, 16:30:36	02201918.D	P1900794-003msd		MR	RSKBOTH.M	
19	20-Feb-19, 16:40:37	02201919.D	std s32-01311901		MR	RSKBOTH.M	pass

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:19:27
Operator : MR
Sample : P1900793-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 10:31:54 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

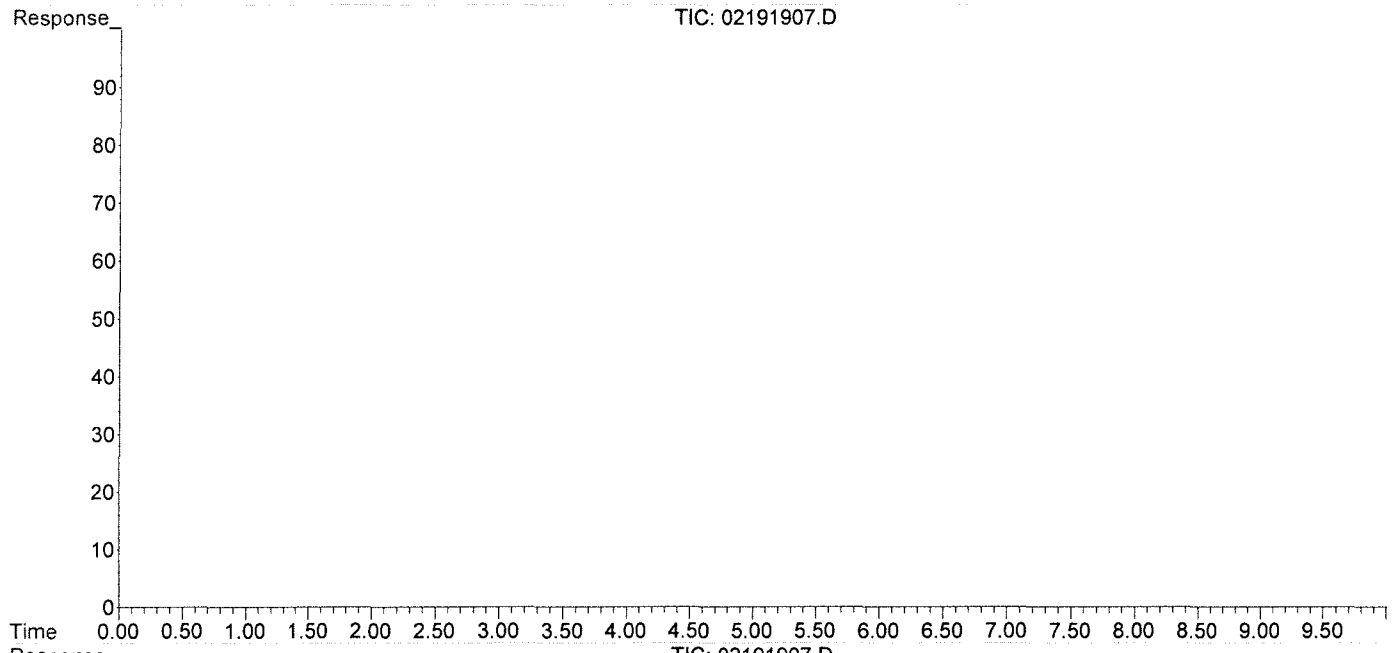
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	1473	0.162	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

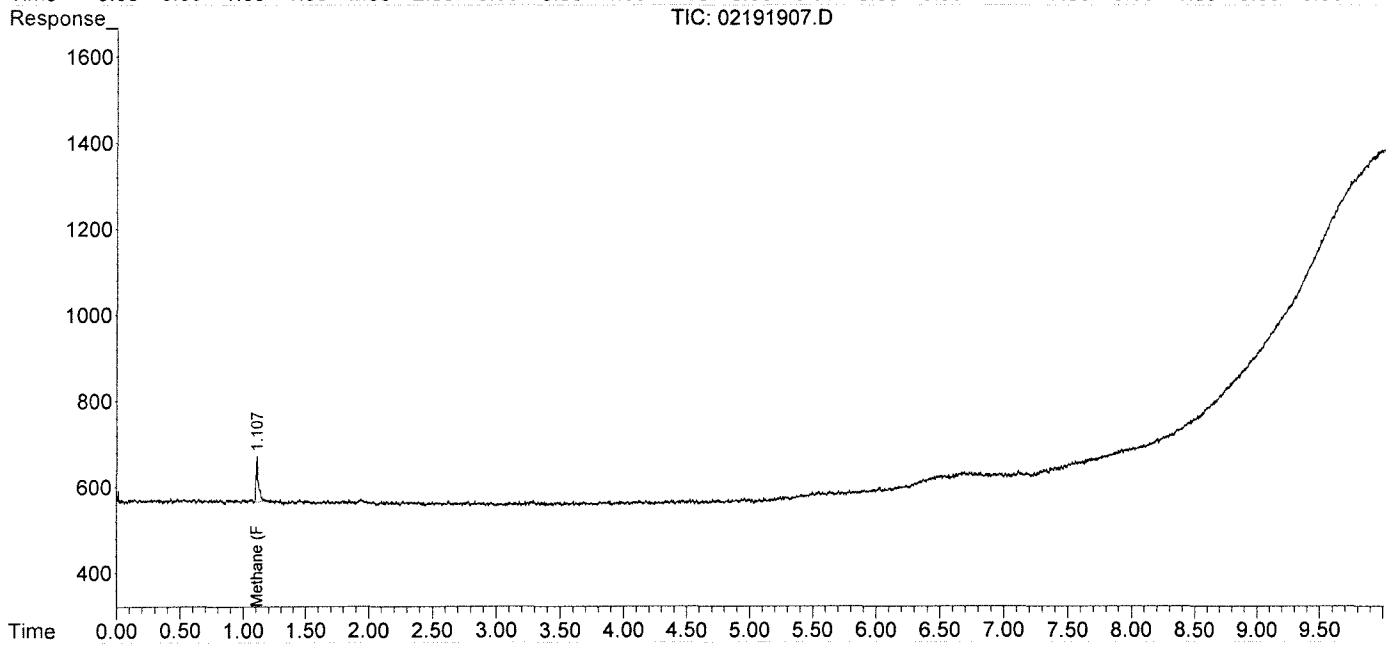
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:19:27
Operator : MR
Sample : P1900793-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 10:31:54 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:35:00
Operator : MR
Sample : P1900793-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 14:24:15 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

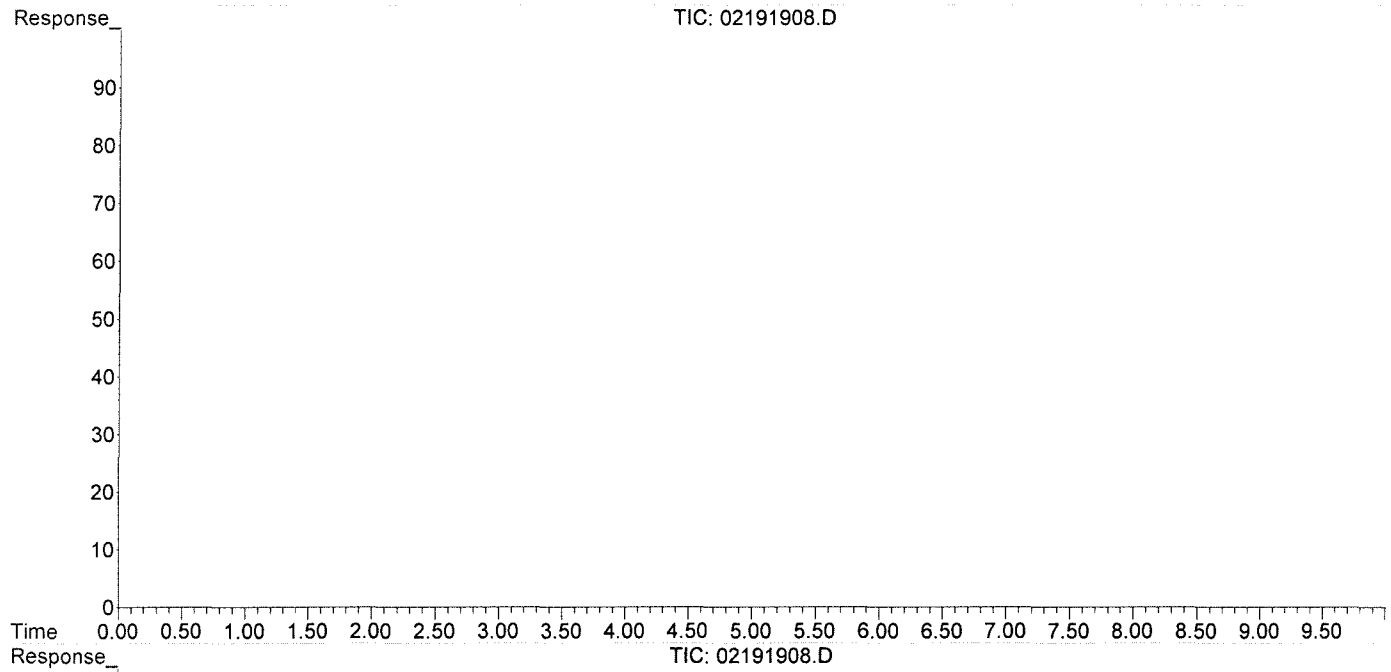
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.122	32190	3.549	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

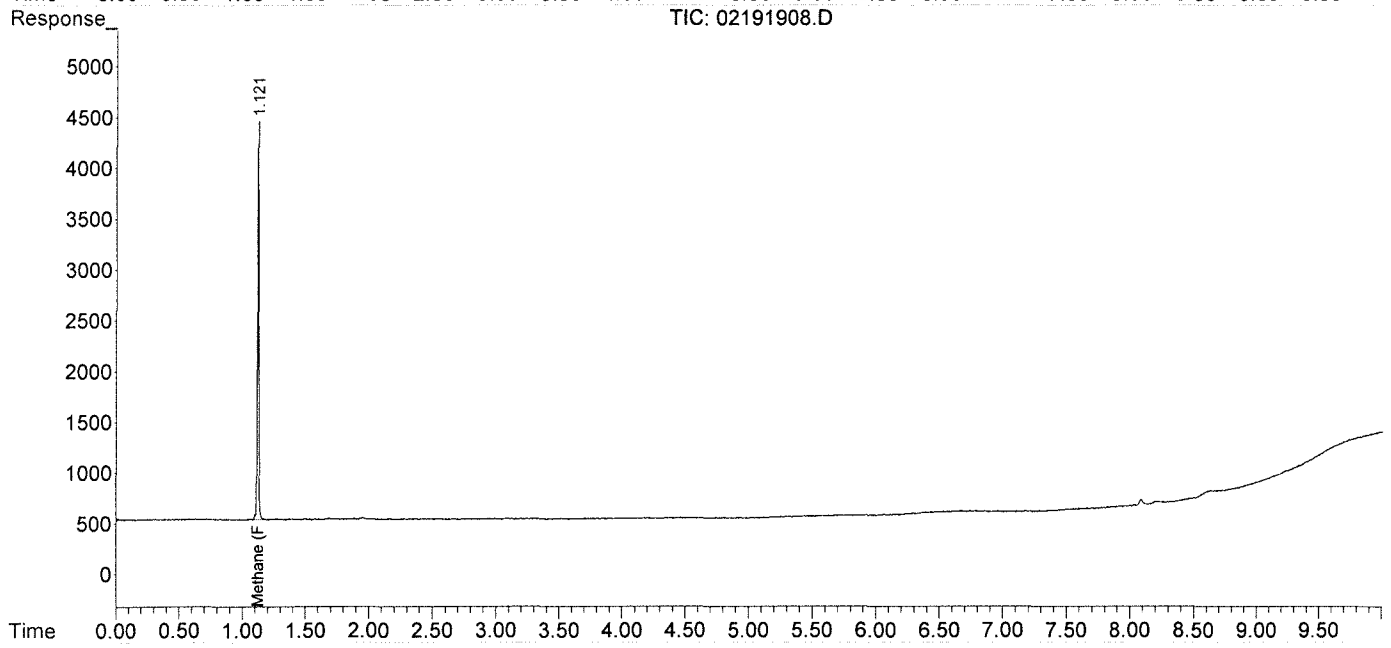
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:35:00
Operator : MR
Sample : P1900793-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 14:24:15 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:50:58
Operator : MR
Sample : P1900793-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 14:24:35 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

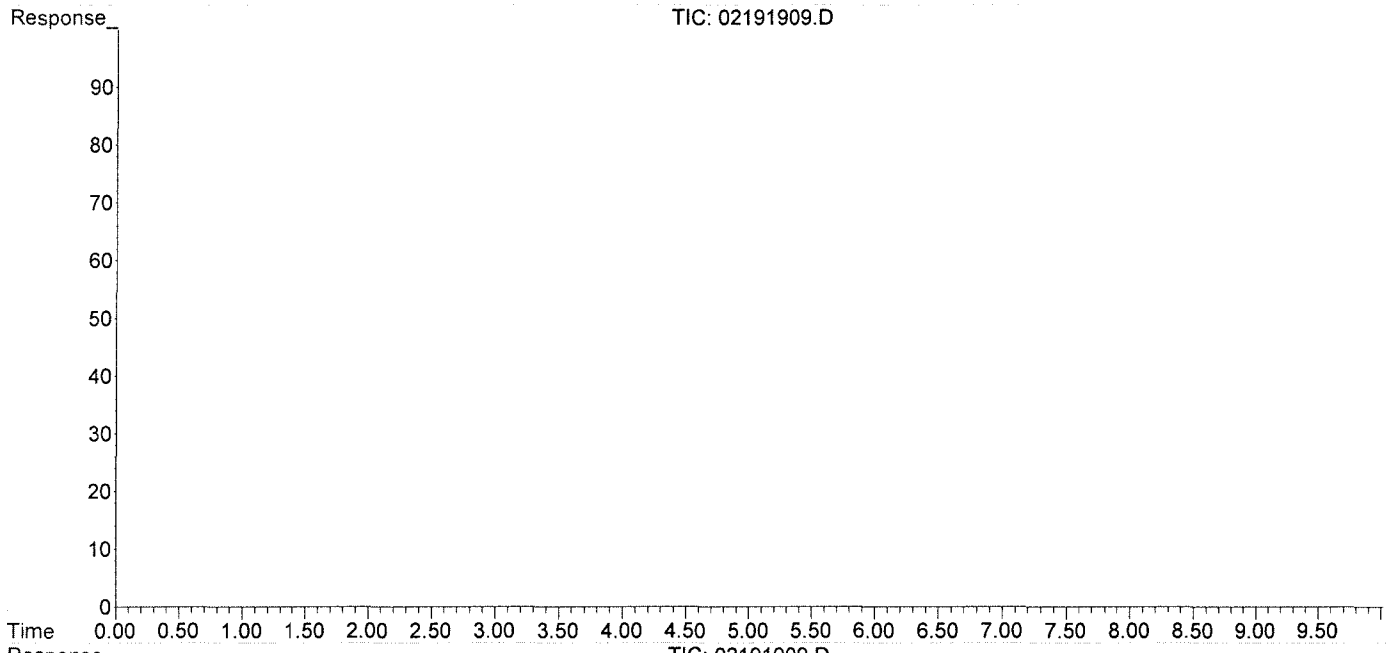
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

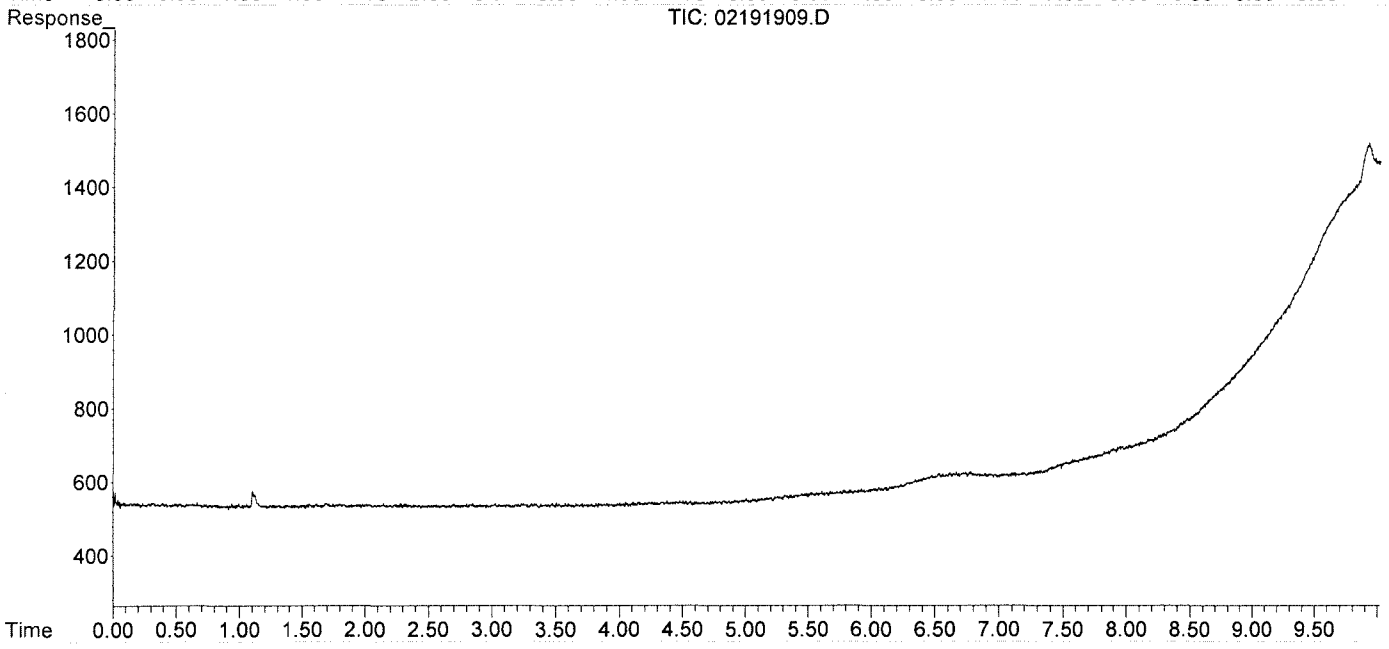
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:50:58
Operator : MR
Sample : P1900793-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 14:24:35 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 14:04:08
Operator : MR
Sample : P1900793-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 14:24:50 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

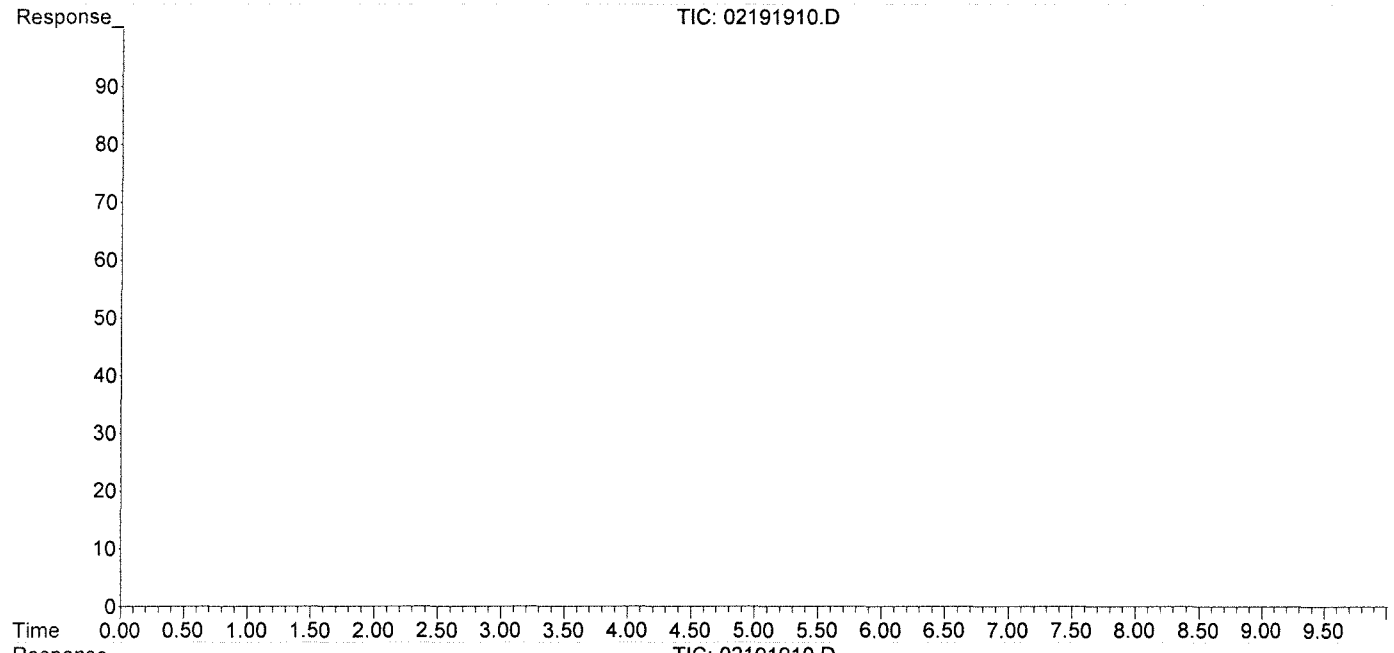
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.107	1203	0.133	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

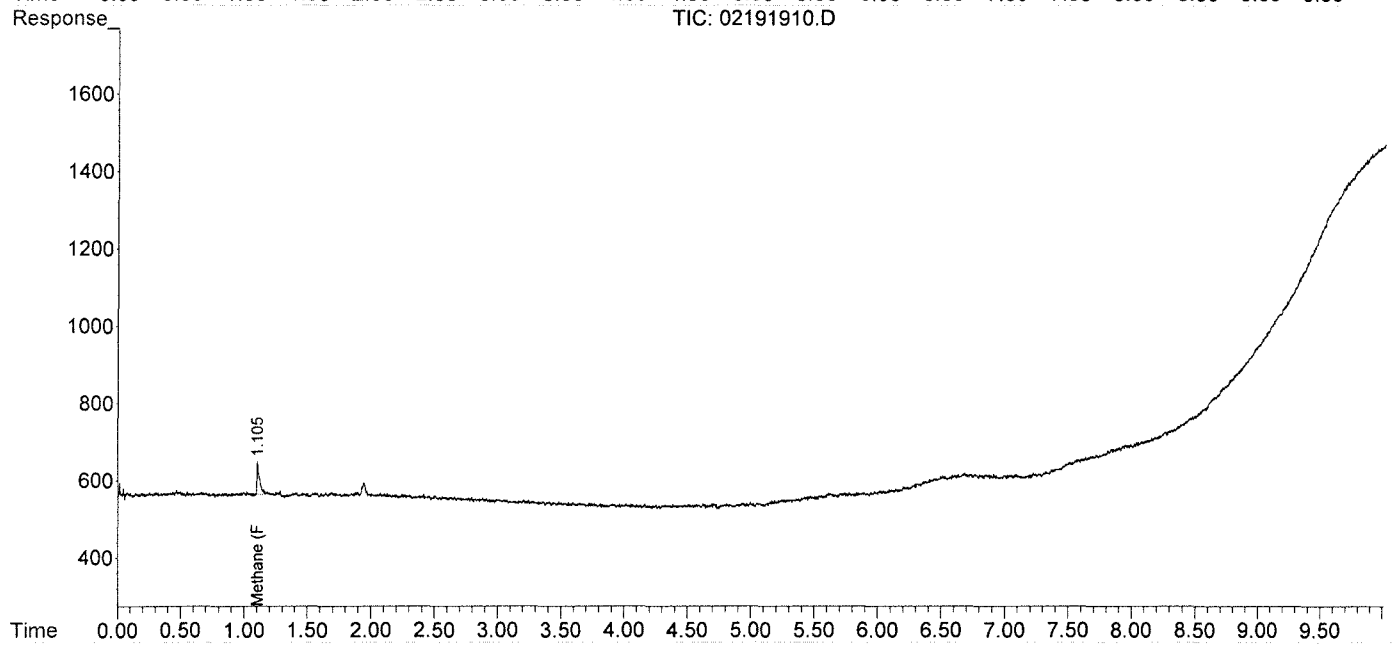
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 14:04:08
Operator : MR
Sample : P1900793-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 14:24:50 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 12:07:17
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 12:50:26 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

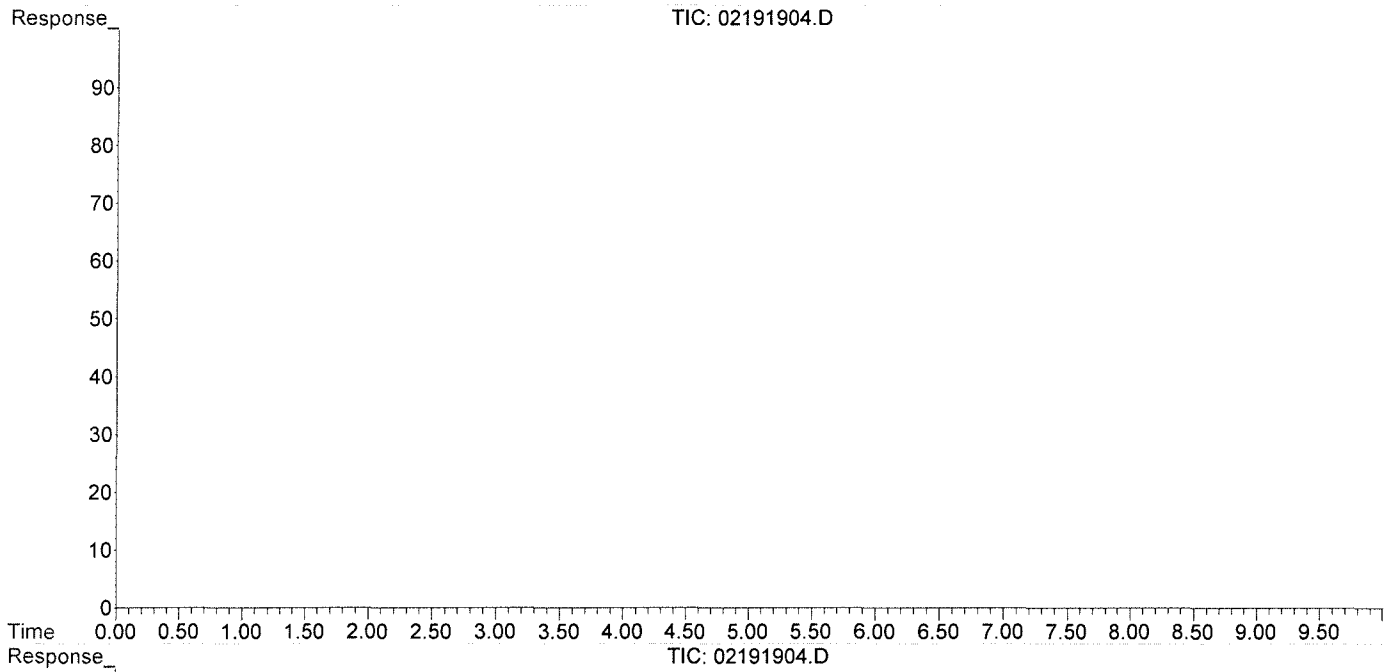
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.121	2652	0.292	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

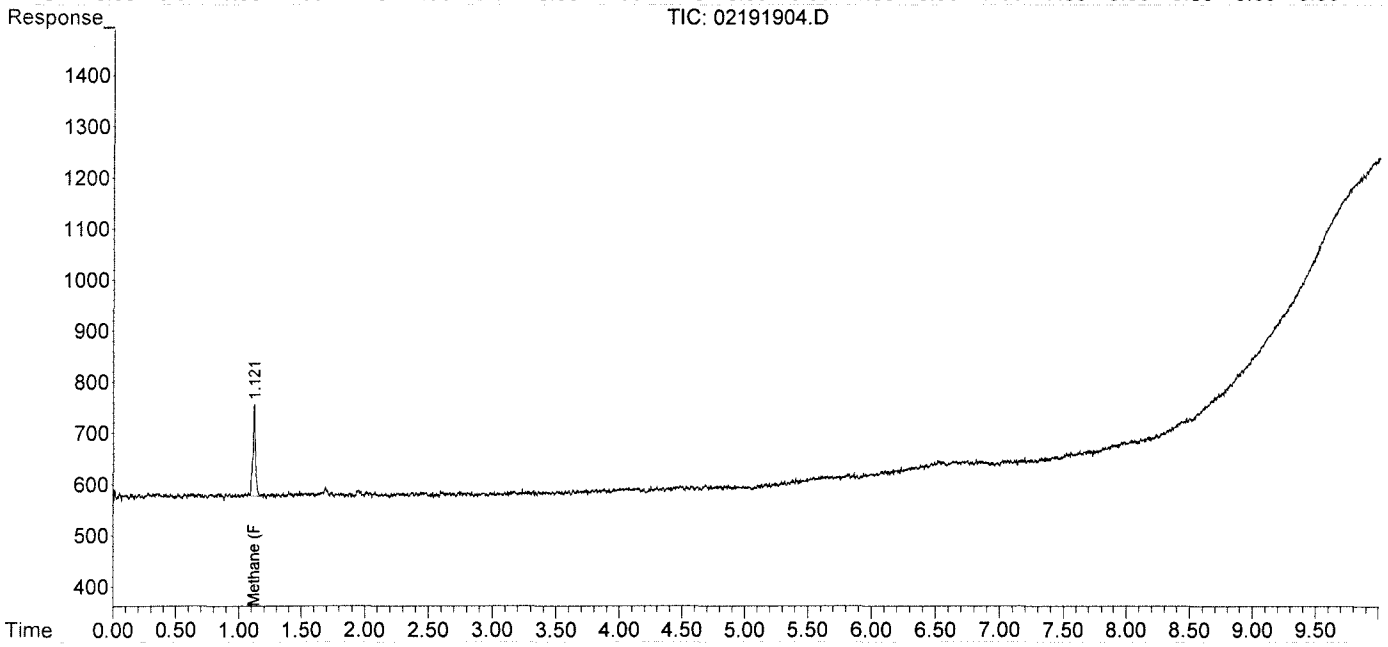
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 12:07:17
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 12:50:26 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 12:51:40
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 13:02:48 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

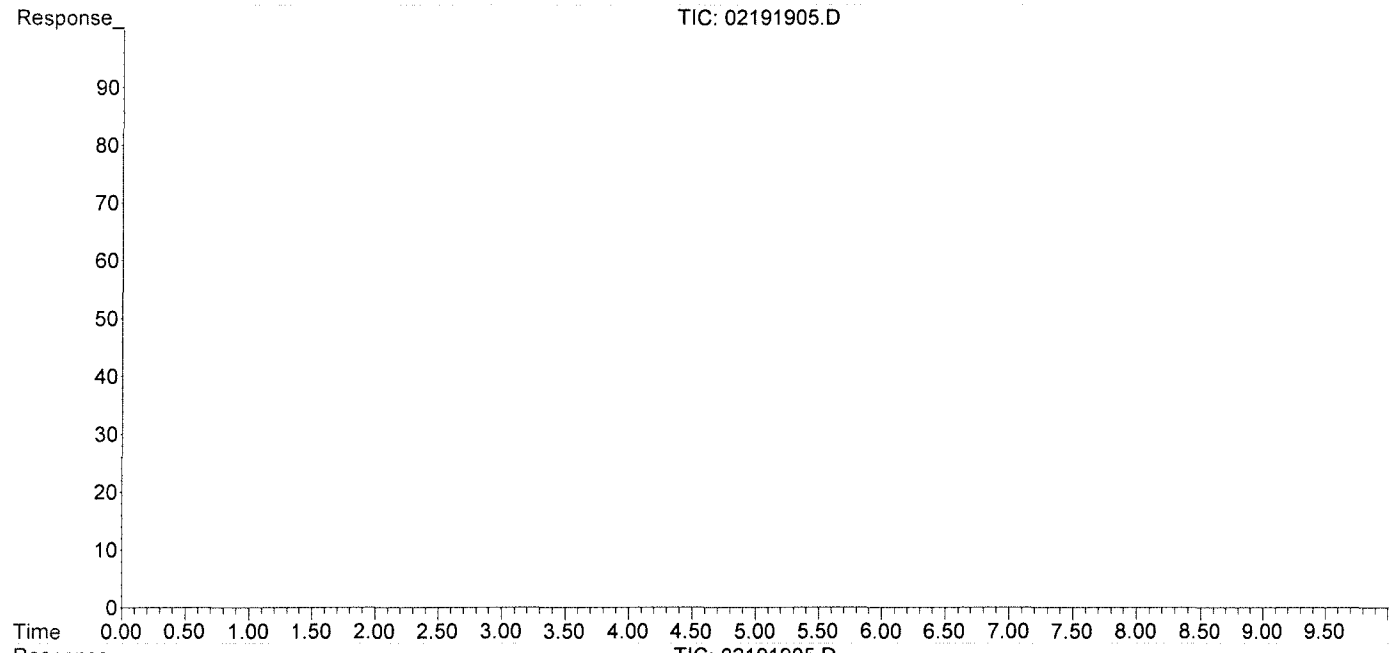
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.124	14261	1.572	ppm
7)	Ethylene	1.693	16992	1.015	ppm
8)	Ethane	1.959	21430	1.264	ppm
9)	Propylene	4.338	22875	0.976	ppm
10)	Propane	4.460	34021	1.367	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.673	44374	1.667	ppm
13)	n-Butane	6.673	44374	1.667	ppm

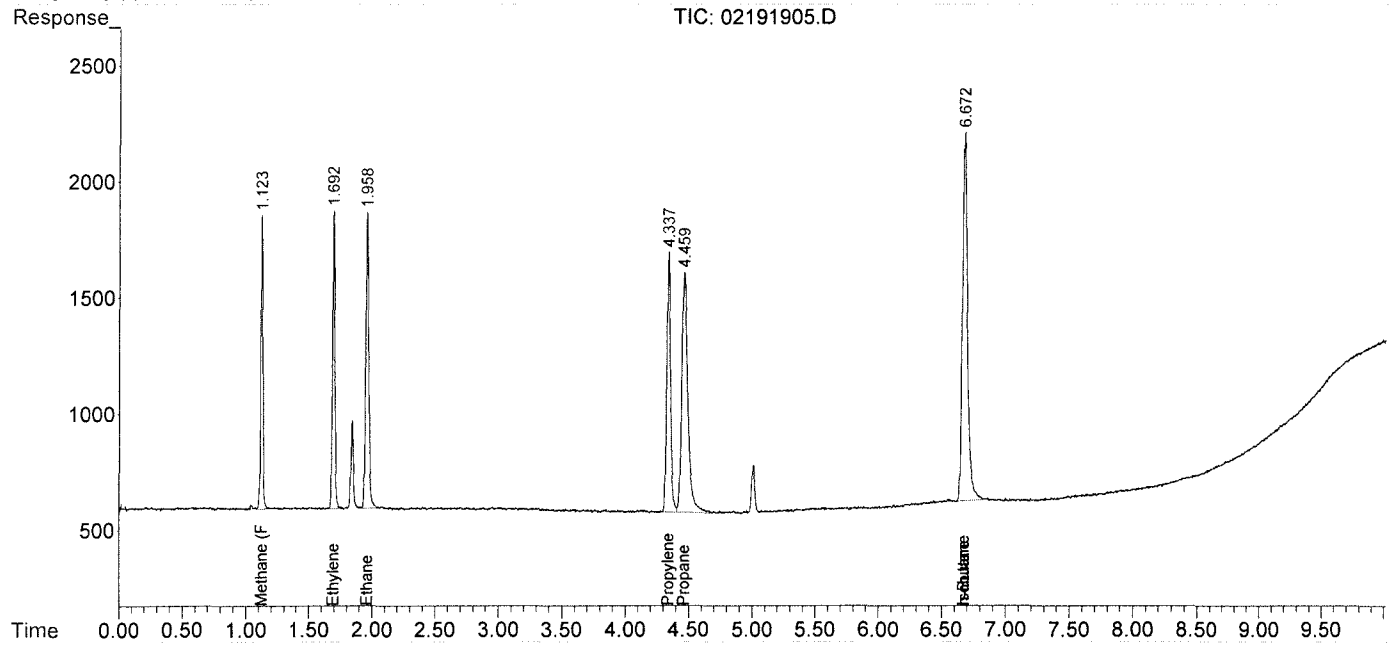
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 12:51:40
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 13:02:48 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:05:52
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 13:17:55 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

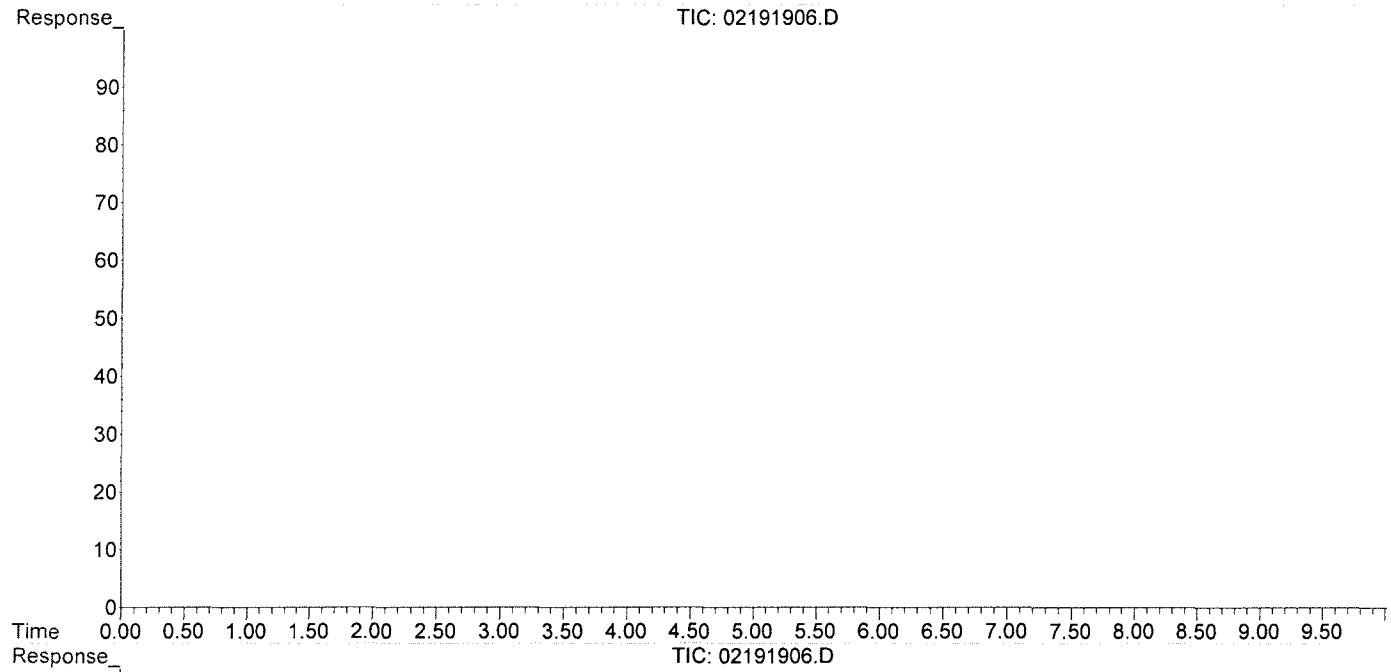
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.122	14559	1.605	ppm
7)	Ethylene	1.690	17036	1.018	ppm
8)	Ethane	1.956	21471	1.267	ppm
9)	Propylene	4.337	23150	0.988	ppm
10)	Propane	4.459	33797	1.358	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.672	45372	1.705	ppm
13)	n-Butane	6.672	45372	1.705	ppm

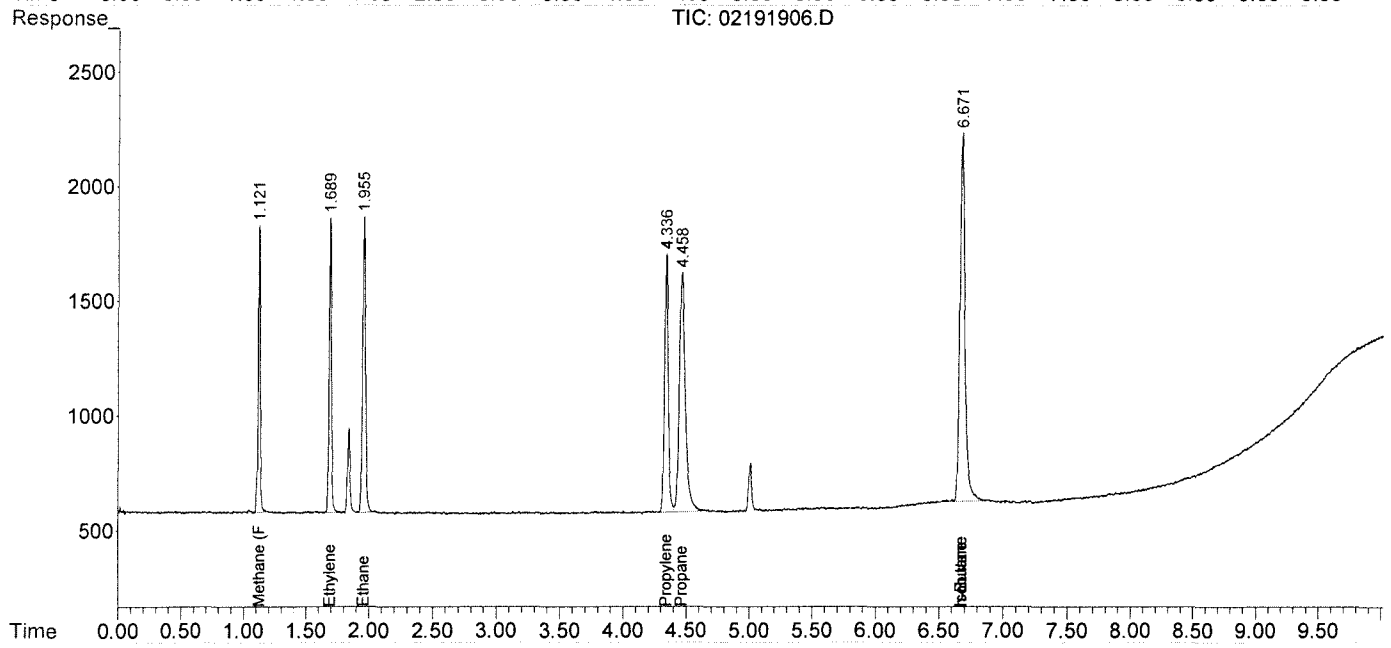
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:05:52
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 13:17:55 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

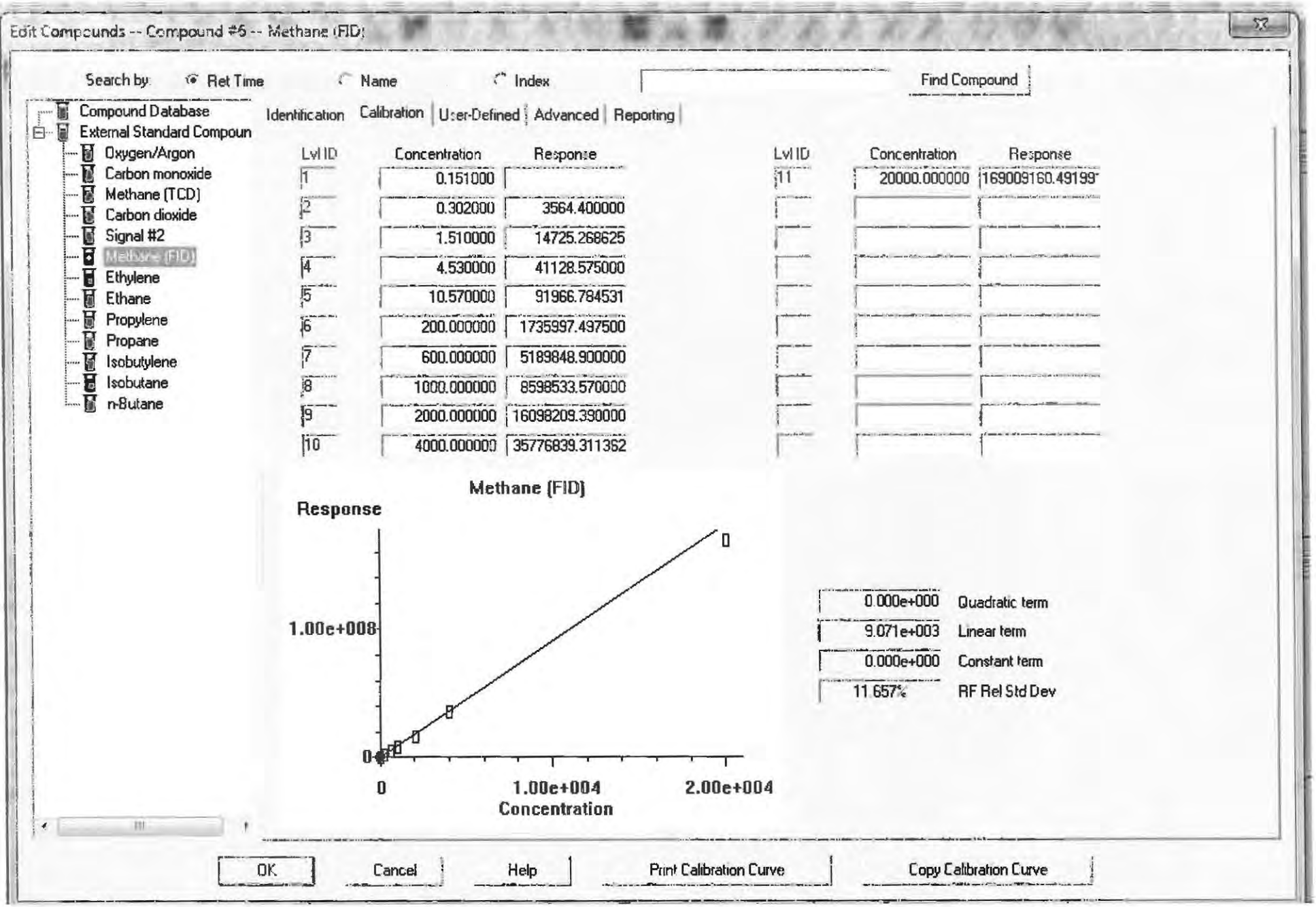
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017


Edit Compounds -- Compound #6 -- Methane (FID)
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compoun
Oxygen/Argon
Carbon monoxide
Methane (TCD)
Carbon dioxide
Signal #2
Methane (FID)
Ethylene
Ethane
Propylene
Propane
Isobutylene
Isobutane
n-Butane
Identification Calibration User-Defined Advanced Reporting
Lvl ID Concentration Response
1 0.151000
2 0.302000 3564.400000
3 1.510000 14725.268625
4 4.530000 41128.575000
5 10.570000 91966.784531
6 200.000000 1735997.497500
7 600.000000 5189848.900000
8 1000.000000 8598533.570000
9 2000.000000 16098209.390000
10 4000.000000 35776839.311362
Lvl ID Concentration Response
11 20000.000000 169009160.49199
Methane (FID)
Response
1.00e+008
0
0
1.00e+004
2.00e+004
Concentration
0.000e+000 Quadratic term
9.071e+003 Linear term
0.000e+000 Constant term
11.657% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

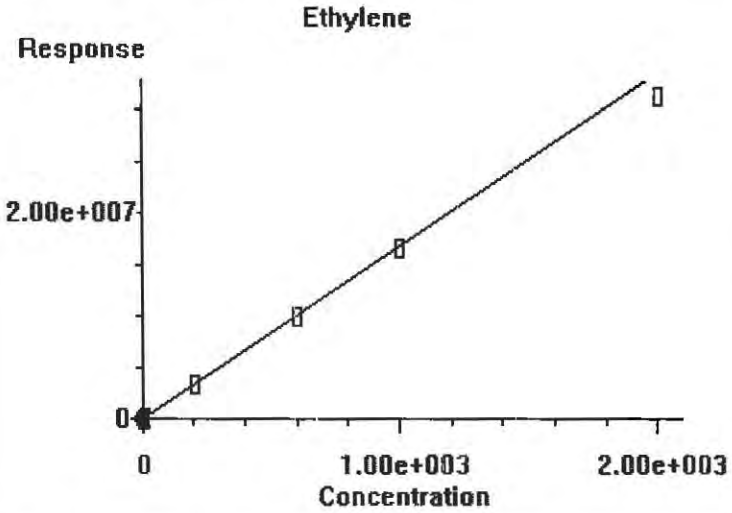
Search by: Ret Time | Name | Index | Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

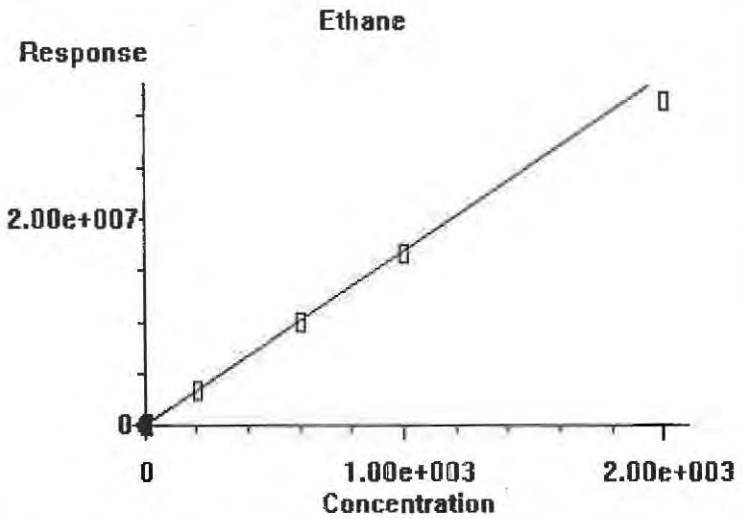
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

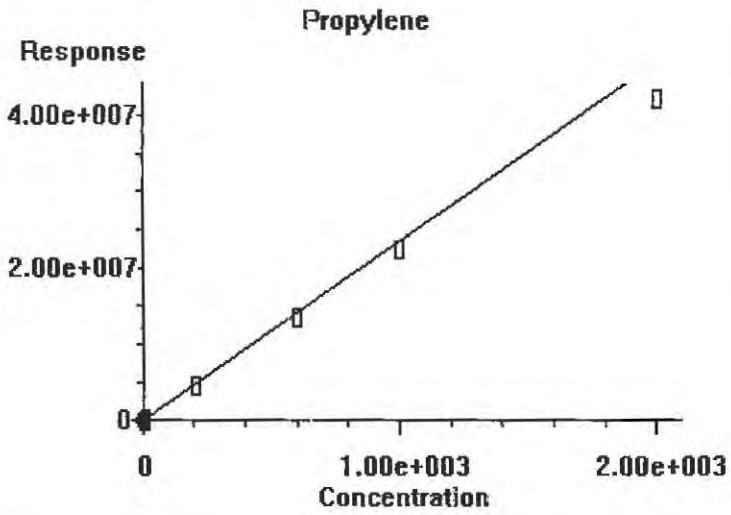
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

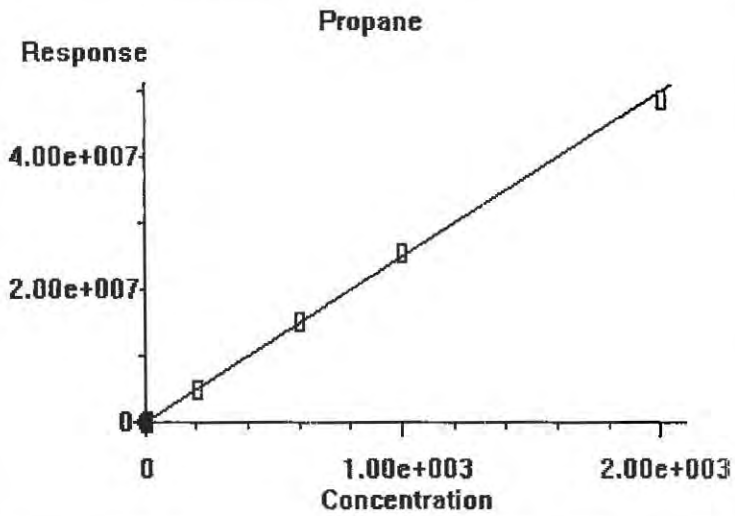
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663916
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

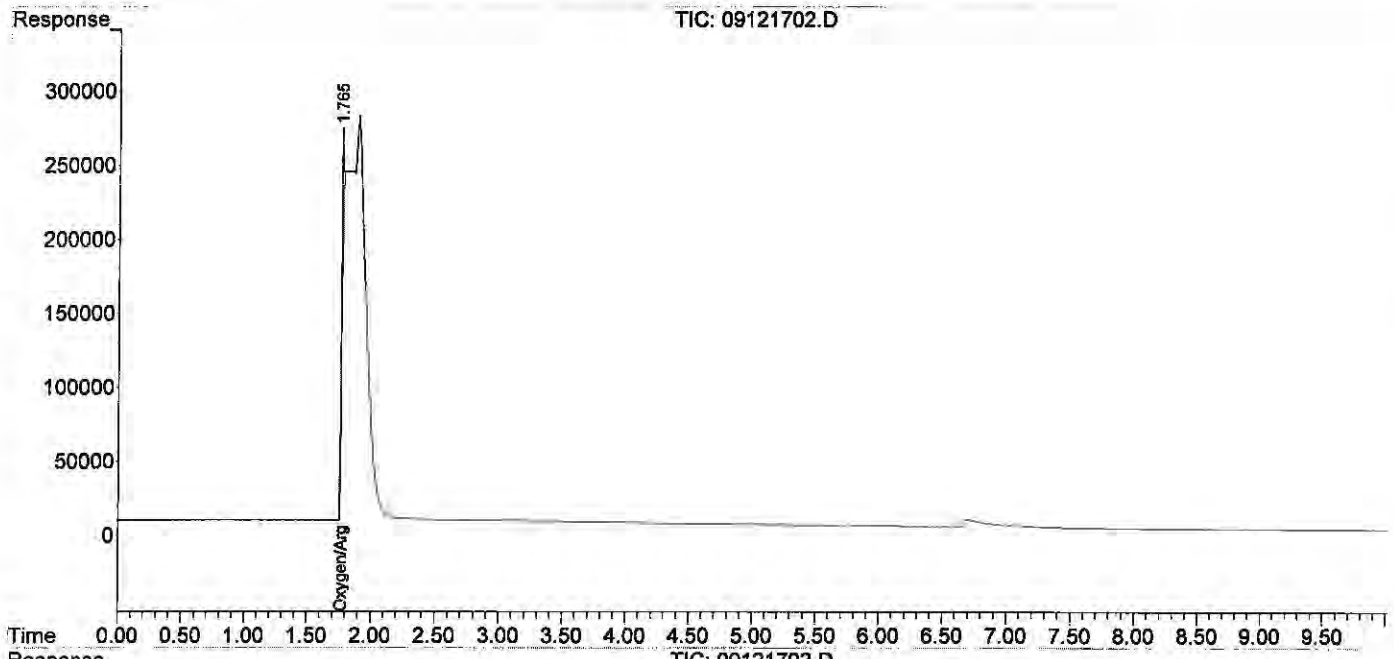
(f)=RT Delta > 1/2 Window (m)=manual int.

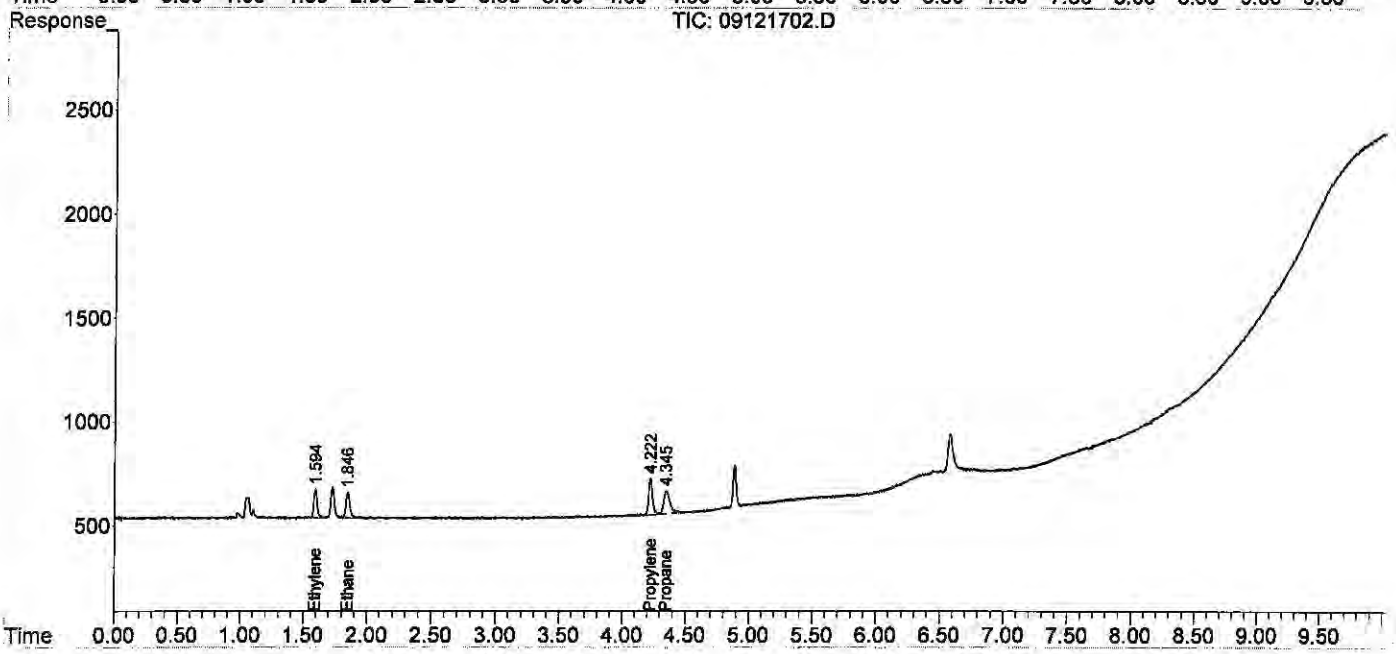
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

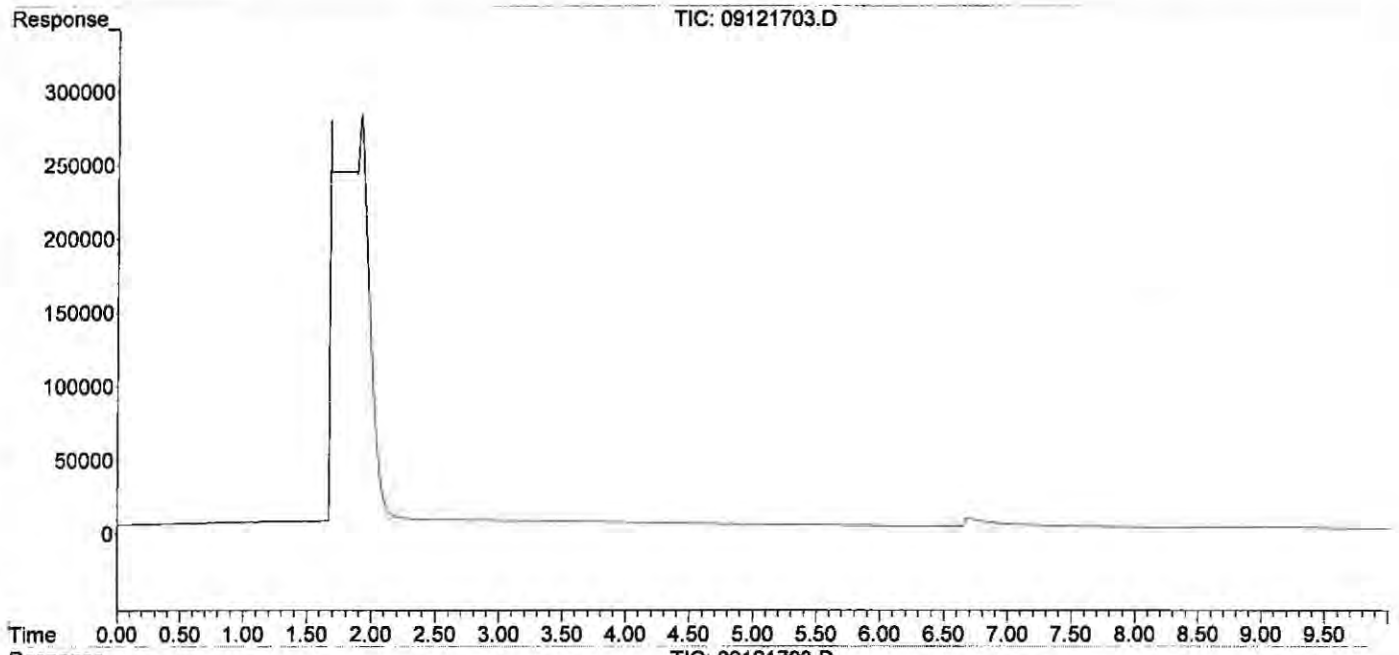
(f)=RT Delta > 1/2 Window (m)=manual int.

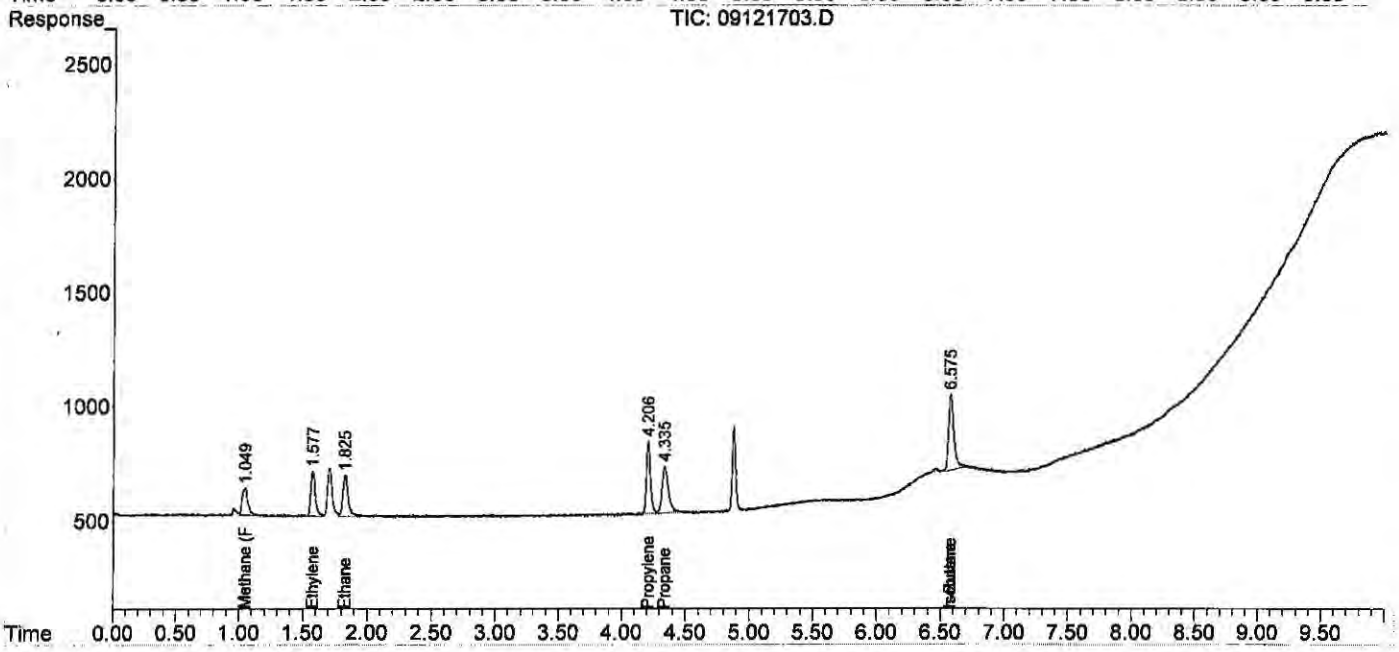
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



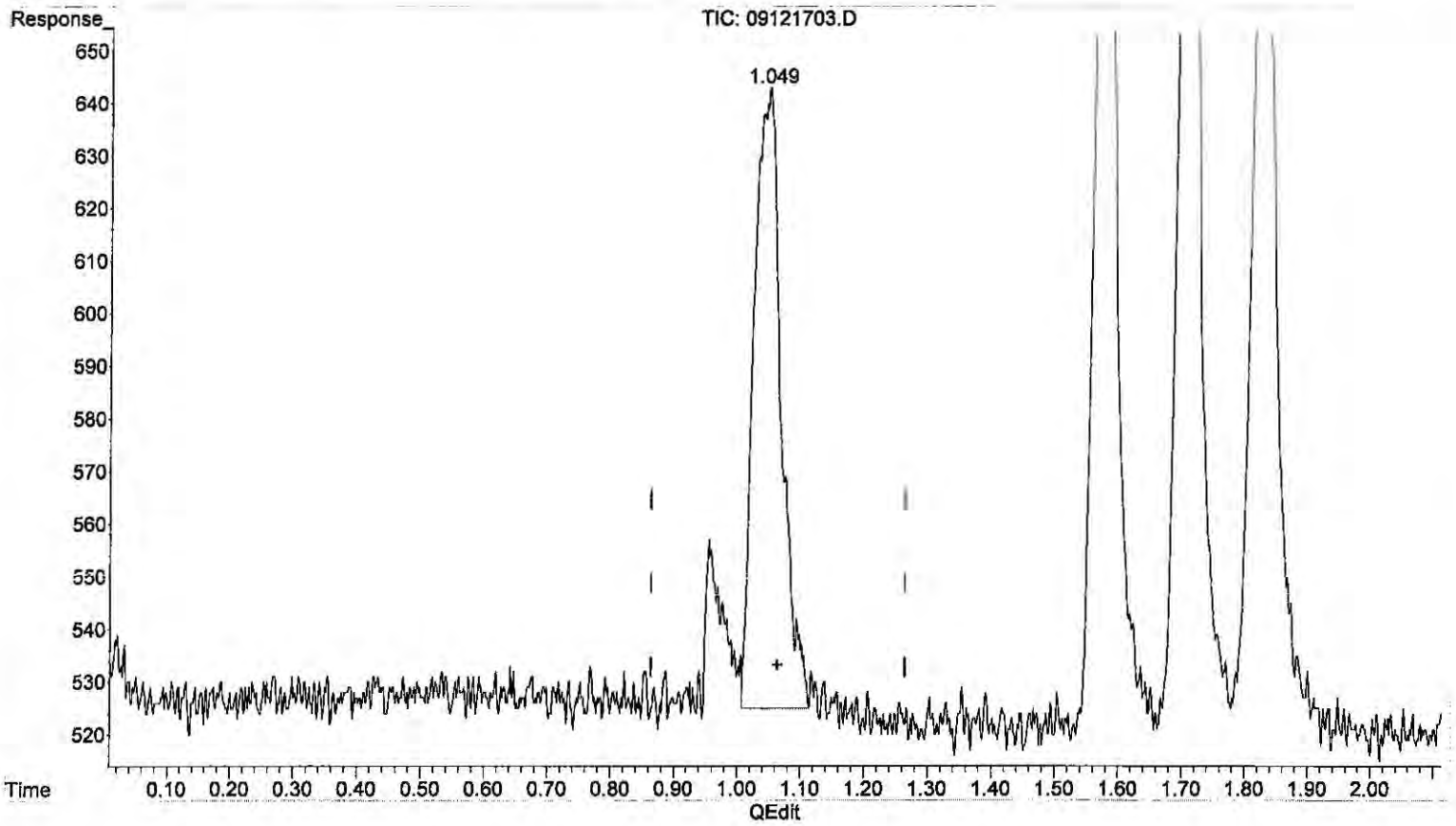


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

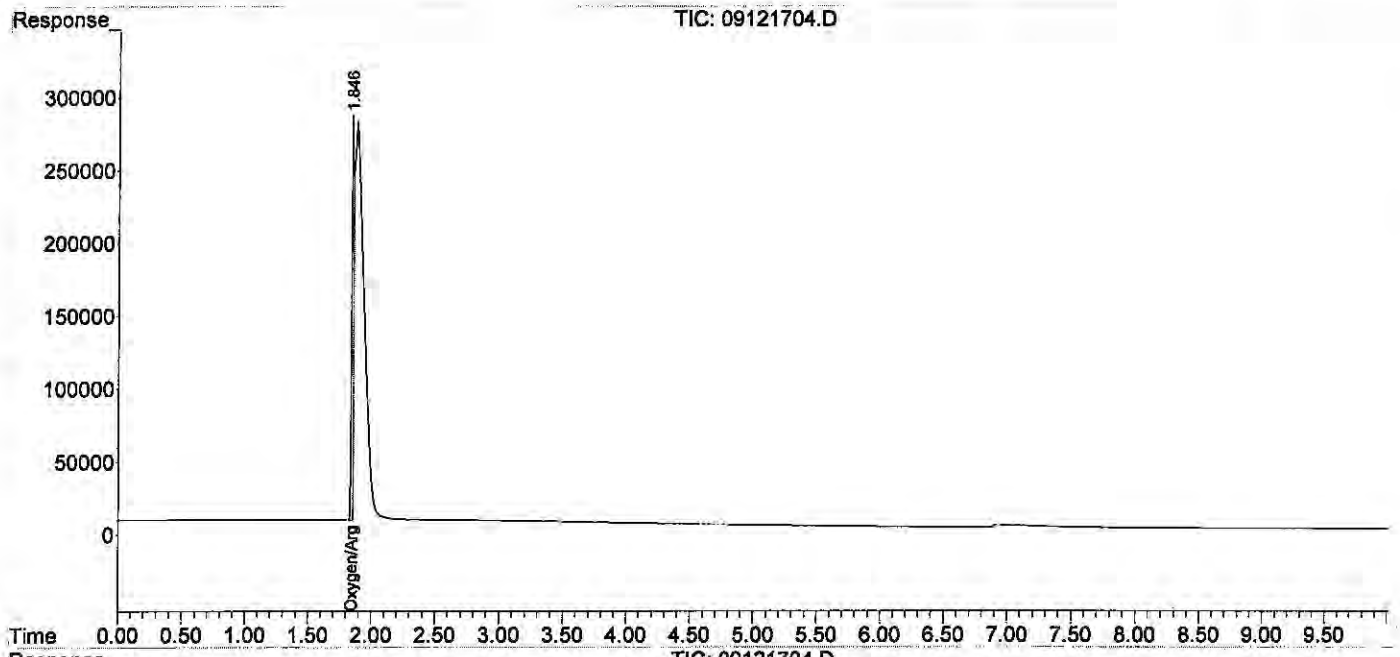
(f)=RT Delta > 1/2 Window (m)=manual int.

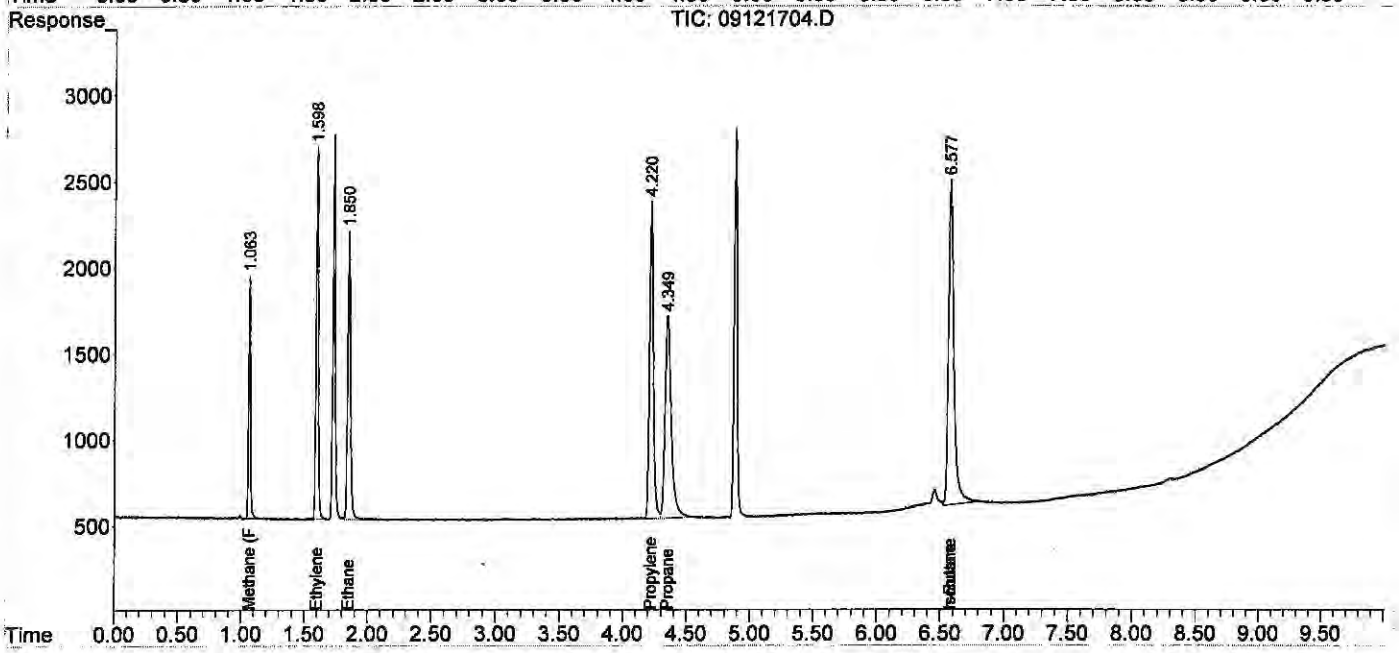
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

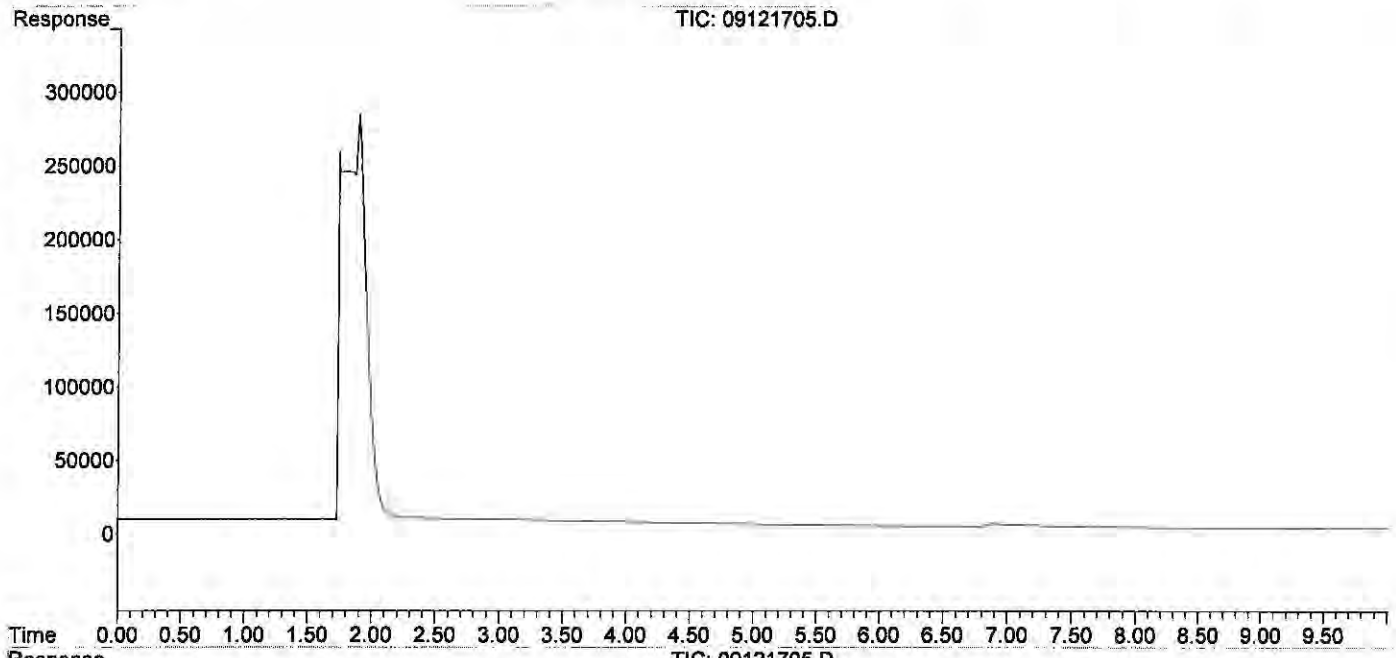
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

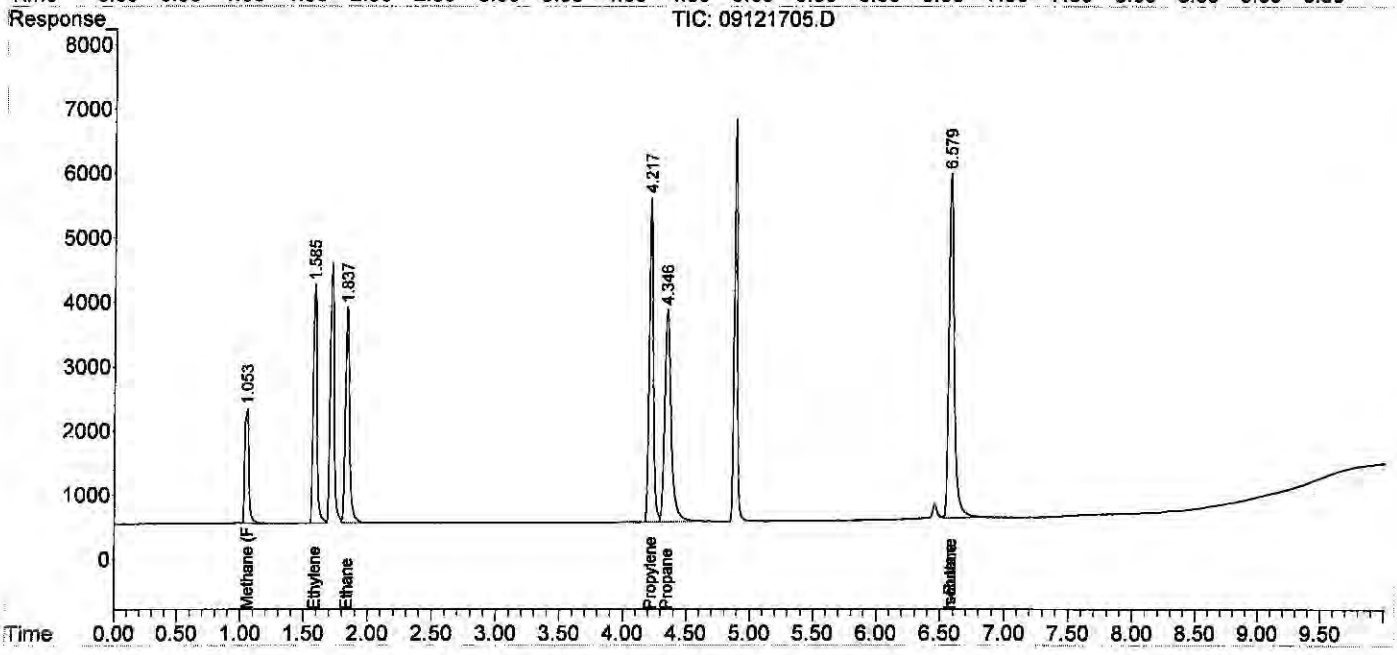
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

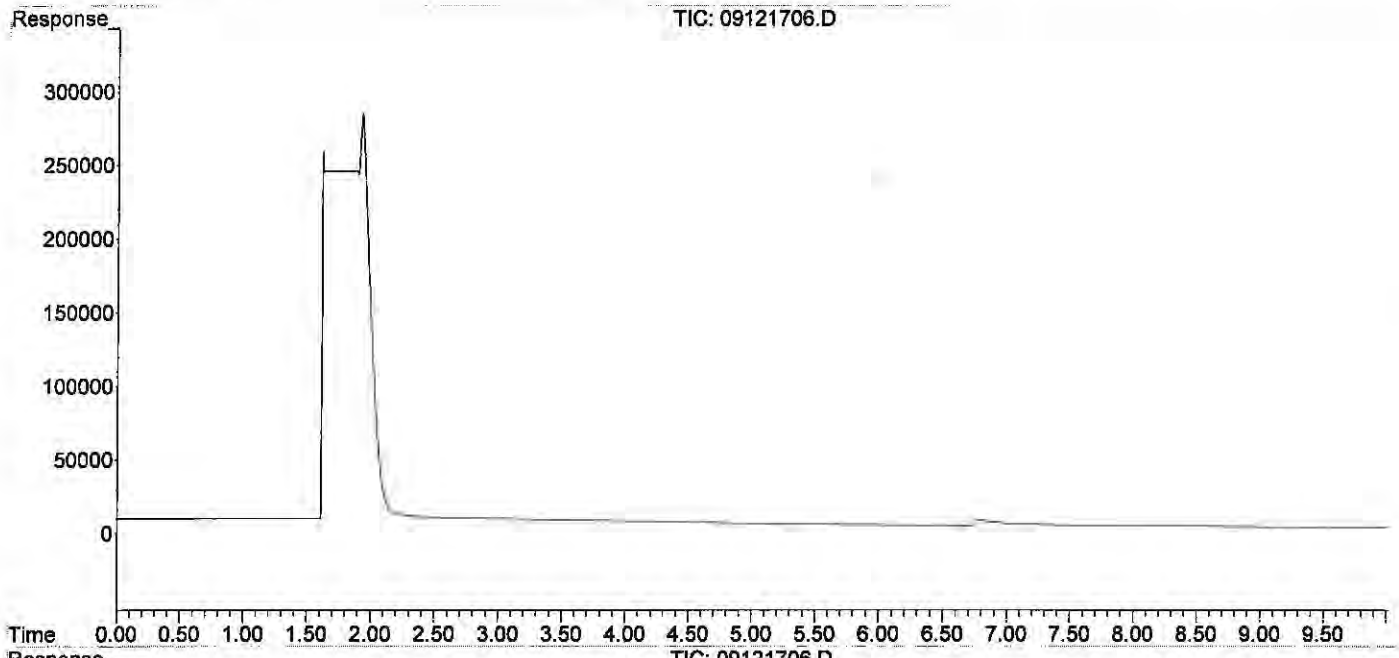
(f)=RT Delta > 1/2 Window (m)=manual int.

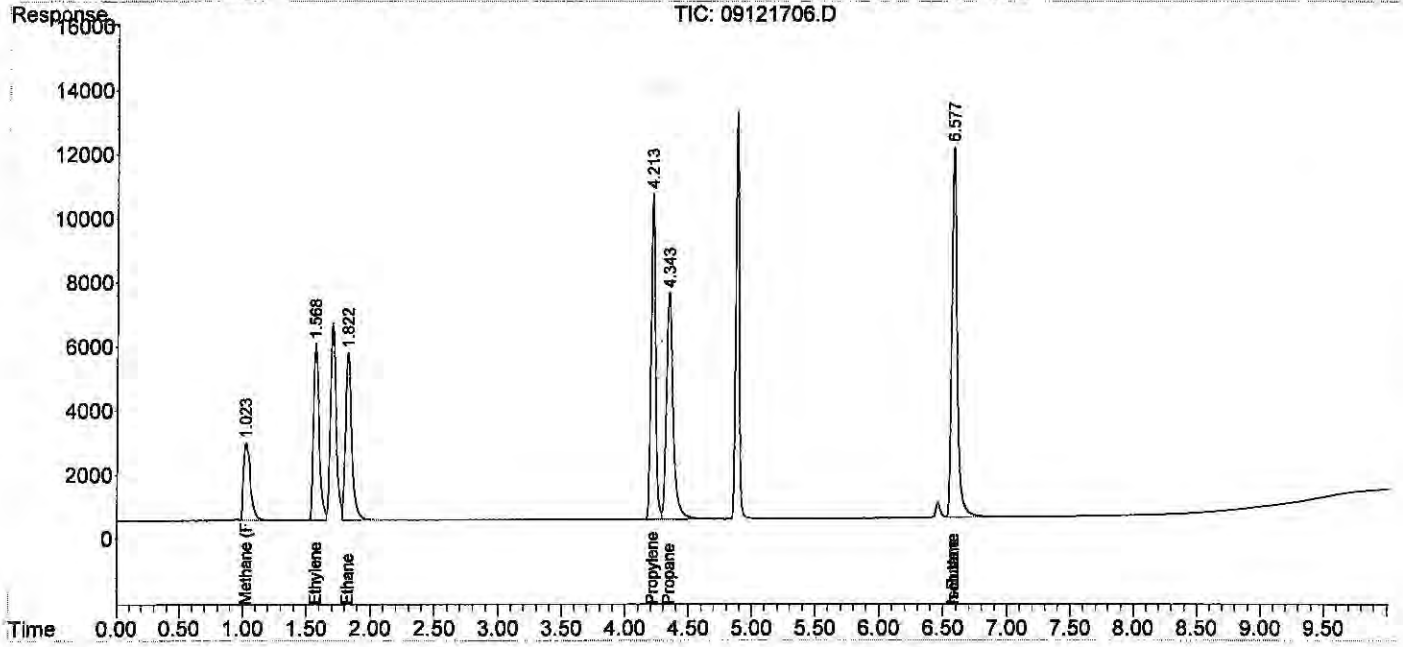
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

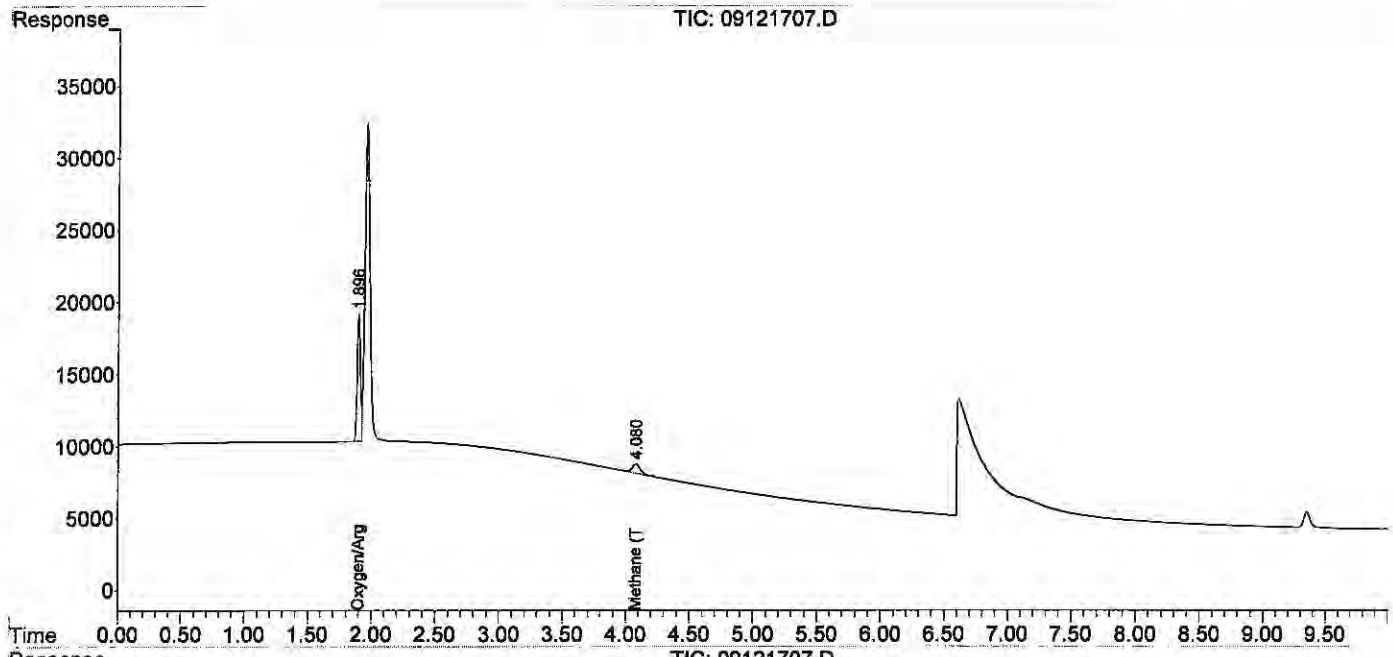
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

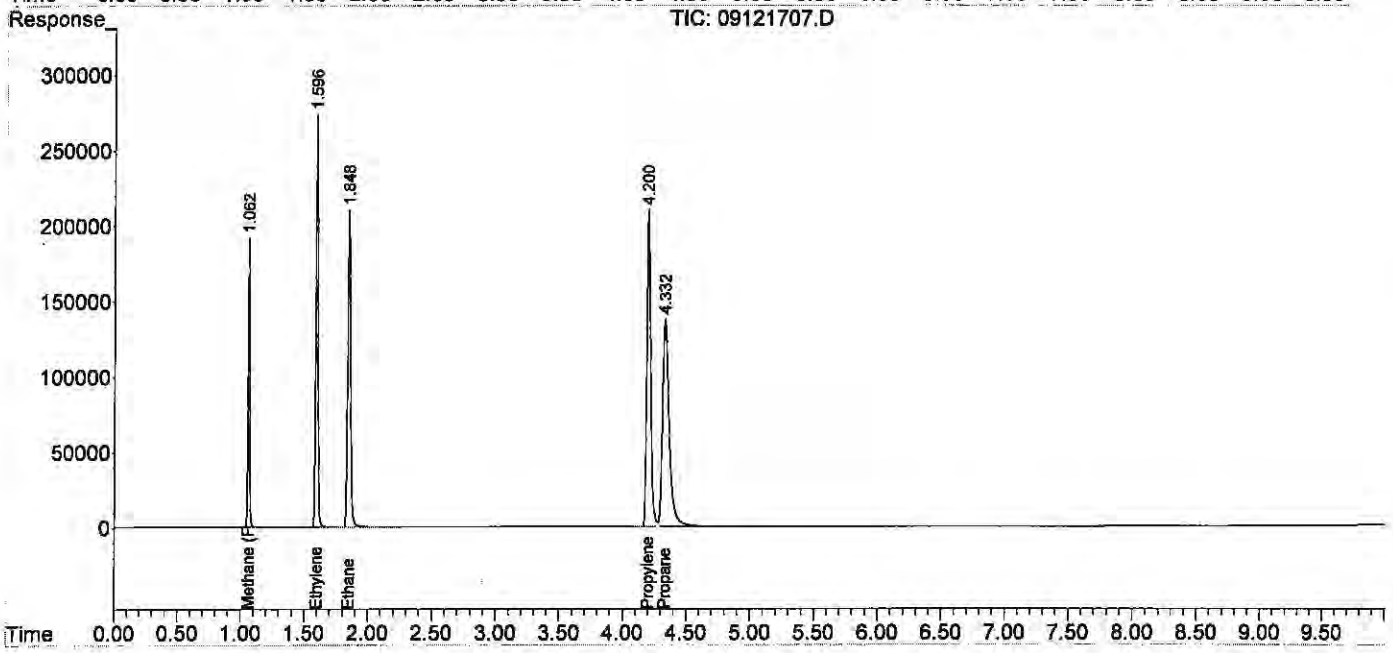
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

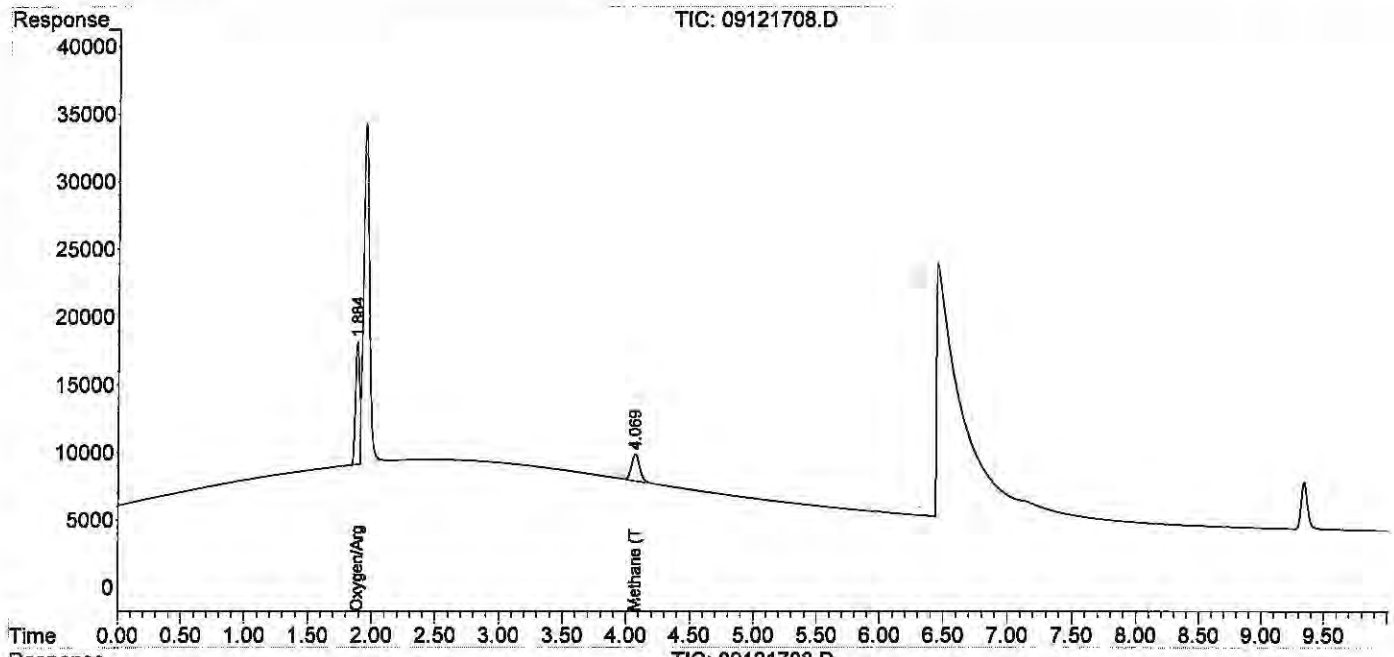
(f)=RT Delta > 1/2 Window (m)=manual int.

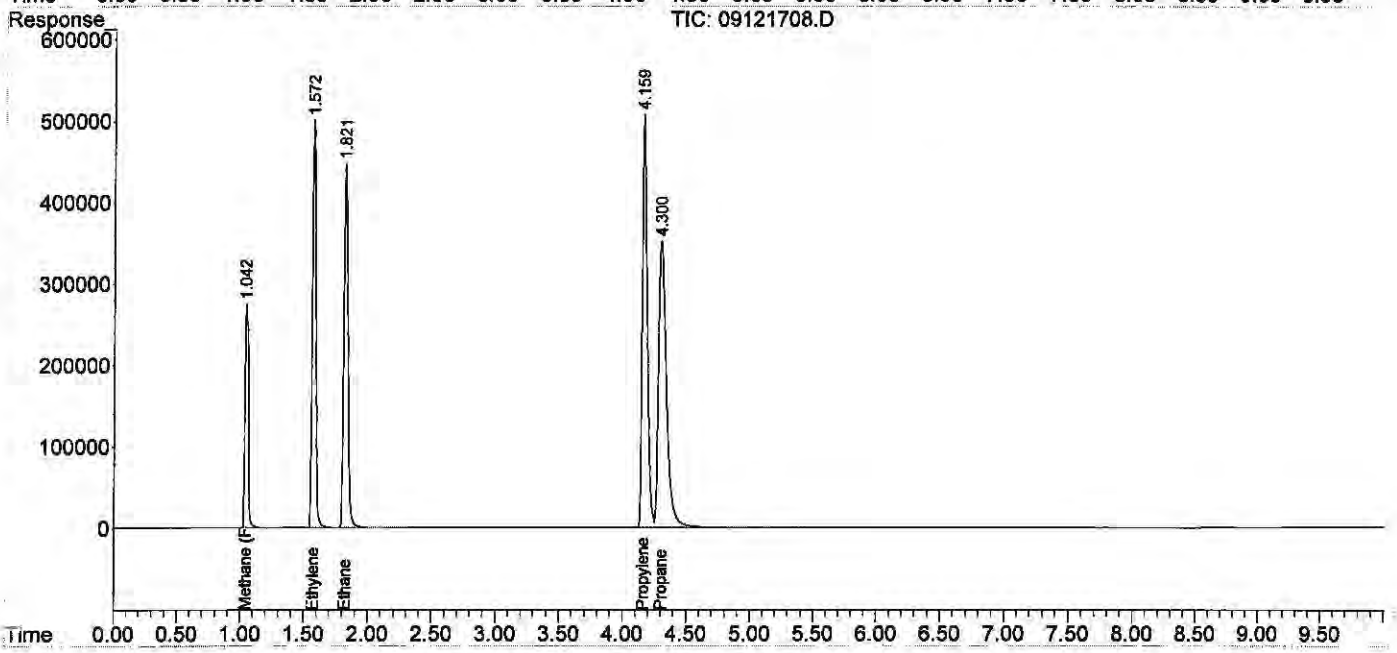
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

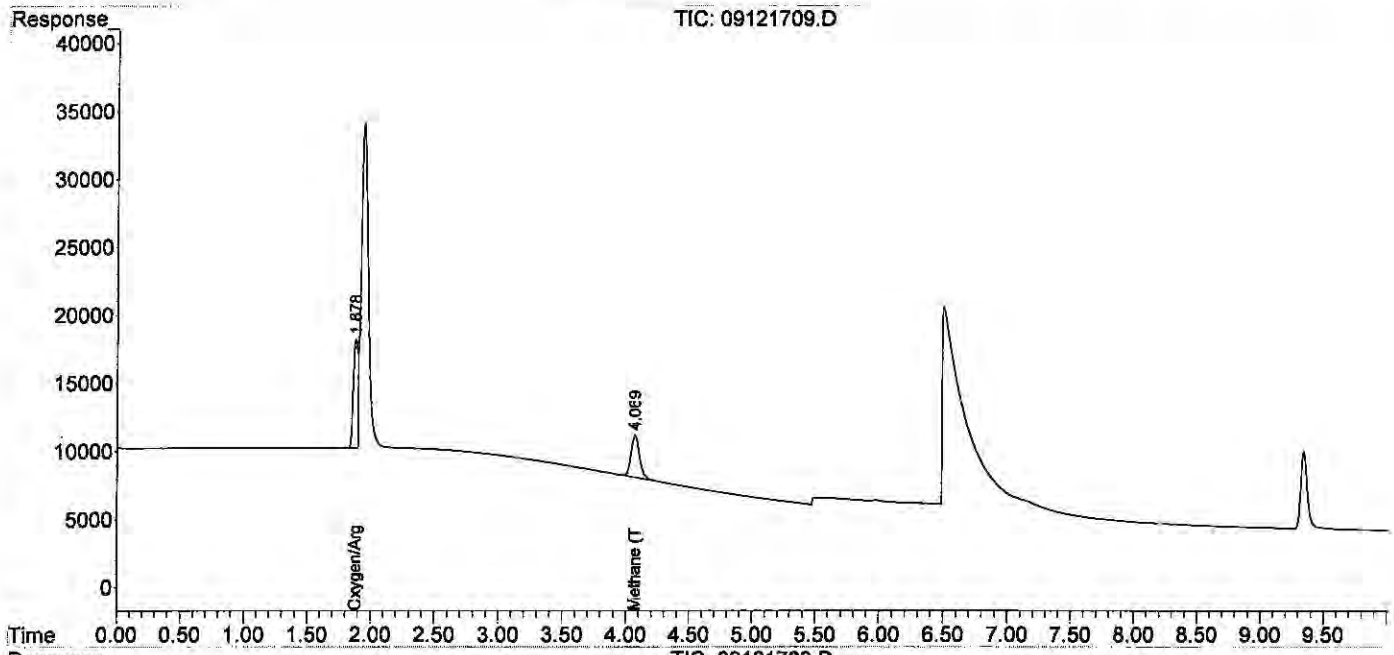
(f)=RT Delta > 1/2 Window (m)=manual int.

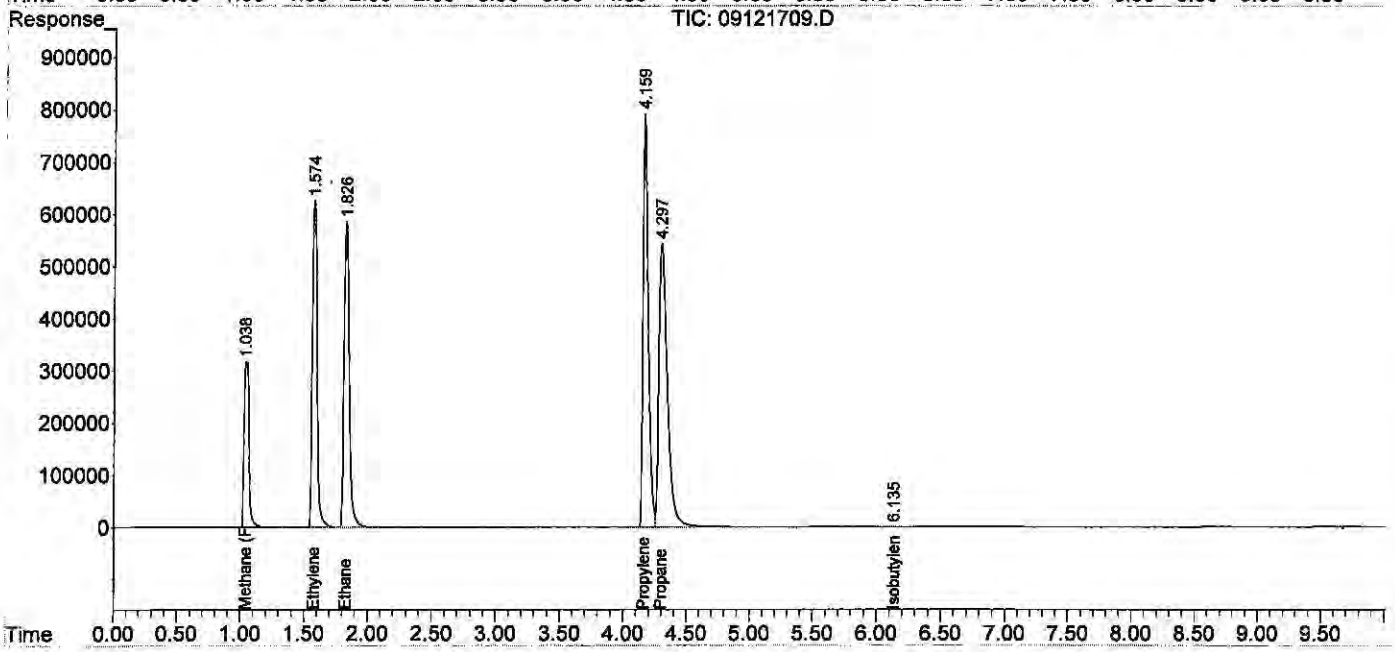
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

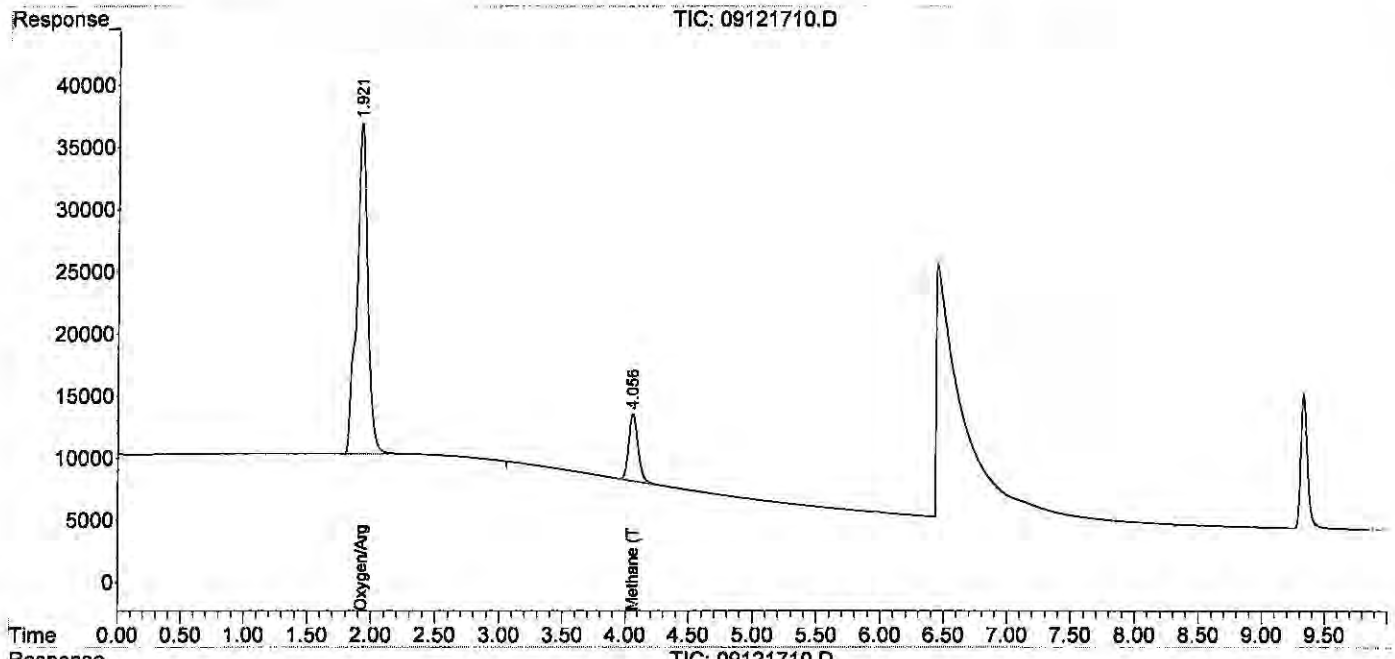
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

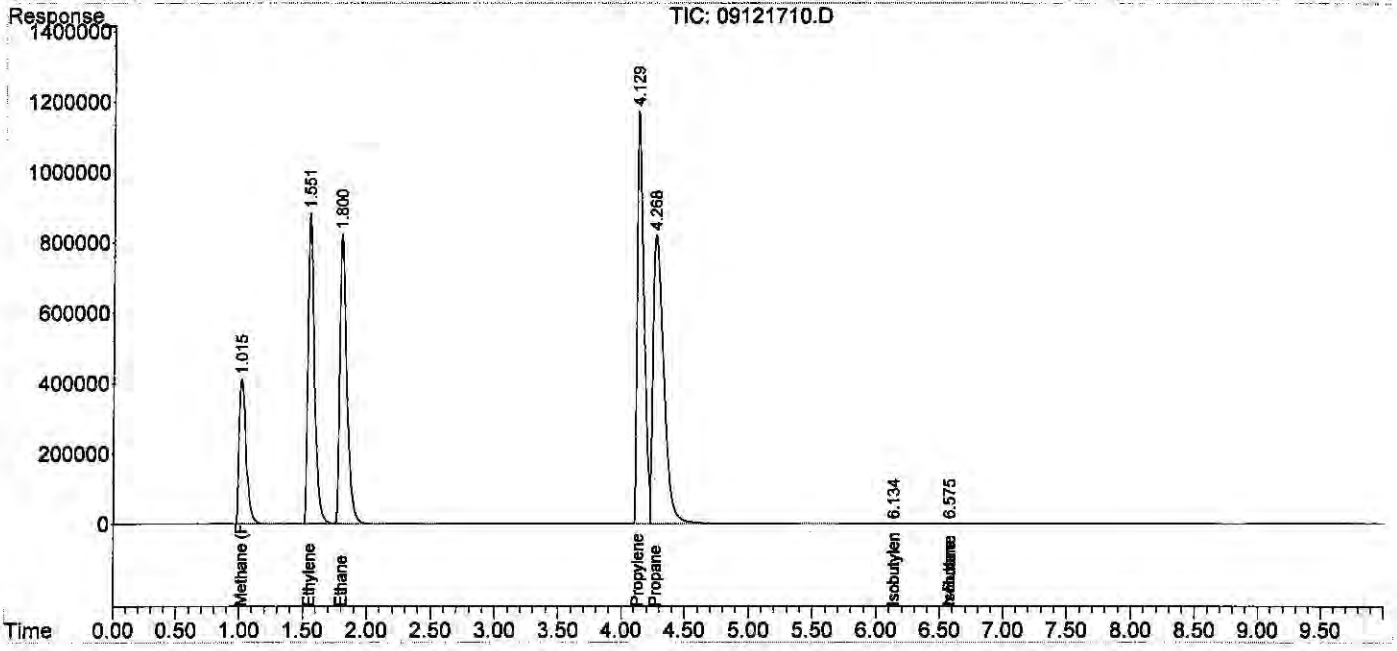
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



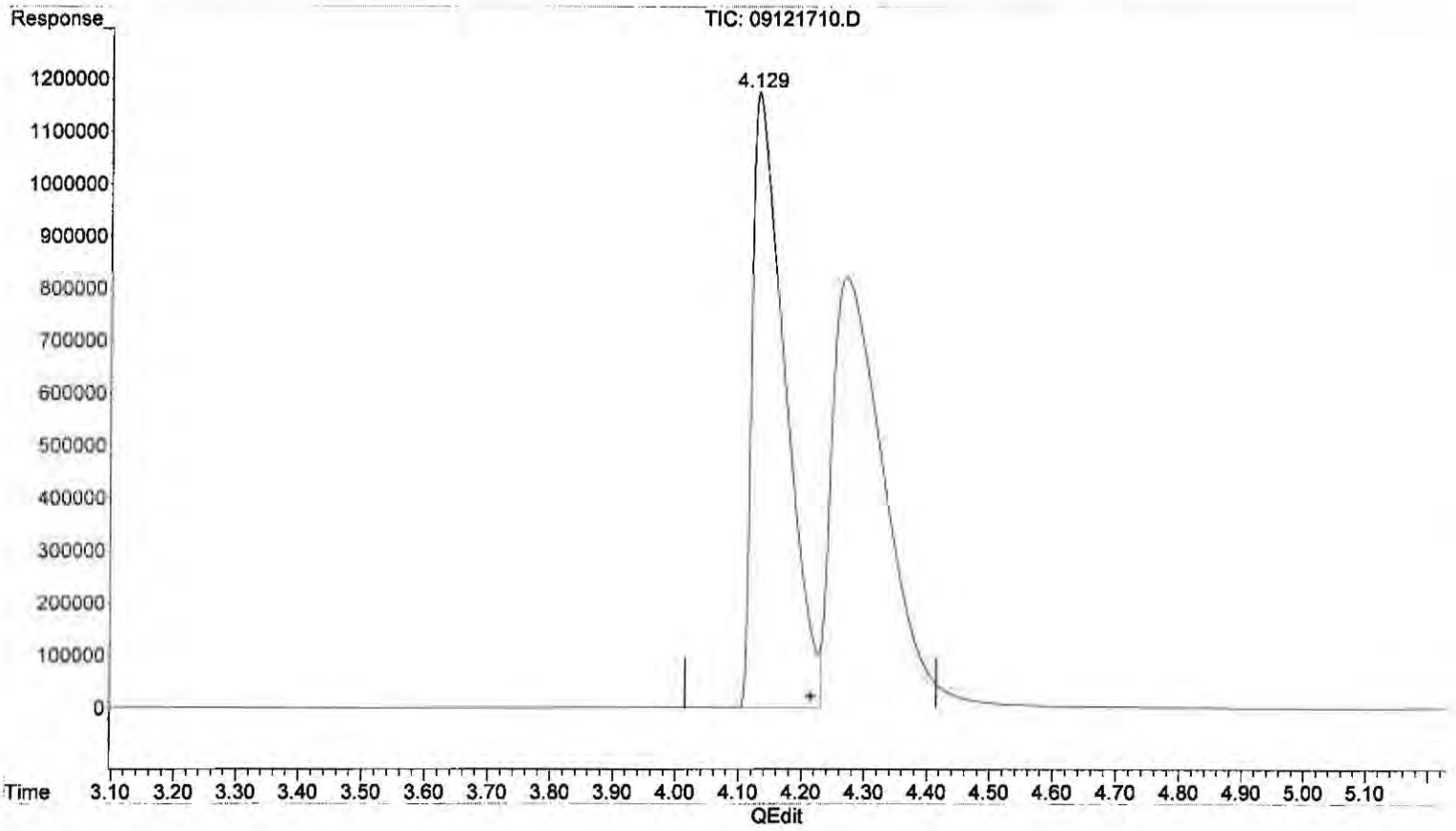


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene
4.129min 1775.341 ppm m
response 42124690

(+) = Expected Retention Time
RS091217_R.M Wed Sep 13 15:08:03 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

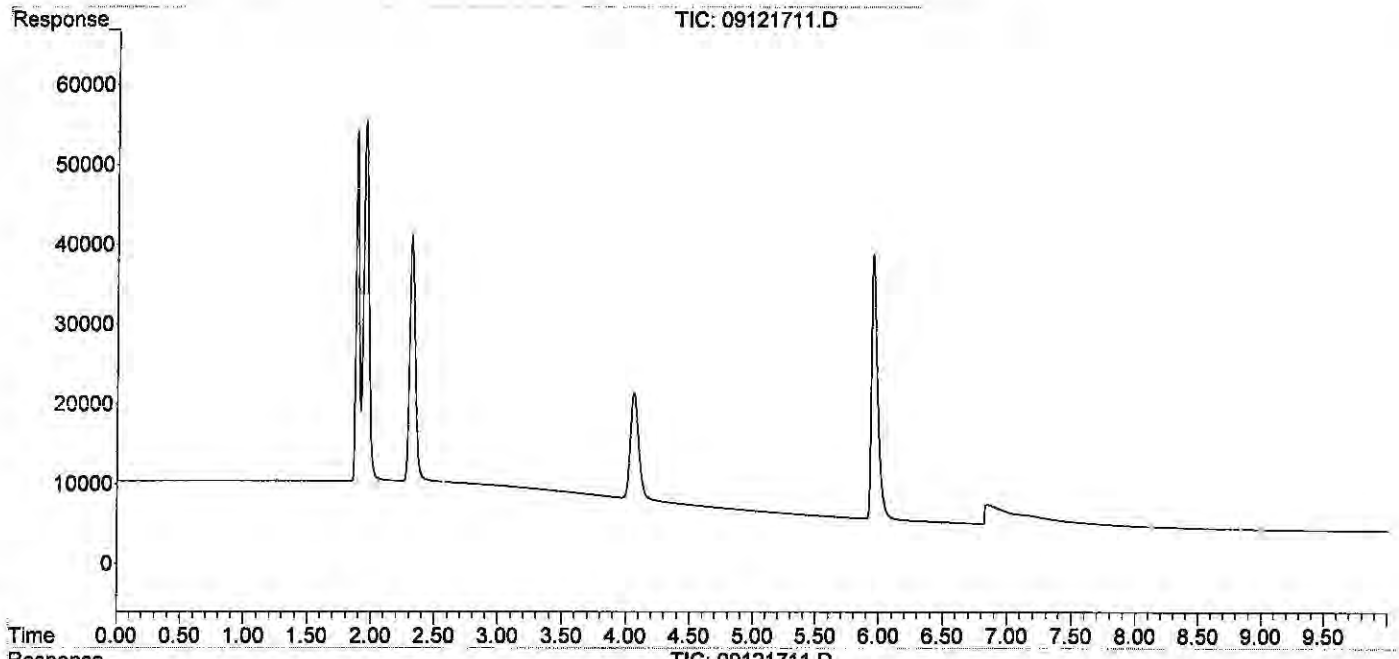
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

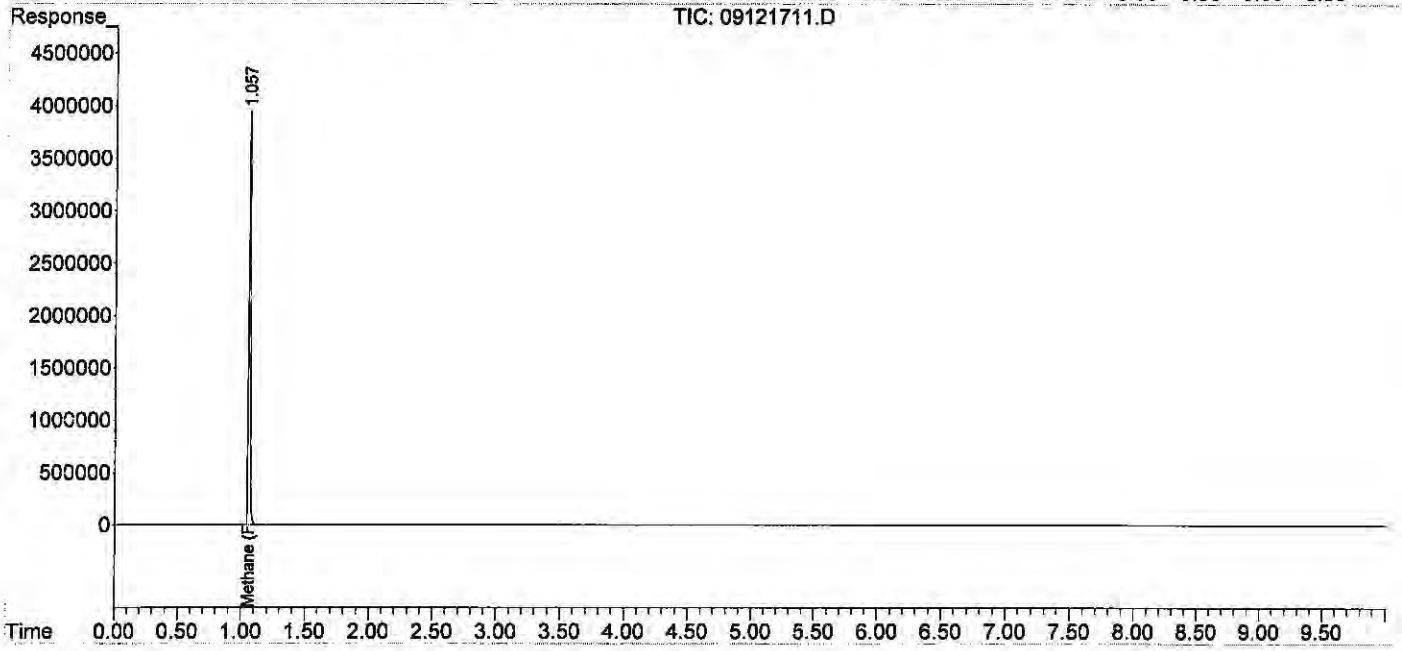
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

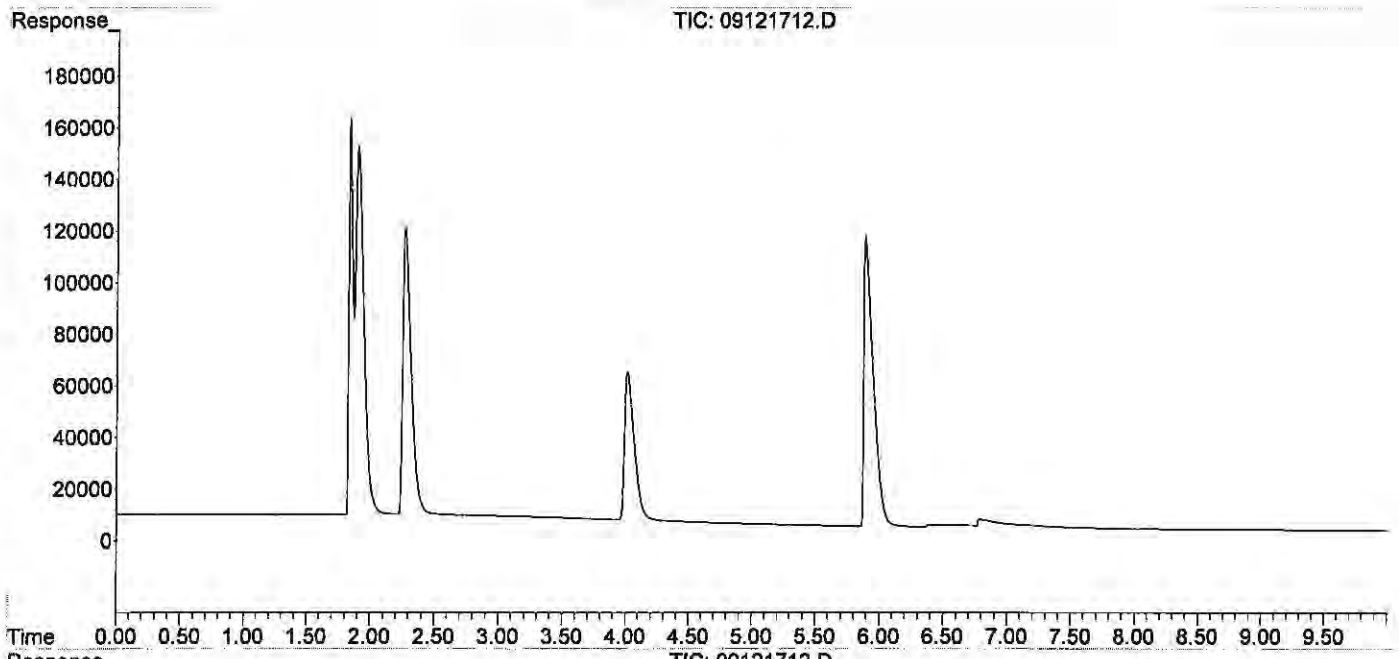
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

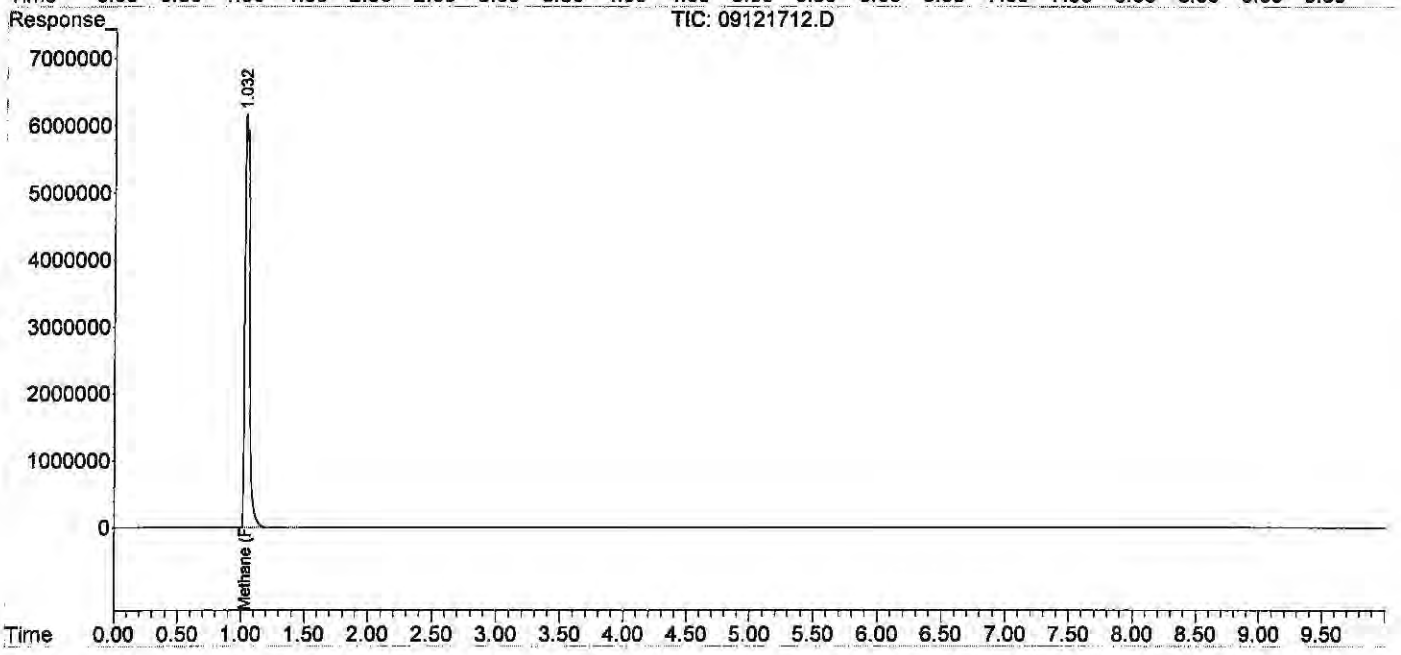
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.843	2922459	3.687	ppm	
2)	Carbon monoxide	1.843	2922459	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual %D
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.063	13748	1.516	ppm	1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2
13)	n-Butane	6.579f	48019	1.804	ppm	

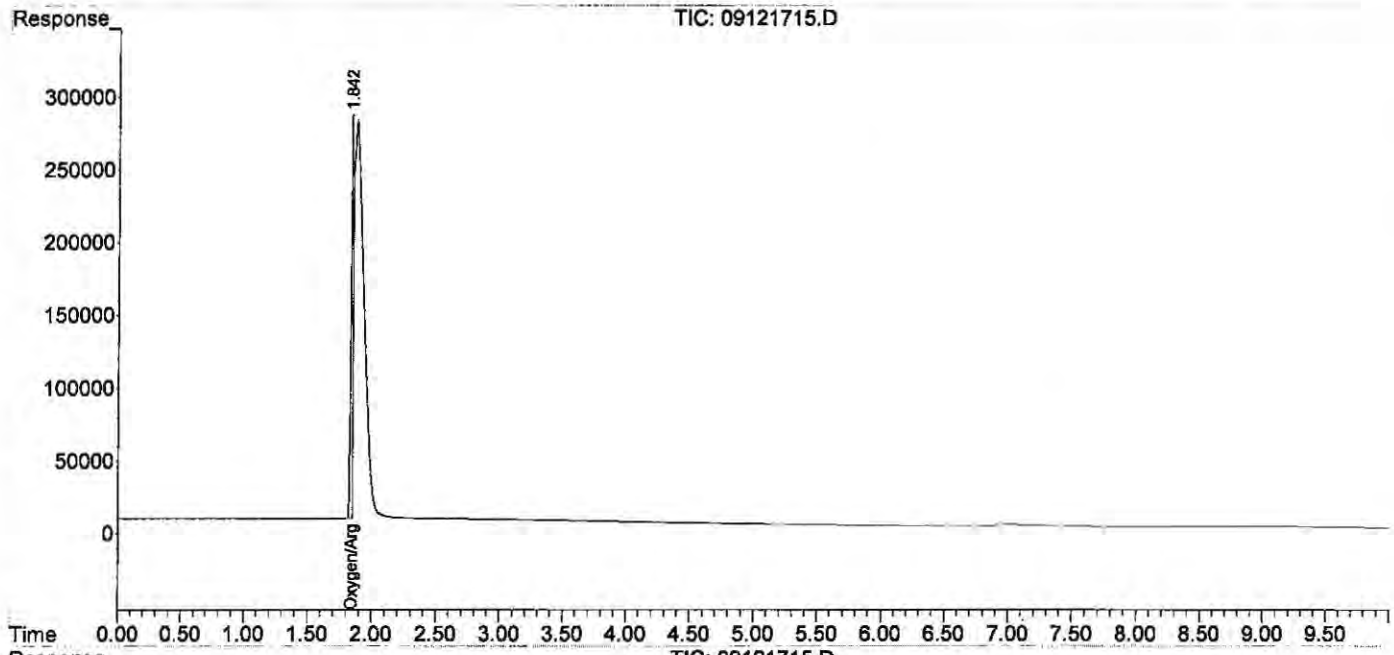
(f)=RT Delta > 1/2 Window (m)=manual int.

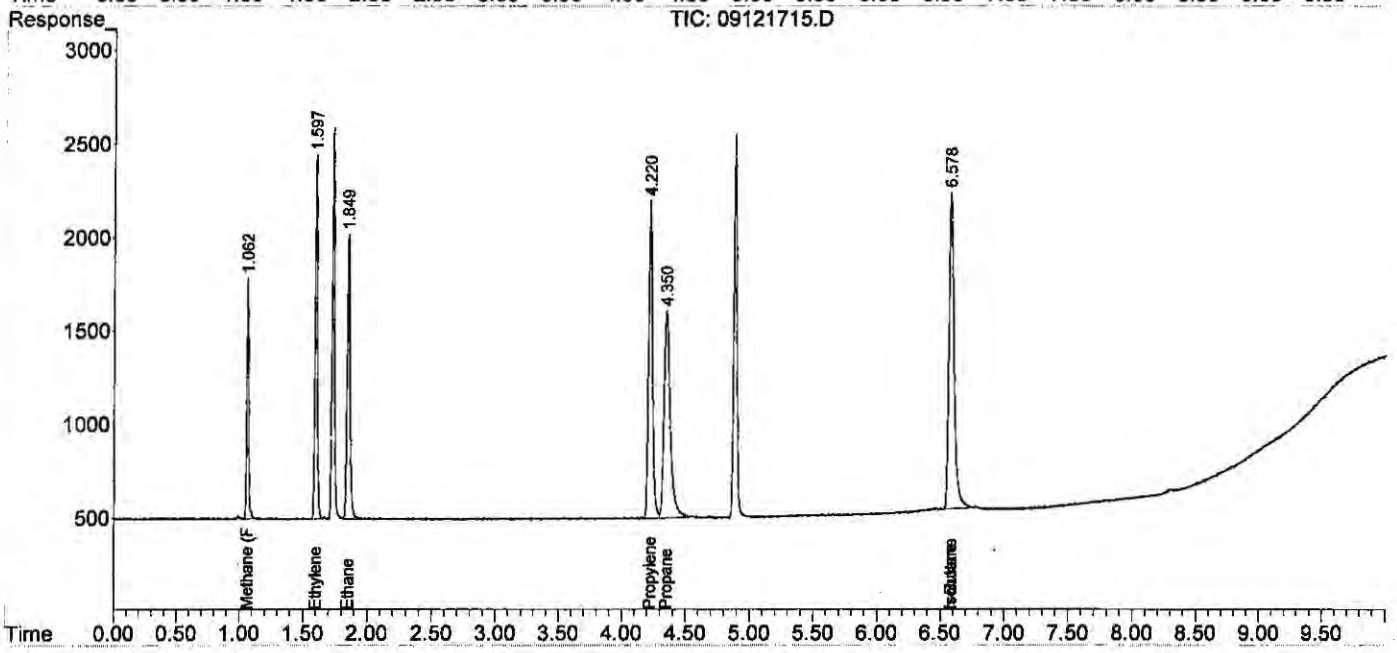
9/14/2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : MR | Instrument : GC#10
Service Request: P1900793 | Date Analysis : 02/19/19 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-07231801	0.100	1.510	1.446	1.417
ACTUAL		1.51	1.51	1.51
%Difference		0.0%	4.2%	6.2%
mcs 0.1ml	0.100	0.292	0.000	0.000
rb 0.1ml	0.100	0.000	0.000	0.000
fid lcs s30-05241604	0.100	1.572	1.015	1.264
fid lcsd s30-05241604	0.100	1.605	1.018	1.267
P1900793-001 0.1ml	0.100	0.162	0.000	0.000
P1900793-002 0.1ml	0.100	3.549	0.000	0.000
P1900793-003 0.1ml	0.100	0.000	0.000	0.000
P1900793-004 0.1ml	0.100	0.133	0.000	0.000

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	2.920	0.000	0.000
fid lcs s30-05241604	15.720	10.150	12.640
fid lcsd s30-05241604	16.050	10.180	12.670
P1900793-001 0.1ml	1.620	0.000	0.000
P1900793-002 0.1ml	35.490	0.000	0.000
P1900793-003 0.1ml	0.000	0.000	0.000
P1900793-004 0.1ml	1.330	0.000	0.000

std s32-07231801	1.654	1.523	1.474
ACTUAL	1.51	1.51	1.51
%Difference	9.5%	0.9%	2.4%

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191902.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 11:21:08
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 11:31:03 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

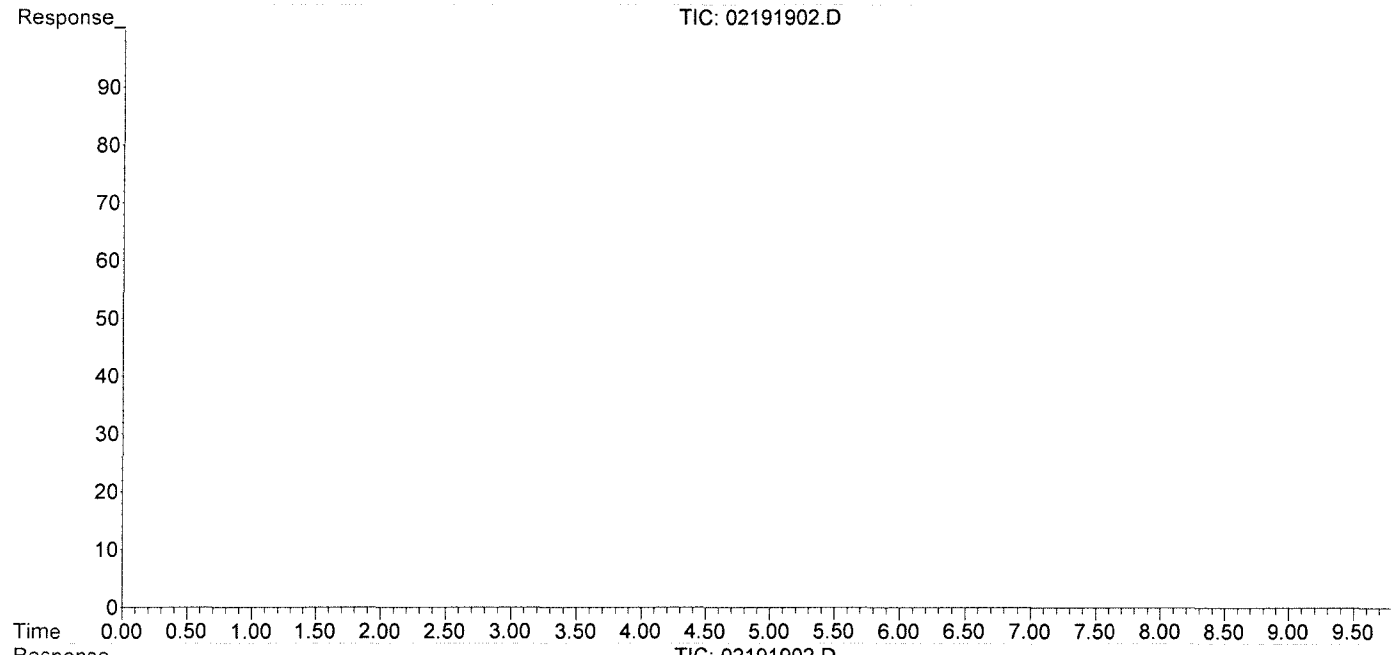
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.120	13699	1.510	ppm
7)	Ethylene	1.689	24199	1.446	ppm
8)	Ethane	1.955	24012	1.417	ppm
9)	Propylene	4.339	33165	1.415	ppm
10)	Propane	4.462	34542	1.388	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.675	42880	1.611	ppm
13)	n-Butane	6.675	42880	1.611	ppm

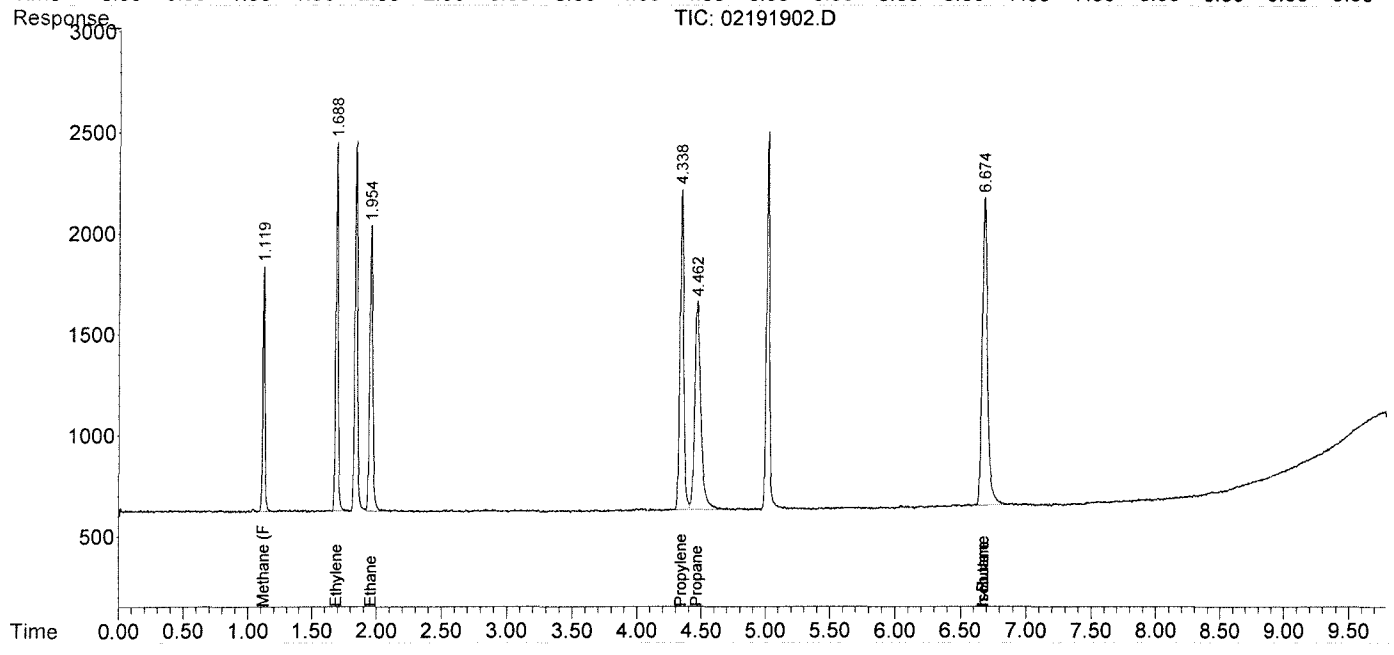
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191902.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 11:21:08
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 11:31:03 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 15:27:26
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 15:43:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

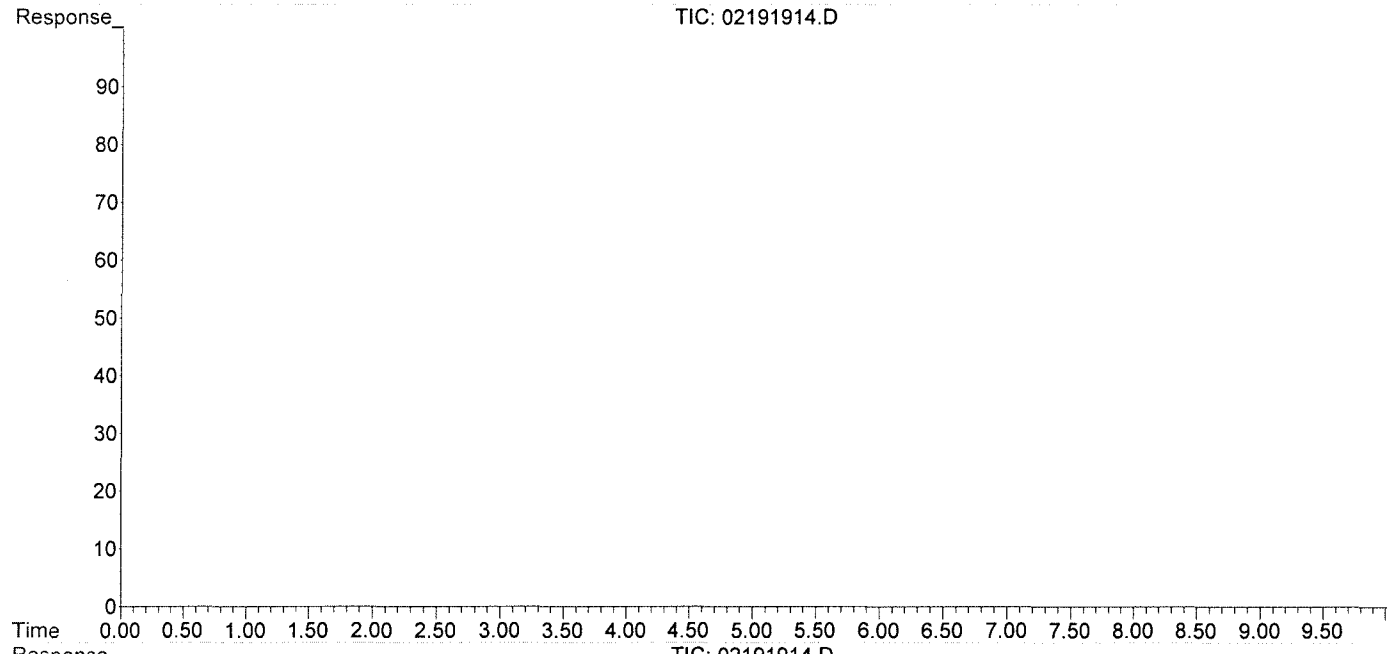
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.119	15001	1.654	ppm
7)	Ethylene	1.685	25483	1.523	ppm
8)	Ethane	1.950	24985	1.474	ppm
9)	Propylene	4.327	33010	1.409	ppm
10)	Propane	4.450	34837	1.400	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.662	39745	1.493	ppm
13)	n-Butane	6.662	39745	1.493	ppm

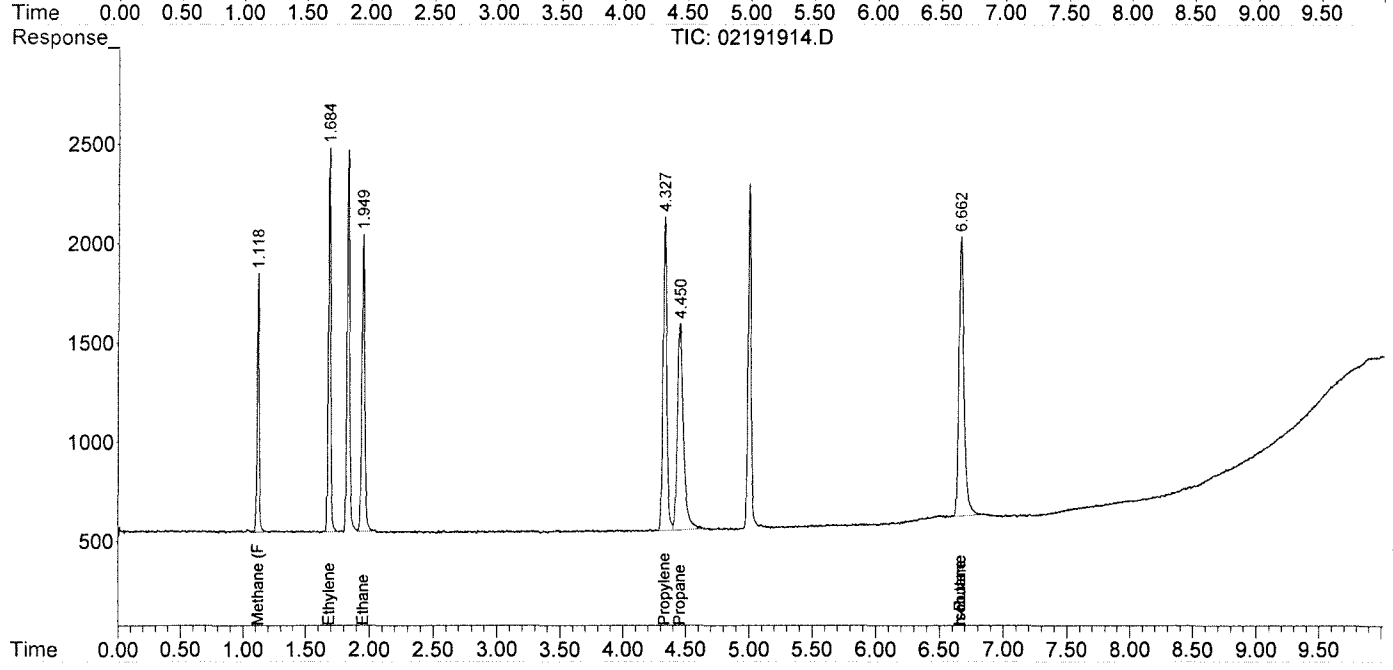
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 15:27:26
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 15:43:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2019_02\19\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	19-Feb-19, 10:47:24	02191901.D	Prime		MR	RSKBOTH.M	
2	19-Feb-19, 11:21:08	02191902.D	std s32-07231801		MR	RSKBOTH.M	pass
3	19-Feb-19, 11:33:51	02191903.D	rb 0.1ml		MR	RSKBOTH.M	pass
4	19-Feb-19, 12:07:17	02191904.D	mcs 0.1ml		MR	RSKBOTH.M	pass
5	19-Feb-19, 12:51:40	02191905.D	fid lcs s30-05241604		MR	RSKBOTH.M	pass
6	19-Feb-19, 13:05:52	02191906.D	fid lcsd s30-05241604		MR	RSKBOTH.M	pass
7	19-Feb-19, 13:19:27	02191907.D	P1900793-001 0.1ml		MR	RSKBOTH.M	
8	19-Feb-19, 13:35:00	02191908.D	P1900793-002 0.1ml		MR	RSKBOTH.M	
9	19-Feb-19, 13:50:58	02191909.D	P1900793-003 0.1ml		MR	RSKBOTH.M	
10	19-Feb-19, 14:04:08	02191910.D	P1900793-004 0.1ml		MR	RSKBOTH.M	
11	19-Feb-19, 14:17:38	02191911.D	P1900794-001 0.1		MR	RSKBOTH.M	
12	19-Feb-19, 14:55:04	02191912.D	P1900794-002 0.1		MR	RSKBOTH.M	
13	19-Feb-19, 15:08:18	02191913.D	P1900794-003 0.1		MR	RSKBOTH.M	
14	19-Feb-19, 15:27:26	02191914.D	std s32-07231801		MR	RSKBOTH.M	pass

10450 Stancliff Rd. Suite 210
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March 11, 2019

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

Work Order: **HS19020720**

Laboratory Results for: **LHAAP-37 501032**

Dear Susan,

ALS Environmental received 9 sample(s) on Feb 14, 2019 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-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Work Order: HS19020720

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19020720-01	35BWW12-190213	Groundwater		13-Feb-2019 08:15	14-Feb-2019 10:27	☐
HS19020720-02	35BWW12-190213-FD	Groundwater		13-Feb-2019 08:15	14-Feb-2019 10:27	☐
HS19020720-03	35BWW04-190213	Groundwater		13-Feb-2019 09:30	14-Feb-2019 10:27	☐
HS19020720-04	LHSMW58-190213	Groundwater		13-Feb-2019 10:40	14-Feb-2019 10:27	☐
HS19020720-05	35BWW11-190213	Groundwater		13-Feb-2019 11:30	14-Feb-2019 10:27	☐
HS19020720-06	35BWW05-190213	Groundwater		13-Feb-2019 12:15	14-Feb-2019 10:27	☐
HS19020720-07	35BWW20-190213	Groundwater		13-Feb-2019 13:05	14-Feb-2019 10:27	☐
HS19020720-08	35BWW09-190213	Groundwater		13-Feb-2019 13:50	14-Feb-2019 10:27	☐
HS19020720-09	Trip Blank	Groundwater		13-Feb-2019 00:00	14-Feb-2019 10:27	☐

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-37 501032
Work Order:

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.

GCMS Volatiles by Method SW8260

Batch ID: R333479

Sample ID: CCV

- 4-Methyl-2-Pentanone exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: VLCSW-190225

- 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2,3-Trichloropropane and 1,2-Dichlorobenzene exceeded QC limits for LCS. CCV is OK. Samples are ND for these compounds.

Sample ID: 35BWW04-190213 (HS19020720-03MS)

- MS and MSD recovered outside the QC limits for some compounds

WetChemistry by Method SW9056

Batch ID: R333686

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-190213
Collection Date: 13-Feb-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 20:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 20:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 20:13
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 20:13
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 20:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-190213
Collection Date: 13-Feb-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 20:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 20:13
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 20:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Tetrachloroethene	**8.0**		**0.30**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 20:13
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Trichloroethene	**0.91**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 20:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:13
Surr: 1,2-Dichloroethane-d4	*96.2*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 20:13*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 20:13*
Surr: Dibromofluoromethane	*96.0*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 20:13*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 20:13*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**9.37**		**0.200**	**0.500**	**0.500**	**mg/L**	1	14-Feb-2019 15:30
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	14-Feb-2019 15:30
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	14-Feb-2019 15:30
Sulfate	**49.1**		**0.200**	**0.500**	**0.500**	**mg/L**	1	14-Feb-2019 15:30
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	26-Feb-2019 15:16

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-190213
Collection Date: 13-Feb-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-190213-FD
Collection Date: 13-Feb-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:37
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 20:37
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 20:37
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:37
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 20:37
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 20:37
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 20:37
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-190213-FD
Collection Date: 13-Feb-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 20:37
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 20:37
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 20:37
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 20:37
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Tetrachloroethene	**8.2**		**0.30**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 20:37
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Trichloroethene	**0.88**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 20:37
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 20:37
Surr: 1,2-Dichloroethane-d4	*97.5*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 20:37*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 20:37*
Surr: Dibromofluoromethane	*96.0*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 20:37*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 20:37*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**9.61**		**0.200**	**0.500**	**0.500**	**mg/L**	1	14-Feb-2019 15:45
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	14-Feb-2019 15:45
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	14-Feb-2019 15:45
Sulfate	**47.8**		**0.200**	**0.500**	**0.500**	**mg/L**	1	14-Feb-2019 15:45
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	26-Feb-2019 15:16

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-190213-FD
Collection Date: 13-Feb-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW04-190213
Collection Date: 13-Feb-2019 09:30

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:29
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 15:29
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 15:29
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:29
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 15:29
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 15:29
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 15:29
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW04-190213
Collection Date: 13-Feb-2019 09:30

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 15:29
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 15:29
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 15:29
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:29
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Tetrachloroethene	**5.3**		**0.30**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 15:29
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Trichloroethene	**0.59**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 15:29
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:29
Surr: 1,2-Dichloroethane-d4	*97.8*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 15:29*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 15:29*
Surr: Dibromofluoromethane	*97.9*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 15:29*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 15:29*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**3.24**		**0.200**	**0.500**	**0.500**	**mg/L**	1	14-Feb-2019 15:59
Nitrogen, Nitrate (As N)	**0.174**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	14-Feb-2019 15:59
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	14-Feb-2019 15:59
Sulfate	**34.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	14-Feb-2019 15:59
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	26-Feb-2019 15:16

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 501032 WorkOrder:HS19020720
Sample ID: 35BWW04-190213 Lab ID:HS19020720-03
Collection Date: 13-Feb-2019 09:30 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40
SUBCONTRACTED ANALYSIS		**Method:NA**						Analyst: SUBK
Miscellaneous Analysis	See Attached		0	0		NA	1	11-Mar-2019 17:40

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: LHSMW58-190213
Collection Date: 13-Feb-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 21:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 21:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 21:01
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 21:01
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 21:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: LHSMW58-190213
Collection Date: 13-Feb-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 21:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 21:01
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 21:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Tetrachloroethene	**6.1**		**0.30**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 21:01
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:01
Surr: 1,2-Dichloroethane-d4	*97.8*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 21:01*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 21:01*
Surr: Dibromofluoromethane	*96.2*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 21:01*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 21:01*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW11-190213
Collection Date: 13-Feb-2019 11:30

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 21:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 21:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 21:25
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 21:25
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 21:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW11-190213
Collection Date: 13-Feb-2019 11:30

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 21:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 21:25
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 21:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:25
Surr: 1,2-Dichloroethane-d4	*97.1*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 21:25*
Surr: 4-Bromofluorobenzene	*99.2*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 21:25*
Surr: Dibromofluoromethane	*96.2*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 21:25*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 21:25*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW05-190213
Collection Date: 13-Feb-2019 12:15

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:49
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 21:49
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 21:49
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:49
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 21:49
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 21:49
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 21:49
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW05-190213
Collection Date: 13-Feb-2019 12:15

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 21:49
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 21:49
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 21:49
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 21:49
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Tetrachloroethene	**1.9**		**0.30**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 21:49
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Trichloroethene	**9.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 21:49
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 21:49
Surr: 1,2-Dichloroethane-d4	*95.8*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 21:49*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 21:49*
Surr: Dibromofluoromethane	*95.4*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 21:49*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 21:49*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW20-190213
Collection Date: 13-Feb-2019 13:05

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,1,2-Trichlor-1,2,2-trifluoroethane	**5.0**		**0.50**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 22:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 22:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 22:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 22:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 22:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 22:13
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 22:13
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 22:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW20-190213
Collection Date: 13-Feb-2019 13:05

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 22:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 22:13
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 22:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 22:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Tetrachloroethene	**34**		**0.30**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 22:13
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Trichloroethene	**6.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 22:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 22:13
Surr: 1,2-Dichloroethane-d4	*95.2*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 22:13*
Surr: 4-Bromofluorobenzene	*99.7*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 22:13*
Surr: Dibromofluoromethane	*95.1*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 22:13*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 22:13*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW09-190213
Collection Date: 13-Feb-2019 13:50

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:53
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 15:53
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 15:53
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:53
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 15:53
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 15:53
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 15:53
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW09-190213
Collection Date: 13-Feb-2019 13:50

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
cis-1,2-Dichloroethene	**1.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Feb-2019 15:53
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 15:53
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 15:53
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 15:53
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 15:53
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Trichloroethene	**410**		**1.0**	**2.5**	**5.0**	**UG/L**	5	25-Feb-2019 17:05
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 15:53
Surr: 1,2-Dichloroethane-d4	*97.5*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 15:53*
Surr: 1,2-Dichloroethane-d4	*98.1*			**0**	*81-118*	*%REC*	*5*	*25-Feb-2019 17:05*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 15:53*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*5*	*25-Feb-2019 17:05*
Surr: Dibromofluoromethane	*97.7*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 15:53*
Surr: Dibromofluoromethane	*97.0*			**0**	*80-119*	*%REC*	*5*	*25-Feb-2019 17:05*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 15:53*
Surr: Toluene-d8	*98.8*			**0**	*89-112*	*%REC*	*5*	*25-Feb-2019 17:05*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: Trip Blank
Collection Date: 13-Feb-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 17:53
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 17:53
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Feb-2019 17:53
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 17:53
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Feb-2019 17:53
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	25-Feb-2019 17:53
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Feb-2019 17:53
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: Trip Blank
Collection Date: 13-Feb-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19020720
Lab ID:HS19020720-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Feb-2019 17:53
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Feb-2019 17:53
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	25-Feb-2019 17:53
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Feb-2019 17:53
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Feb-2019 17:53
Surr: 1,2-Dichloroethane-d4	*98.4*			**0**	*81-118*	*%REC*	*1*	*25-Feb-2019 17:53*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*25-Feb-2019 17:53*
Surr: Dibromofluoromethane	*98.5*			**0**	*80-119*	*%REC*	*1*	*25-Feb-2019 17:53*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*25-Feb-2019 17:53*

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

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R333479	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS19020720-01	35BWW12-190213	13 Feb 2019 08:15			25 Feb 2019 20:13	1
HS19020720-02	35BWW12-190213-FD	13 Feb 2019 08:15			25 Feb 2019 20:37	1
HS19020720-03	35BWW04-190213	13 Feb 2019 09:30			25 Feb 2019 15:29	1
HS19020720-04	LHSMW58-190213	13 Feb 2019 10:40			25 Feb 2019 21:01	1
HS19020720-05	35BWW11-190213	13 Feb 2019 11:30			25 Feb 2019 21:25	1
HS19020720-06	35BWW05-190213	13 Feb 2019 12:15			25 Feb 2019 21:49	1
HS19020720-07	35BWW20-190213	13 Feb 2019 13:05			25 Feb 2019 22:13	1
HS19020720-08	35BWW09-190213	13 Feb 2019 13:50			25 Feb 2019 17:05	5
HS19020720-08	35BWW09-190213	13 Feb 2019 13:50			25 Feb 2019 15:53	1
HS19020720-09	Trip Blank	13 Feb 2019 00:00			25 Feb 2019 17:53	1
Batch ID R333532	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS19020720-01	35BWW12-190213	13 Feb 2019 08:15			26 Feb 2019 15:16	1
HS19020720-02	35BWW12-190213-FD	13 Feb 2019 08:15			26 Feb 2019 15:16	1
HS19020720-03	35BWW04-190213	13 Feb 2019 09:30			26 Feb 2019 15:16	1
Batch ID R333686	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS19020720-01	35BWW12-190213	13 Feb 2019 08:15			14 Feb 2019 15:30	1
HS19020720-02	35BWW12-190213-FD	13 Feb 2019 08:15			14 Feb 2019 15:45	1
HS19020720-03	35BWW04-190213	13 Feb 2019 09:30			14 Feb 2019 15:59	1
Batch ID R334336	**Test Name :** SUBCONTRACTED ANALYSIS				**Matrix:** Groundwater	
HS19020720-01	35BWW12-190213	13 Feb 2019 08:15			11 Mar 2019 17:40	1
HS19020720-01	35BWW12-190213	13 Feb 2019 08:15			11 Mar 2019 17:40	1
HS19020720-02	35BWW12-190213-FD	13 Feb 2019 08:15			11 Mar 2019 17:40	1
HS19020720-02	35BWW12-190213-FD	13 Feb 2019 08:15			11 Mar 2019 17:40	1
HS19020720-03	35BWW04-190213	13 Feb 2019 09:30			11 Mar 2019 17:40	1
HS19020720-03	35BWW04-190213	13 Feb 2019 09:30			11 Mar 2019 17:40	1

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 14:41**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 14:41**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*48.73*	*1.0*	*50*	*0*	*97.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50*	*1.0*	*50*	*0*	*100.0*	*85 - 114*				
Surr: Dibromofluoromethane	*48.21*	*1.0*	*50*	*0*	*96.4*	*80 - 119*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 14:41**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.95*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 13:53**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.26	1.0	20	0	111	78 - 124				
1,1,1-Trichloroethane	17.86	1.0	20	0	89.3	74 - 131				
1,1,2,2-Tetrachloroethane	26.44	1.0	20	0	132	71 - 121				S
1,1,2-Trichlor-1,2,2-trifluoroethane	19.29	1.0	20	0	96.5	70 - 136				
1,1,2-Trichloroethane	23.81	1.0	20	0	119	80 - 119				S
1,1-Dichloroethane	20.45	1.0	20	0	102	77 - 125				
1,1-Dichloroethene	17.56	1.0	20	0	87.8	71 - 131				
1,1-Dichloropropene	18.08	1.0	20	0	90.4	78 - 125				
1,2,3-Trichlorobenzene	23.78	1.0	20	0	119	69 - 129				
1,2,3-Trichloropropane	25.37	1.0	20	0	127	73 - 122				S
1,2,4-Trichlorobenzene	23.26	1.0	20	0	116	69 - 130				
1,2,4-Trimethylbenzene	23.2	1.0	20	0	116	76 - 124				
1,2-Dibromo-3-chloropropane	25.44	1.0	20	0	127	62 - 128				
1,2-Dibromoethane	23.21	1.0	20	0	116	77 - 121				
1,2-Dichlorobenzene	23.94	1.0	20	0	120	80 - 119				S
1,2-Dichloroethane	21.59	1.0	20	0	108	73 - 128				
1,2-Dichloropropane	22.96	1.0	20	0	115	78 - 122				
1,3,5-Trimethylbenzene	22.29	1.0	20	0	111	75 - 124				
1,3-Dichlorobenzene	23.56	1.0	20	0	118	80 - 119				
1,3-Dichloropropane	23.36	1.0	20	0	117	80 - 119				
1,4-Dichlorobenzene	23.32	1.0	20	0	117	79 - 118				
2,2-Dichloropropane	16.9	1.0	20	0	84.5	60 - 139				
2-Butanone	46.09	2.0	40	0	115	56 - 143				
2-Chlorotoluene	23.24	1.0	20	0	116	79 - 122				
2-Hexanone	50.61	2.0	40	0	127	57 - 139				
4-Chlorotoluene	23.41	1.0	20	0	117	78 - 122				
4-Isopropyltoluene	21.26	1.0	20	0	106	77 - 127				
4-Methyl-2-pentanone	51.2	2.0	40	0	128	67 - 130				
Acetone	47.2	2.0	40	0	118	39 - 160				
Benzene	21.21	1.0	20	0	106	79 - 120				
Bromobenzene	23.69	1.0	20	0	118	80 - 120				
Bromochloromethane	20.08	1.0	20	0	100	78 - 123				
Bromodichloromethane	22.47	1.0	20	0	112	79 - 125				
Bromoform	23.85	1.0	20	0	119	66 - 130				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 13:53**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	24.03	1.0	20	0	120	53 - 141				
Carbon disulfide	37.62	2.0	40	0	94.1	64 - 133				
Carbon tetrachloride	16.31	1.0	20	0	81.6	72 - 136				
Chlorobenzene	21.76	1.0	20	0	109	82 - 118				
Chloroethane	20.09	1.0	20	0	100	60 - 138				
Chloroform	20.6	1.0	20	0	103	79 - 124				
Chloromethane	22.77	1.0	20	0	114	50 - 139				
cis-1,2-Dichloroethene	20.5	1.0	20	0	102	78 - 123				
cis-1,3-Dichloropropene	22.03	1.0	20	0	110	75 - 124				
Dibromochloromethane	22.84	1.0	20	0	114	74 - 126				
Dibromomethane	21.97	1.0	20	0	110	79 - 123				
Dichlorodifluoromethane	16.56	1.0	20	0	82.8	32 - 152				
Ethylbenzene	20.74	1.0	20	0	104	79 - 121				
Hexachlorobutadiene	20.52	1.0	20	0	103	66 - 134				
Isopropylbenzene	20.12	1.0	20	0	101	72 - 131				
m,p-Xylene	41.95	2.0	40	0	105	80 - 121				
Methylene chloride	20.94	2.0	20	0	105	74 - 124				
Naphthalene	24.1	1.0	20	0	120	61 - 128				
n-Butylbenzene	22	1.0	20	0	110	75 - 128				
n-Propylbenzene	22.33	1.0	20	0	112	76 - 126				
o-Xylene	21.51	1.0	20	0	108	78 - 122				
sec-Butylbenzene	21.1	1.0	20	0	105	77 - 126				
Styrene	21.94	1.0	20	0	110	78 - 123				
tert-Butylbenzene	21.17	1.0	20	0	106	78 - 124				
Tetrachloroethene	18.85	1.0	20	0	94.2	74 - 129				
Toluene	21.66	1.0	20	0	108	80 - 121				
trans-1,2-Dichloroethene	19.1	1.0	20	0	95.5	75 - 124				
trans-1,3-Dichloropropene	21.66	1.0	20	0	108	73 - 127				
Trichloroethene	19.86	1.0	20	0	99.3	79 - 123				
Trichlorofluoromethane	16.94	1.0	20	0	84.7	65 - 141				
Vinyl chloride	20.12	1.0	20	0	101	58 - 137				
Surr: 1,2-Dichloroethane-d4	*48.9*	*1.0*	*50*	*0*	*97.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.73*	*1.0*	*50*	*0*	*99.5*	*85 - 114*				
Surr: Dibromofluoromethane	*48.93*	*1.0*	*50*	*0*	*97.9*	*80 - 119*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190225** Units: **UG/L** Analysis Date: **25-Feb-2019 13:53**
Client ID: Run ID: **VOA6_333479** SeqNo: **4964295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.76*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19020720-03MS** Units: **UG/L** Analysis Date: **25-Feb-2019 16:17**
Client ID: **35BWW04-190213** Run ID: **VOA6_333479** SeqNo: **4964300** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	22.32	1.0	20	0	112	78 - 124				
1,1,1-Trichloroethane	22.16	1.0	20	0	111	74 - 131				
1,1,2,2-Tetrachloroethane	23.43	1.0	20	0	117	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	27.31	1.0	20	0	137	70 - 136				S
1,1,2-Trichloroethane	23.62	1.0	20	0	118	80 - 119				
1,1-Dichloroethane	22.71	1.0	20	0	114	77 - 125				
1,1-Dichloroethene	22.46	1.0	20	0	112	71 - 131				
1,1-Dichloropropene	22.65	1.0	20	0	113	78 - 125				
1,2,3-Trichlorobenzene	21.64	1.0	20	0	108	69 - 129				
1,2,3-Trichloropropane	22.62	1.0	20	0	113	73 - 122				
1,2,4-Trichlorobenzene	23.04	1.0	20	0	115	69 - 130				
1,2,4-Trimethylbenzene	25.59	1.0	20	0	128	76 - 124				S
1,2-Dibromo-3-chloropropane	21.39	1.0	20	0	107	62 - 128				
1,2-Dibromoethane	23	1.0	20	0	115	77 - 121				
1,2-Dichlorobenzene	23.47	1.0	20	0	117	80 - 119				
1,2-Dichloroethane	22.58	1.0	20	0	113	73 - 128				
1,2-Dichloropropane	24.13	1.0	20	0	121	78 - 122				
1,3,5-Trimethylbenzene	25.18	1.0	20	0	126	75 - 124				S
1,3-Dichlorobenzene	23.79	1.0	20	0	119	80 - 119				
1,3-Dichloropropane	23.69	1.0	20	0	118	80 - 119				
1,4-Dichlorobenzene	23.36	1.0	20	0	117	79 - 118				
2,2-Dichloropropane	20.07	1.0	20	0	100	60 - 139				
2-Butanone	45.71	2.0	40	0	114	56 - 143				
2-Chlorotoluene	24.09	1.0	20	0	120	79 - 122				
2-Hexanone	48.76	2.0	40	0	122	57 - 139				
4-Chlorotoluene	24.21	1.0	20	0	121	78 - 122				
4-Isopropyltoluene	24.9	1.0	20	0	125	77 - 127				
4-Methyl-2-pentanone	50.51	2.0	40	0	126	67 - 130				
Acetone	46.86	2.0	40	0	117	39 - 160				
Benzene	24.05	1.0	20	0	120	79 - 120				S
Bromobenzene	23.97	1.0	20	0	120	80 - 120				
Bromochloromethane	21.39	1.0	20	0	107	78 - 123				
Bromodichloromethane	23.37	1.0	20	0	117	79 - 125				
Bromoform	23.5	1.0	20	0	118	66 - 130				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19020720-03MS** Units: **UG/L** Analysis Date: **25-Feb-2019 16:17**
Client ID: **35BWW04-190213** Run ID: **VOA6_333479** SeqNo: **4964300** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	34.62	1.0	20	0	173	53 - 141				S
Carbon disulfide	45	2.0	40	0	112	64 - 133				
Carbon tetrachloride	21.21	1.0	20	0	106	72 - 136				
Chlorobenzene	23.11	1.0	20	0	116	82 - 118				
Chloroethane	23.98	1.0	20	0	120	60 - 138				
Chloroform	22.84	1.0	20	0	114	79 - 124				
Chloromethane	30.56	1.0	20	0	153	50 - 139				S
cis-1,2-Dichloroethene	22.57	1.0	20	0	113	78 - 123				
cis-1,3-Dichloropropene	21.77	1.0	20	0	109	75 - 124				
Dibromochloromethane	22.35	1.0	20	0	112	74 - 126				
Dibromomethane	22.98	1.0	20	0	115	79 - 123				
Dichlorodifluoromethane	23.47	1.0	20	0	117	32 - 152				
Ethylbenzene	24.62	1.0	20	0	123	79 - 121				S
Hexachlorobutadiene	21.81	1.0	20	0	109	66 - 134				
Isopropylbenzene	25.03	1.0	20	0	125	72 - 131				
m,p-Xylene	48	2.0	40	0	120	80 - 121				
Methylene chloride	22.49	2.0	20	0	112	74 - 124				
Naphthalene	21.81	1.0	20	0	109	61 - 128				
n-Butylbenzene	25.96	1.0	20	0	130	75 - 128				S
n-Propylbenzene	25.19	1.0	20	0	126	76 - 126				
o-Xylene	23.67	1.0	20	0	118	78 - 122				
sec-Butylbenzene	24.78	1.0	20	0	124	77 - 126				
Styrene	24.2	1.0	20	0	121	78 - 123				
tert-Butylbenzene	24.23	1.0	20	0	121	78 - 124				
Tetrachloroethene	28.92	1.0	20	5.334	118	74 - 129				
Toluene	24.23	1.0	20	0	121	80 - 121				S
trans-1,2-Dichloroethene	22.13	1.0	20	0	111	75 - 124				
trans-1,3-Dichloropropene	21.66	1.0	20	0	108	73 - 127				
Trichloroethene	23.62	1.0	20	0.5947	115	79 - 123				
Trichlorofluoromethane	22.86	1.0	20	0	114	65 - 141				
Vinyl chloride	24.3	1.0	20	0	121	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.26*	*1.0*	*50*	*0*	*98.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.48*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*48.74*	*1.0*	*50*	*0*	*97.5*	*80 - 119*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument:** VOA6 **Method:** SW8260

MS Sample ID: **HS19020720-03MS** Units: **UG/L** Analysis Date: **25-Feb-2019 16:17**
Client ID: **35BWW04-190213** Run ID: **VOA6_333479** SeqNo: **4964300** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.29*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19020720-03MSD** Units: **UG/L** Analysis Date: **25-Feb-2019 16:41**
Client ID: **35BWW04-190213** Run ID: **VOA6_333479** SeqNo: **4964301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.88	1.0	20	0	109	78 - 124	22.32	2.02	20	
1,1,1-Trichloroethane	21.63	1.0	20	0	108	74 - 131	22.16	2.43	20	
1,1,2,2-Tetrachloroethane	22.34	1.0	20	0	112	71 - 121	23.43	4.75	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	26.37	1.0	20	0	132	70 - 136	27.31	3.52	20	
1,1,2-Trichloroethane	22.95	1.0	20	0	115	80 - 119	23.62	2.87	20	
1,1-Dichloroethane	22.33	1.0	20	0	112	77 - 125	22.71	1.71	20	
1,1-Dichloroethene	22.07	1.0	20	0	110	71 - 131	22.46	1.72	20	
1,1-Dichloropropene	22.07	1.0	20	0	110	78 - 125	22.65	2.59	20	
1,2,3-Trichlorobenzene	22.11	1.0	20	0	111	69 - 129	21.64	2.16	20	
1,2,3-Trichloropropane	22.17	1.0	20	0	111	73 - 122	22.62	2.03	20	
1,2,4-Trichlorobenzene	22.36	1.0	20	0	112	69 - 130	23.04	3	20	
1,2,4-Trimethylbenzene	24.63	1.0	20	0	123	76 - 124	25.59	3.83	20	
1,2-Dibromo-3-chloropropane	21.06	1.0	20	0	105	62 - 128	21.39	1.54	20	
1,2-Dibromoethane	22.61	1.0	20	0	113	77 - 121	23	1.71	20	
1,2-Dichlorobenzene	22.8	1.0	20	0	114	80 - 119	23.47	2.9	20	
1,2-Dichloroethane	22.01	1.0	20	0	110	73 - 128	22.58	2.56	20	
1,2-Dichloropropane	23.86	1.0	20	0	119	78 - 122	24.13	1.13	20	
1,3,5-Trimethylbenzene	24.07	1.0	20	0	120	75 - 124	25.18	4.52	20	
1,3-Dichlorobenzene	23	1.0	20	0	115	80 - 119	23.79	3.37	20	
1,3-Dichloropropane	23.02	1.0	20	0	115	80 - 119	23.69	2.87	20	
1,4-Dichlorobenzene	22.35	1.0	20	0	112	79 - 118	23.36	4.41	20	
2,2-Dichloropropane	19.58	1.0	20	0	97.9	60 - 139	20.07	2.46	20	
2-Butanone	45.08	2.0	40	0	113	56 - 143	45.71	1.4	20	
2-Chlorotoluene	23.28	1.0	20	0	116	79 - 122	24.09	3.45	20	
2-Hexanone	48.69	2.0	40	0	122	57 - 139	48.76	0.157	20	
4-Chlorotoluene	23.49	1.0	20	0	117	78 - 122	24.21	3.01	20	
4-Isopropyltoluene	24.15	1.0	20	0	121	77 - 127	24.9	3.05	20	
4-Methyl-2-pentanone	47.85	2.0	40	0	120	67 - 130	50.51	5.42	20	
Acetone	45.73	2.0	40	0	114	39 - 160	46.86	2.44	20	
Benzene	23.7	1.0	20	0	119	79 - 120	24.05	1.46	20	
Bromobenzene	22.83	1.0	20	0	114	80 - 120	23.97	4.89	20	
Bromochloromethane	20.79	1.0	20	0	104	78 - 123	21.39	2.82	20	
Bromodichloromethane	23.35	1.0	20	0	117	79 - 125	23.37	0.0867	20	
Bromoform	22.93	1.0	20	0	115	66 - 130	23.5	2.47	20	

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19020720-03MSD** Units: **UG/L** Analysis Date: **25-Feb-2019 16:41**
Client ID: **35BWW04-190213** Run ID: **VOA6_333479** SeqNo: **4964301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	33.99	1.0	20	0	170	53 - 141	34.62	1.83	20	S
Carbon disulfide	43.5	2.0	40	0	109	64 - 133	45	3.38	20	
Carbon tetrachloride	20.55	1.0	20	0	103	72 - 136	21.21	3.13	20	
Chlorobenzene	22.39	1.0	20	0	112	82 - 118	23.11	3.17	20	
Chloroethane	23.68	1.0	20	0	118	60 - 138	23.98	1.25	20	
Chloroform	22.42	1.0	20	0	112	79 - 124	22.84	1.84	20	
Chloromethane	28.35	1.0	20	0	142	50 - 139	30.56	7.47	20	S
cis-1,2-Dichloroethene	22.11	1.0	20	0	111	78 - 123	22.57	2.08	20	
cis-1,3-Dichloropropene	21.62	1.0	20	0	108	75 - 124	21.77	0.648	20	
Dibromochloromethane	21.98	1.0	20	0	110	74 - 126	22.35	1.65	20	
Dibromomethane	22.67	1.0	20	0	113	79 - 123	22.98	1.38	20	
Dichlorodifluoromethane	22.91	1.0	20	0	115	32 - 152	23.47	2.39	20	
Ethylbenzene	23.73	1.0	20	0	119	79 - 121	24.62	3.71	20	
Hexachlorobutadiene	21.78	1.0	20	0	109	66 - 134	21.81	0.137	20	
Isopropylbenzene	24.38	1.0	20	0	122	72 - 131	25.03	2.65	20	
m,p-Xylene	47.08	2.0	40	0	118	80 - 121	48	1.93	20	
Methylene chloride	21.77	2.0	20	0	109	74 - 124	22.49	3.27	20	
Naphthalene	21.74	1.0	20	0	109	61 - 128	21.81	0.29	20	
n-Butylbenzene	25.06	1.0	20	0	125	75 - 128	25.96	3.55	20	
n-Propylbenzene	23.98	1.0	20	0	120	76 - 126	25.19	4.91	20	
o-Xylene	23.05	1.0	20	0	115	78 - 122	23.67	2.64	20	
sec-Butylbenzene	23.88	1.0	20	0	119	77 - 126	24.78	3.69	20	
Styrene	23.55	1.0	20	0	118	78 - 123	24.2	2.72	20	
tert-Butylbenzene	23.28	1.0	20	0	116	78 - 124	24.23	3.98	20	
Tetrachloroethene	28.15	1.0	20	5.334	114	74 - 129	28.92	2.67	20	
Toluene	23.45	1.0	20	0	117	80 - 121	24.23	3.24	20	
trans-1,2-Dichloroethene	21.16	1.0	20	0	106	75 - 124	22.13	4.48	20	
trans-1,3-Dichloropropene	21.73	1.0	20	0	109	73 - 127	21.66	0.325	20	
Trichloroethene	23.16	1.0	20	0.5947	113	79 - 123	23.62	1.97	20	
Trichlorofluoromethane	21.93	1.0	20	0	110	65 - 141	22.86	4.17	20	
Vinyl chloride	23.7	1.0	20	0	119	58 - 137	24.3	2.47	20	
Surr: 1,2-Dichloroethane-d4	*48.9*	*1.0*	*50*	*0*	*97.8*	*81 - 118*	*49.26*	*0.746*	*20*	
Surr: 4-Bromofluorobenzene	*51.41*	*1.0*	*50*	*0*	*103*	*85 - 114*	*50.48*	*1.82*	*20*	
Surr: Dibromofluoromethane	*49.17*	*1.0*	*50*	*0*	*98.3*	*80 - 119*	*48.74*	*0.881*	*20*	

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333479 **Instrument:** VOA6 **Method:** SW8260

MSD Sample ID: **HS19020720-03MSD** Units: **UG/L** Analysis Date: **25-Feb-2019 16:41**
Client ID: **35BWW04-190213** Run ID: **VOA6_333479** SeqNo: **4964301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.73*	*1.0*	*50*	*0*	*99.5*	*89 - 112*	*50.29*	*1.11*	*20*	

The following samples were analyzed in this batch:

HS19020720-01	HS19020720-02	HS19020720-03	HS19020720-04
HS19020720-05	HS19020720-06	HS19020720-07	HS19020720-08
HS19020720-09			

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333686 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-021419** Units: **mg/L** Analysis Date: **14-Feb-2019 12:02**
Client ID: Run ID: **ICS2100_333686** SeqNo: **4968483** PrepDate: DF: **1**

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

LCS Sample ID: **WLCSW1-021419** Units: **mg/L** Analysis Date: **14-Feb-2019 12:17**
Client ID: Run ID: **ICS2100_333686** SeqNo: **4968484** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.96	0.500	20	0	99.8	80 - 120				
Nitrogen, Nitrate (As N)	3.889	0.100	4	0	97.2	80 - 120				
Nitrogen, Nitrite (As N)	4.213	0.100	4	0	105	80 - 120				
Sulfate	19.89	0.500	20	0	99.4	80 - 120				

LCSD Sample ID: **WLCSDW1-021419** Units: **mg/L** Analysis Date: **14-Feb-2019 12:31**
Client ID: Run ID: **ICS2100_333686** SeqNo: **4968485** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.33	0.500	20	0	102	80 - 120	19.96	1.81	20	
Nitrogen, Nitrate (As N)	3.965	0.100	4	0	99.1	80 - 120	3.889	1.94	20	
Nitrogen, Nitrite (As N)	4.3	0.100	4	0	108	80 - 120	4.213	2.04	20	
Sulfate	20.31	0.500	20	0	102	80 - 120	19.89	2.11	20	

MS Sample ID: **HS19020720-03MS** Units: **mg/L** Analysis Date: **14-Feb-2019 16:14**
Client ID: **35BWW04-190213** Run ID: **ICS2100_333686** SeqNo: **4968492** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	12.91	0.500	10	3.242	96.6	80 - 120				
Nitrogen, Nitrate (As N)	1.978	0.100	2	0.174	90.2	80 - 120				
Nitrogen, Nitrite (As N)	2.022	0.100	2	0	101	80 - 120				
Sulfate	43.1	0.500	10	34.59	85.2	80 - 120				

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS19020720

QC BATCH REPORT

Batch ID: R333686 **Instrument: ICS2100** **Method: SW9056**

MSD Sample ID: **HS19020720-03MSD** Units: **mg/L** Analysis Date: **14-Feb-2019 16:28**
Client ID: **35BWW04-190213** Run ID: **ICS2100_333686** SeqNo: **4968493** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	12.97	0.500	10	3.242	97.3	80 - 120	12.91	0.502	20	
Nitrogen, Nitrate (As N)	1.98	0.100	2	0.174	90.3	80 - 120	1.978	0.101	20	
Nitrogen, Nitrite (As N)	0.1000	0.100	2	0	0	80 - 120	2.022	0	20	U
Sulfate	43.3	0.500	10	34.59	87.1	80 - 120	43.1	0.451	20	

The following samples were analyzed in this batch: HS19020720-01 HS19020720-02 HS19020720-03

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: **HS19020720**

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	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
California	2919, 2018-2019	30-Apr-2019
Maryland	343, 2018-2019	30-Jun-2019

ALS Houston, US Date: 11-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Work Order: HS19020720

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19020720-01	35BWW12-190213	Login	2/14/2019 12:05:44 PM	JRM	WET325
HS19020720-01	35BWW12-190213	Login	2/14/2019 12:05:44 PM	JRM	VOA167
HS19020720-01	35BWW12-190213	Login	2/14/2019 12:05:44 PM	JRM	Sub
HS19020720-01	35BWW12-190213	Login	2/14/2019 12:05:44 PM	JRM	Sub
HS19020720-01	35BWW12-190213	Login	2/14/2019 12:05:44 PM	JRM	Sub
HS19020720-01	35BWW12-190213	Login	2/14/2019 12:05:44 PM	JRM	Sub

ALS Houston, US Date: 11-Mar-19

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19020720
Date/Time Received: **14-Feb-2019 10:27**
Received by: **RPG**

Checklist completed by: *Raegen Giga* 13-Feb-2019
eSignature | Date

Reviewed by: _____
eSignature | Date

Matrices: **GW**
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):	0.5c/0.9c uc/c	IR 11
Cooler(s)/Kit(s):	24408	
Date/Time sample(s) sent to storage:	02/13/2019 12:48	

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: LHAAP37-FEB2019-ALSsaltLake-1902-13

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO			
Facility Name	Longhorn AAP		
Project Number	501032		
	LHAAP-37		
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	960 W. LeVoy Drive		
City	Salt Lake	State	UTAH
Postal Code	84123	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	3-40 ml VOA/HCL	3-40 ml VOA/Cool to 6 deg C	2-40ml Amber/H2SO4	2-40ml Amber/Cool to 6 deg C	1-250 ml /Cool to 6 deg C				
											Vocs by 8260B	MEE by RSK175	CO2 by RSK175	Toc by Sm5310C	TIC by SM5310C	Anions (chloride/sulfate/nitrate/nitrite) by 9056				
35BWW12-190213	LHAAP37	20.52	20.76		WG	2/13/19	0815	14			X	X	X	X	X	X				
35BWW12-190213-FD	LHAAP37	20.52	20.76		WG	2/13/19	0815	14			X	X	X	X	X	X				
35BWW04-190213	LHAAP37	21.75	21.97		WG	2/13/19	0930	14			X	X	X	X	X	X				
35BWW04-190213-MS	LHAAP37	21.75	21.97		WG	2/13/19	0930	14			X	X	X	X	X	X				
35BWW04-190213-MSD	LHAAP37	21.75	21.97		WG	2/13/19	0930	14			X	X	X	X	X	X				
LHSMW58-190213	LHAAP37	22.48	23.22		WG	2/13/19	1040	3			X									
35BWW11-190213	LHAAP37	21.46	21.72		WG	2/13/19	1130	3			X									
35BWW05-190213	LHAAP37	22.57	22.82		WG	2/13/19	1215	3			X									
35BWW20-190213	LHAAP37	24.47	24.72		WG	2/13/19	1305	3			X									
35BWW09-190213	LHAAP37	24.77	25.00		WG	2/13/19	1350	3			X									
TRIP BLANK	LHAAP37				W	2/13/19		2			X									

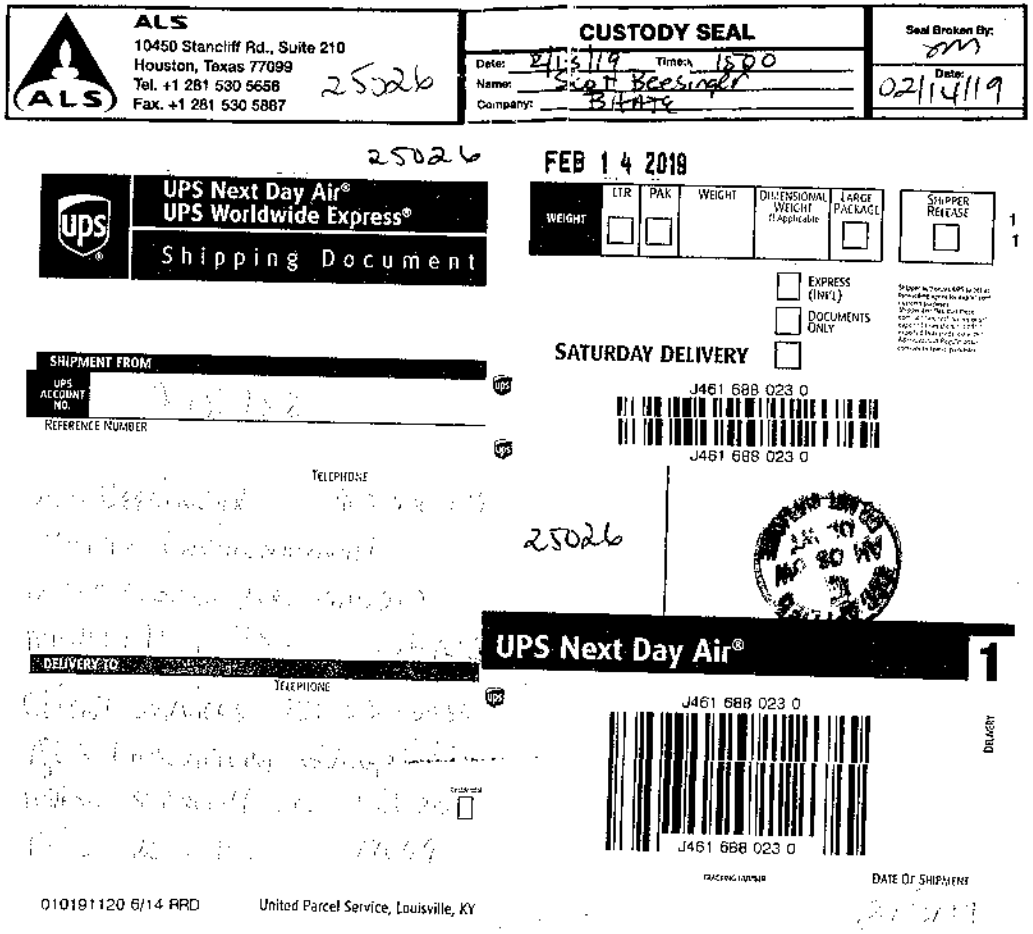
HS19020720

Aptim Environmental & Infrastucture. Inc.

LHAAP-37 501032

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Justin Beesinger/BHATE	2/13/19 1530	ALS.	2/14/19 10:27

25026



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
25026

CUSTODY SEAL
Date: 2/14/19 Time: 1500
Name: Scott Beesinger
Company: BHATE

Seal Broken By:
Date: 02/14/19

25026

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ALS Environmental
ALS Group USA, Corp
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Kelso, WA 98626
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www.alsglobal.com

March 11, 2019

Analytical Report for Service Request No: K1901413

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

RE: HS19020720

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory February 15, 2019
For your reference, these analyses have been assigned our service request number **K1901413.**

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

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Table of Contents

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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www.alsglobal.com

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

Client: ALS Environmental - US
Project: HS19020720
Sample Matrix: Ground Water

Service Request: K1901413
Date Received: 02/15/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Three ground water samples were received for analysis at ALS Environmental on 02/15/2019. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 03/11/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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K1901413

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

COC ID: 10751

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:	HS19020720
TSR:	Sonia West

	LAB SAMPLE ID / ANALYSIS REQUESTED	CLIENT SAMPLE ID	MATRIX	COLLECT DATE / DUE DATE	
1.	**HS19020720-01**	**35BWW12-190213**	**Groundwater**	**13 Feb 2019 08:15**	4
	TIC Analysis with Level IV			28 Feb 2019	
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			28 Feb 2019	
2.	**HS19020720-02**	**35BWW12-190213-FD**	**Groundwater**	**13 Feb 2019 08:15**	4
	TIC Analysis with Level IV			28 Feb 2019	
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			28 Feb 2019	
3.	**HS19020720-03**	**35BWW04-190213**	**Groundwater**	**13 Feb 2019 09:30**	12
	TIC Analysis with Level IV			28 Feb 2019	
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			28 Feb 2019	

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

MS/MSD HS19020720-03

QC Level: DOD IV (DoD Data Package)

Received: Cody Graves
ALS 2/15/19 0940

00955963

PC KL

Cooler Receipt and Preservation Form

Client ALS, Houston Service Request *K19* 01413

Received: 2/15/19 Opened: 2/15/19 By: CG Unloaded: 2/15/19 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

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
1.1	1.1	1.2	1.2	0.0	349	107S1	4809 7830 8878	

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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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1901413
Project:	HS19020720	**Date Collected:**	02/13/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Inorganic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
35BWW12-190213	K1901413-001	**103**	13	5	2	25	03/08/19 21:49	
35BWW12-190213-FD	K1901413-002	**132**	13	5	2	25	03/08/19 22:07	
35BWW04-190213	K1901413-003	**123**	13	5	2	25	03/08/19 22:25	
Method Blank	K1901413-MB	ND U	0.50	0.20	0.07	1	03/08/19 21:30	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1901413
Project	HS19020720	**Date Collected:**	02/13/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Inorganic

Sample Name:	Lab Code:	MRL	LOQ	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
35BWW12-190213	K1901413-001DUP	13	5	2	103	101	102	2	10	03/08/19
35BWW12-190213-FD	K1901413-002DUP	13	5	2	132	129	131	2	10	03/08/19
35BWW04-190213	K1901413-003DUP	13	5	2	123	120	122	2	10	03/08/19
Batch QC	K1901414-001DUP	13	5	2	141	140	140	<1	10	03/08/19
Batch QC	K1901414-002DUP	13	5	2	137	135	136	1	10	03/08/19
Batch QC	K1901414-003DUP	13	5	2	33	35	33.8	4	10	03/08/19
Batch QC	K1901414-004DUP	13	5	2	112	110	111	2	10	03/09/19

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:**	K1901413
Project:	HS19020720	**Date Collected:**	02/13/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
		Date Analyzed:	03/8/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Inorganic

Sample Name:	35BWW04-190213	**Units:**	mg/L
Lab Code:	K1901413-003	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1901413-003MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Inorganic	123	758	625	102	83-117

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1901413
Project:	HS19020720	**Date Analyzed:**	03/08/19
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Inorganic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	627738

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1901413-LCS	25.3	25.0	101	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1901413
Project: HS19020720

Continuing Calibration Verification (CCV) Summary

Carbon, Total Inorganic

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

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	627738	KQ1903025-04	03/08/19 21:10	25.0	24.6	98	90-110
CCV2	627738	KQ1903025-05	03/08/19 23:44	25.0	24.4	98	90-110
CCV3	627738	KQ1903025-06	03/09/19 00:37	25.0	24.3	97	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1901413
Project: HS19020720

Continuing Calibration Blank (CCB) Summary
Carbon, Total Inorganic

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

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	627738	KQ1903025-01	03/08/19 21:20	0.50	0.20	0.07	ND	U
CCB2	627738	KQ1903025-02	03/08/19 23:51	0.50	0.20	0.07	ND	U
CCB3	627738	KQ1903025-03	03/09/19 00:44	0.50	0.20	0.07	ND	U

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1901413
Project:	HS19020720	**Date Collected:**	02/13/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
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
35BWW12-190213	K1901413-001	**1.63**	0.50	0.20	0.07	1	02/20/19 17:58	
35BWW12-190213-FD	K1901413-002	**2.48**	0.50	0.20	0.07	1	02/20/19 18:30	
35BWW04-190213	K1901413-003	**3.81**	0.50	0.20	0.07	1	02/20/19 19:02	
Method Blank	K1901413-MB	ND U	0.50	0.20	0.07	1	02/20/19 01:10	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1901413
Project	HS19020720	**Date Collected:**	02/13/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	MRL	LOQ	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
35BWW12-190213	K1901413-001DUP	0.50	0.20	0.07	1.63	1.54	1.58	6	10	02/20/19
35BWW12-190213-FD	K1901413-002DUP	0.50	0.20	0.07	2.48	2.44	2.46	2	10	02/20/19
35BWW04-190213	K1901413-003DUP	0.50	0.20	0.07	3.81	3.84	3.83	<1	10	02/20/19
Batch QC	K1901414-001DUP	0.50	0.20	0.07	1.47	1.41	1.44	4	10	02/20/19
Batch QC	K1901414-002DUP	0.50	0.20	0.07	3.25	3.02	3.14	7	10	02/20/19
Batch QC	K1901414-003DUP	0.50	0.20	0.07	0.86	0.84	0.849	3	10	02/20/19
Batch QC	K1901414-004DUP	0.50	0.20	0.07	2.81	2.60	2.71	8	10	02/20/19

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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:**	K1901413
Project:	HS19020720	**Date Collected:**	02/13/19
Sample Matrix:	Ground Water	**Date Received:**	02/15/19
		Date Analyzed:	02/20/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	35BWW04-190213	**Units:**	mg/L
Lab Code:	K1901413-003	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1901413-003MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	3.81	29.6	25.0	103	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:**	K1901413
Project:	HS19020720	**Date Collected:**	N/A
Sample Matrix:	Ground Water	**Date Received:**	N/A
		Date Analyzed:	02/20/19
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	K1901414-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K1901414-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.47	27.6	25.0	104	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:**	K1901413
Project:	HS19020720	**Date Analyzed:**	02/20/19
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:	625676

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1901413-LCS	24.6	25.0	99	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1901413
Project: HS19020720

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	625676	KQ1902128-06	02/20/19 09:49	25.0	25.4	102	90-110
CCV2	625676	KQ1902128-07	02/20/19 20:07	25.0	25.2	101	90-110
CCV3	625676	KQ1902128-08	02/21/19 01:15	25.0	24.8	99	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1901413
Project: HS19020720

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	625676	KQ1902128-03	02/20/19 10:06	0.50	0.20	0.07	0.39	J
CCB2	625676	KQ1902128-04	02/20/19 20:24	0.50	0.20	0.07	ND	U
CCB3	625676	KQ1902128-05	02/21/19 01:32	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # (Original) K1901413, 1414

Tier: IV IV

Date Analyzed: 3/7/19 TIC: 627738

Analyst: BCD Run #

Analysis: TIC

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: K1901414-3 is overdiluted. However these are turbid samples when shaken that require a minimum dilution upon mcg RAs

Final Approved by: [signature] Date: 03/08/19 TH

DQREPORT

C:\Documents and Settings\adam.bradbury\My Documents\DATAQUAL.DOC

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627738 **Method/Testcode:** SM 5310 C/TIC

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1901413-001	Carbon, Total Inorganic	N/A		Ground Water	4.13 mg/L	10 ml	103 mg/L	25	25	50			3/8/19 21:49	N	IV
K1901413-002	Carbon, Total Inorganic	N/A		Ground Water	5.30 mg/L	10 ml	132 mg/L	25	25	50			3/8/19 22:07	N	IV
K1901413-003	Carbon, Total Inorganic	N/A		Ground Water	4.92 mg/L	10 ml	123 mg/L	25	25	50			3/8/19 22:25	Y	IV
K1901414-001	Carbon, Total Inorganic	N/A		Ground Water	5.64 mg/L	10 ml	141 mg/L	25	25	50			3/8/19 23:05	N	IV
K1901414-002	Carbon, Total Inorganic	N/A		Ground Water	5.46 mg/L	10 ml	137 mg/L	25	25	50			3/8/19 23:18	N	IV
K1901414-003	Carbon, Total Inorganic	N/A		Ground Water	1.32 mg/L	10 ml	50 mg/L U	25	25	50			3/8/19 23:58	N	IV
K1901414-004	Carbon, Total Inorganic	N/A		Ground Water	4.49 mg/L	10 ml	112 mg/L	25	25	50			3/9/19 00:11	N	IV
KQ1903025-01	Carbon, Total Inorganic	CCB		Ground Water	0.00 mg/L	10 ml	2.0 mg/L U	1	1.0	2.0			3/8/19 21:20	N	IV
KQ1903025-02	Carbon, Total Inorganic	CCB		Ground Water	3.52999999999998E	10 ml	2.0 mg/L U	1	1.0	2.0			3/8/19 23:51	N	IV
KQ1903025-03	Carbon, Total Inorganic	CCB		Ground Water	3.29999999999997E	10 ml	2.0 mg/L U	1	1.0	2.0			3/9/19 00:44	N	IV
KQ1903025-04	Carbon, Total Inorganic	CCV		Ground Water	24.62 mg/L	10 ml	24.6 mg/L	1					3/8/19 21:10	N	IV
KQ1903025-05	Carbon, Total Inorganic	CCV		Ground Water	24.40 mg/L	10 ml	24.4 mg/L	1					3/8/19 23:44	N	IV
KQ1903025-06	Carbon, Total Inorganic	CCV		Ground Water	24.27 mg/L	10 ml	24.3 mg/L	1					3/9/19 00:37	N	IV
KQ1903025-07	Carbon, Total Inorganic	LCS		Ground Water	25.28 mg/L	10 ml	25.3 mg/L	1	1.0	2.0	101		3/8/19 21:39	N	IV
KQ1903025-08	Carbon, Total Inorganic	MB		Ground Water	0.04 mg/L	10 ml	2.0 mg/L U	1	1.0	2.0			3/8/19 21:30	N	IV
KQ1903025-09	Carbon, Total Inorganic	MS	K1901413-003	Ground Water	30.34 mg/L	0.4 ml	758 mg/L	1	25	50	102		3/8/19 22:43	N	IV
KQ1903025-10	Carbon, Total Inorganic	DUP	K1901413-003	Ground Water	4.81 mg/L	10 ml	120 mg/L	25	25	50		2	3/8/19 22:25	N	IV
KQ1903025-11	Carbon, Total Inorganic	DUP	K1901413-001	Ground Water	4.04 mg/L	10 ml	101 mg/L	25	25	50		2	3/8/19 21:49	N	IV
KQ1903025-12	Carbon, Total Inorganic	DUP	K1901413-002	Ground Water	5.18 mg/L	10 ml	129 mg/L	25	25	50		2	3/8/19 22:07	N	IV
KQ1903025-13	Carbon, Total Inorganic	DUP	K1901414-001	Ground Water	5.60 mg/L	10 ml	140 mg/L	25	25	50		<1	3/8/19 23:05	N	IV
KQ1903025-14	Carbon, Total Inorganic	DUP	K1901414-002	Ground Water	5.40 mg/L	10 ml	135 mg/L	25	25	50		1	3/8/19 23:18	N	IV
KQ1903025-15	Carbon, Total Inorganic	DUP	K1901414-003	Ground Water	1.38 mg/L	10 ml	35 mg/L J	25	25	50		NC	3/8/19 23:58	N	IV
KQ1903025-16	Carbon, Total Inorganic	DUP	K1901414-004	Ground Water	4.41 mg/L	10 ml	110 mg/L	25	25	50		2	3/9/19 00:11	N	IV

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

03/11/19

Printed 3/9/19 10:36

TIC: 627738

Schedule: 03082019B

Version: 4
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/03/08 19:12 - 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
D	Sample	RB	IC 030411 (IC 030411)	1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	IC 030411 (IC 030411)	1	True	Ready
A	Check Standard	[IC] CCV 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
D	Check Standard	[IC] CCB 030411 [0.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
1	Sample	MB1	IC 030411 (IC 030411)	1	True	Ready
2	Check Standard	[IC] LCS 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
3	Sample	K1901413-001.03 25x	IC 030411 (IC 030411)	2	True	Ready
4	Sample	K1901413-002.03 25x	IC 030411 (IC 030411)	2	True	Ready
5	Sample	K1901413-003.07 25x	IC 030411 (IC 030411)	2	True	Ready
6	Sample	K1901413-003.07 ms 25x	IC 030411 (IC 030411)	1	True	Ready
7	Sample	RB	IC 030411 (IC 030411)	2	True	Ready
8	Sample	K1901414-001.03 25x	IC 030411 (IC 030411)	2	True	Ready
9	Sample	K1901414-002.03 25x	IC 030411 (IC 030411)	2	True	Ready
10	Sample	RB	IC 030411 (IC 030411)	2	True	Ready
A	Check Standard	[IC] CCV 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
D	Check Standard	[IC] CCB 030411 [0.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
11	Sample	K1901414-003.03 25x	IC 030411 (IC 030411)	2	True	Ready
12	Sample	K1901414-004.03 25x	IC 030411 (IC 030411)	2	True	Ready
13	Sample	RB	IC 030411 (IC 030411)	2	True	Ready
A	Check Standard	[IC] CCV 030411 [25.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
D	Check Standard	[IC] CCB 030411 [0.0 ppm]	IC 030411 (IC 030411)	1	True	Ready
					False	

03/11/19

Fusion Report - 03082019B
Friday, March 08, 2019 06:37 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/03/09 08:59 - Saturday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	03082019B	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

03/11/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/03/08 18:37

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	17.32	20.30	2.98	49.55	05:22
2	TC Clean	6.36	9.20	2.85	49.99	04:03
3	TC Clean	3.34	6.03	2.69	50.02	03:48
4	TC Clean	2.40	5.36	2.96	50.03	03:58

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/03/08 18:59

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.79	4.61	2.82	49.66	05:25
2	TC Clean	5.01	7.85	2.85	50.02	04:05
3	TC Clean	2.48	5.39	2.91	49.79	06:59
4	TC Clean	2.62	5.32	2.70	49.79	07:02

Sample Type: Clean

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/03/08 19:27

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.35	4.10	2.75	49.72	05:16
2	TC Clean	5.31	8.09	2.78	49.77	07:17
3	TC Clean	2.72	5.66	2.94	49.77	07:04
4	TC Clean	2.50	5.31	2.81	49.75	07:03

Sample Type: Sample

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	IC	RB	0.2867 ppm	0.0000 ppm	0.0000%	2019/03/08 19:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.2867	1.1469	5.71	8.78	3.07	49.87	07:29

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.4894 (IC) (v1230)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Blank (Creating v1231)

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/03/08 20:08

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.82	16.64	2.82	49.86	07:57
2	TC Clean	5.28	8.14	2.86	49.72	07:17
3	TC Clean	2.22	4.94	2.72	49.73	07:00
4	TC Clean	1.67	4.51	2.84	49.73	07:03
5	Reagent Blank	3.27	6.14	2.87	49.69	08:14
6	Acid Blank	1.22	4.06	2.84	49.85	08:04

Sample Type: Sample

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	IC	RB	0.1854 ppm	0.0000 ppm	0.0000%	2019/03/08 21:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.1854	0.7417	4.50	8.00	3.50	49.87	07:30

Dilution
1:2

Blank Contribution
(TC) 1.7739 (IC) (v1231)

Method
IC 030411 (v3)

Calibration
IC 030411 (v13)

Sample Type: Check Standard --> CCV 030411

From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	A	IC	25.0000	1:1	[IC] CCV 030411 [25.0 ppm]	0 / infinity (NA / NA)	24.8796 ppm (PASS)	0.0000 ppm	0%	2019/03/08 21:10

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
A	IC	25.0 ppm	1	24.8796	99.5183	368.40	371.77	3.37	49.86	07:26

Completion State
Success - Criteria met.

Success Action
Do Nothing

Method
IC 030411 (v3)

Calibration
IC 030411 (v13)

STD Conc - Pos A
25 ppmC

Sample Type: Check Standard --> CCB 030411

From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	IC	DI Water [0]	DI	[IC] CCB 030411 [0.0 ppm]	0 / infinity (NA / NA)	0.2528 ppm (PASS)	0.0000 ppm	0%	2019/03/08 21:20

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	IC	0.0 ppm	1	0.2528	1.0114	6.05	9.65	3.60	49.87	07:07

Completion State
Success - Criteria met.

Success Action
Do Nothing

Method
IC 030411 (v3)

Calibration
IC 030411 (v13)

STD Conc - Pos D
0 ppmC

Sample Type: Sample

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	IC	MB1	0.2940 ppm	0.0000 ppm	0.0000%	2019/03/08 21:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.2940	1.1761	6.10	9.48	3.38	49.85	07:30

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Check Standard --> LCS 030411 — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	2	IC	25.0000	1:1	[IC] LCS 030411 [25.0 ppm]	0 / infinity (NA / NA)	25.5364 ppm (PASS)	0.0000 ppm	0%	2019/03/08 21:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
2	IC	25.0 ppm	1	25.5364	102.1455	378.07	381.44	3.37	49.83	07:26

Completion State	Success Action	Method	Calibration	STD Conc - Pos 2
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	25 ppmC

Sample Type: Sample — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	IC	K1901413-001.03 25x	4.3457 ppm	0.0643 ppm	1.4800%	2019/03/08 21:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	4.3912	17.5649	66.38	69.95	3.57	49.83	07:28
2	IC	4.3002	17.2009	65.05	68.08	3.03	49.86	07:25

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	IC	K1901413-002.03 25x	5.4960 ppm	0.0846 ppm	1.5400%	2019/03/08 22:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	5.5558	22.2231	83.52	86.98	3.46	49.84	07:29
2	IC	5.4362	21.7447	81.76	84.81	3.05	49.83	07:22

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	IC	K1901413-003.07 25x	5.1200 ppm	0.0761 ppm	1.4900%	2019/03/08 22:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	5.1738	20.6953	77.90	81.34	3.44	49.87	07:30

2	IC	5.0662	20.2650	76.32	79.47	3.15	49.86	07:28

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	IC	K1901413-003.07 ms 25x	30.5962 ppm	0.0000 ppm	0.0000%	2019/03/08 22:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	30.5962	122.3848	451.96	455.36	3.40	50.05	07:27

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	IC	RB	0.5949 ppm	0.0017 ppm	0.2800%	2019/03/08 22:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.5961	2.3845	10.54	13.89	3.34	49.77	04:55
2	IC	0.5937	2.3750	10.51	13.42	2.91	49.64	04:56

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	IC	K1901414-001.03 25x	5.8762 ppm	0.0267 ppm	0.4500%	2019/03/08 23:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	5.8951	23.5805	88.51	91.82	3.31	49.64	04:56
2	IC	5.8573	23.4294	87.96	91.10	3.14	49.65	04:56

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	IC	K1901414-002.03 25x	5.6888 ppm	0.0462 ppm	0.8100%	2019/03/08 23:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	5.7214	22.8857	85.96	89.44	3.48	49.63	04:55
2	IC	5.6561	22.6244	85.00	88.00	3.00	49.64	04:53

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

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

◈	10	IC	RB	0.5104 ppm	0.0621 ppm	12.1600%	2019/03/08 23:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.4665	1.8661	8.64	12.12	3.48	49.64	04:53
2	IC	0.5543	2.2173	9.93	12.79	2.86	49.63	04:53

Dilution: 1:2

Blank Contribution: (TC) 1.7739 (IC) (v1231)

Method: IC 030411 (v3)

Calibration: IC 030411 (v13)

Sample Type: Check Standard --> CCV 030411

From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	A	IC	25.0000	1:1	[IC] CCV 030411 [25.0 ppm]	0 / infinity (NA / NA)	24.6575 ppm (PASS)	0.0000 ppm	0%	2019/03/08 23:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
A	IC	25.0 ppm	1	24.6575	98.6301	365.14	368.56	3.43	49.63	04:54

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: IC 030411 (v3)

Calibration: IC 030411 (v13)

STD Conc - Pos A: 25 ppmC

Sample Type: Check Standard --> CCB 030411

From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	IC	DI Water [0]	DI	[IC] CCB 030411 [0.0 ppm]	0 / infinity (NA / NA)	0.2602 ppm (PASS)	0.0000 ppm	0%	2019/03/08 23:51

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	IC	0.0 ppm	1	0.2602	1.0407	6.16	9.69	3.53	49.65	04:32

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: IC 030411 (v3)

Calibration: IC 030411 (v13)

STD Conc - Pos D: 0 ppmC

Sample Type: Sample

From Schedule Version 4

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	IC	K1901414-003.03 25x	1.6100 ppm	0.0408 ppm	2.5400%	2019/03/08 23:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	1.5811	6.3245	25.04	28.44	3.40	49.70	04:55
2	IC	1.6389	6.5556	25.89	28.89	3.00	49.62	04:52

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	IC	K1901414-004.03 25x	4.7082 ppm	0.0553 ppm	1.1700%	2019/03/09 00:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	4.7474	18.9894	71.62	75.06	3.44	49.64	04:57
2	IC	4.6691	18.6765	70.47	73.68	3.20	49.62	04:50

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	IC	RB	0.7180 ppm	0.0579 ppm	8.0600%	2019/03/09 00:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC	0.6771	2.7085	11.74	15.39	3.65	49.65	04:58
2	IC	0.7590	3.0358	12.94	15.84	2.89	49.62	04:56

Dilution	Blank Contribution	Method	Calibration
1:2	(TC) 1.7739 (IC) (v1231)	IC 030411 (v3)	IC 030411 (v13)

Sample Type: Check Standard --> CCV 030411 — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	A	IC	25.0000	1:1	[IC] CCV 030411 [25.0 ppm]	0 / infinity (NA / NA)	24.5306 ppm (PASS)	0.0000 ppm	0%	2019/03/09 00:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
A	IC	25.0 ppm	1	24.5306	98.1223	363.27	366.74	3.47	49.62	04:58

Completion State	Success Action	Method	Calibration	STD Conc - Pos A
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	25 ppmC

Sample Type: Check Standard --> CCB 030411 — From Schedule Version 4

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	IC	DI Water [0]	DI	[IC] CCB 030411 [0.0 ppm]	0 / infinity (NA / NA)	0.2570 ppm (PASS)	0.0000 ppm	0%	2019/03/09 00:44

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

	Type									
D	IC	0.0 ppm	1	0.2570	1.0280	6.11	9.64	3.52	49.64	04:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	IC 030411 (v3)	IC 030411 (v13)	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
v1230	0.9720	0.6470	0.0000	0.0000	0.0000	2019/03/08 16:04	Fusion1 (Fusion1)
v1231	1.0907	1.2160	0.0000	0.0000	0.0000	2019/03/08 21:00	Fusion1 (Fusion1)

Calibrations

Name: IC 030411 (IC)

Version: v13

Ver Creation: 2018/11/20 15:25

Comment:

Operator: Fusion1 (Fusion1)

Basic Analysis Type: IC

Calibration curve formula: IC: y = 14.714x + 2.332

r^2 value: IC: r^2 = 0.99968

Basic Analysis Type: IC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	4.3260	0.0000		2018/11/20 14:40
0.50 ppm	12.5220	0.5000		2018/11/20 14:47
1.00 ppm	20.0790	1.0000		2018/11/20 14:54
5.00 ppm	74.7040	5.0000		2018/11/20 15:02
10.0 ppm	146.8910	10.0000		2018/11/20 15:09
25.0 ppm	360.9070	25.0000		2018/11/20 15:16
50.0 ppm	743.1960	50.0000		2018/11/20 15:24

Methods

Name: IC 030411 (IC)

Version: v3

Ver Creation: 2013/02/04 11:47

Comment:

Operator: Gen Chem Lab (Fusion1)

Parameter	Value
SampleVolume	4.0 mL
Dilution	1:2
AcidVolume	1.0 ml
DetectorSweepFlow	500 ml/min
PreSpargeTime	0.00 mins
SystemFlow	200 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	300 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	50 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	7
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	7
SyringeSpeedICAspirate	5
NDIRPressureStabilize	0.50 min
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	2019/03/09 00:52

ALS Environmental

StarLIMS Run: 627738

Analysis: TIC

Method: SM 5310 C

CCV: 11-GEN-05-73O 25 ppm LCS: 11-GEN-05-74A 25 ppm

ICAL Date: 11/20/18

ICAL ID: 11-GEN-05-72D

Spike ID: 11-GEN-05-73M 0.25 ml of 1000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

21 % H3PO4: 11-GEN-05-76G

Equipment ID: K-TOC-03

PIPETTE ID: N11314F, Marge , 129001F

FILTER ID: NA

Analyzed By: BCD	Date Analyzed: 3/8/19
Reviewed By: [signature]	Date Reviewed: 03/11/19

Work Request # Original ( ) K1900868, 1013, 1154, 1230, 1246, 1258, 1286, 1293, 1342, 1343, 1382, 1413, 1414, 799, 865, 1035, 1312, 657

Tier: IV II I II I I IV II II II II I IV II I II

Date Analyzed: 2/19/19

Analyst: JCD

Analysis: TOC Water

Run # 625673, 625674, 625676, 625678

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: K1900799-44 RPH.
K1900865-2 overdiluted, sent for SA.
K1901258-1, 865-4, have a high RPD, but are less than 5x the MRL.
K1900799-44 MS and K1900652-2 MS's have a low %Rec due to suspected matrix interference.

Final Approved by: [signature] Date: 02/25/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 625673 **Method/Testcode:** 9060/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
K1900657-001	Carbon, Total Organic	N/A		Elutriate, Liquid	1.31 mg/L	10 ml	1.31 mg/L	1	0.07	0.50			2/21/19 10:41	N	II
K1900657-002	Carbon, Total Organic	N/A		Elutriate, Liquid	1.03 mg/L	10 ml	1.03 mg/L	1	0.07	0.50			2/21/19 11:44	N	II
KQ1902121-01	Carbon, Total Organic	DUP	K1900657-001	Elutriate, Liquid	1.20 mg/L	10 ml	1.20 mg/L	1	0.07	0.50		8	2/21/19 10:41	N	II
KQ1902121-02	Carbon, Total Organic	TRP	K1900657-001	Elutriate, Liquid	1.22 mg/L	10 ml	1.22 mg/L	1	0.07	0.50		5	2/21/19 10:41	N	II
KQ1902121-03	Carbon, Total Organic	QUAD	K1900657-001	Elutriate, Liquid	1.18 mg/L	10 ml	1.18 mg/L	1	0.07	0.50		5	2/21/19 10:41	N	II
KQ1902121-04	Carbon, Total Organic	DUP	K1900657-002	Elutriate, Liquid	0.92 mg/L	10 ml	0.92 mg/L	1	0.07	0.50		11	2/21/19 11:44	N	II
KQ1902121-05	Carbon, Total Organic	TRP	K1900657-002	Elutriate, Liquid	0.82 mg/L	10 ml	0.82 mg/L	1	0.07	0.50		11	2/21/19 11:44	N	II
KQ1902121-06	Carbon, Total Organic	QUAD	K1900657-002	Elutriate, Liquid	0.84 mg/L	10 ml	0.84 mg/L	1	0.07	0.50		10	2/21/19 11:44	N	II
KQ1902121-07	Carbon, Total Organic	MS	K1900657-002	Elutriate, Liquid	12.17 mg/L	10 ml	12.2 mg/L	1	0.07	0.50	45*		2/21/19 12:48	N	II
KQ1902121-08	Carbon, Total Organic	MS	K1900657-002	Elutriate, Liquid	12.19 mg/L	10 ml	12.2 mg/L	1	0.07	0.50	45*		2/21/19 12:48	N	II
KQ1902121-09	Carbon, Total Organic	MS	K1900657-002	Elutriate, Liquid	12.11 mg/L	10 ml	12.1 mg/L	1	0.07	0.50	44*		2/21/19 12:48	N	II
KQ1902121-10	Carbon, Total Organic	MS	K1900657-002	Elutriate, Liquid	12.33 mg/L	10 ml	12.3 mg/L	1	0.07	0.50	45*		2/21/19 12:48	N	II
KQ1902121-15	Carbon, Total Organic	CCB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 07:59	N	II
KQ1902121-16	Carbon, Total Organic	CCB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 14:40	N	II
KQ1902121-17	Carbon, Total Organic	CCV		Elutriate, Liquid	24.67 mg/L	10 ml	24.7 mg/L	1					2/21/19 07:42	N	II
KQ1902121-18	Carbon, Total Organic	CCV		Elutriate, Liquid	24.30 mg/L	10 ml	24.3 mg/L	1					2/21/19 14:24	N	II
KQ1902121-19	Carbon, Total Organic	LCS		Elutriate, Liquid	24.65 mg/L	10 ml	24.6 mg/L	1	0.07	0.50	99		2/21/19 02:52	N	II
KQ1902121-20	Carbon, Total Organic	LCS		Elutriate, Liquid	24.29 mg/L	10 ml	24.3 mg/L	1	0.07	0.50	97		2/21/19 02:52	N	II
KQ1902121-21	Carbon, Total Organic	LCS		Elutriate, Liquid	24.51 mg/L	10 ml	24.5 mg/L	1	0.07	0.50	98		2/21/19 02:52	N	II
KQ1902121-22	Carbon, Total Organic	LCS		Elutriate, Liquid	24.50 mg/L	10 ml	24.5 mg/L	1	0.07	0.50	98		2/21/19 02:52	N	II
KQ1902121-23	Carbon, Total Organic	MB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:48	N	II
KQ1902121-24	Carbon, Total Organic	MB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:48	N	II
KQ1902121-25	Carbon, Total Organic	MB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:48	N	II
KQ1902121-26	Carbon, Total Organic	MB		Elutriate, Liquid	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:48	N	II

02/25/19

# 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:** 625674 **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?	T
K1900868-002	Carbon, Total Organic	N/A		Water	4.06 mg/L	10 ml	4.06 mg/L	1	0.07	0.50			2/19/19 16:46	N	I
K1900868-003	Carbon, Total Organic	N/A		Water	10.93 mg/L	10 ml	10.9 mg/L	1	0.07	0.50			2/19/19 17:18	N	I
K1900868-004	Carbon, Total Organic	N/A		Water	8.83 mg/L	10 ml	8.83 mg/L	1	0.07	0.50			2/19/19 17:50	N	I
K1900868-005	Carbon, Total Organic	N/A		Water	7.98 mg/L	10 ml	7.98 mg/L	1	0.07	0.50			2/19/19 18:22	N	I
K1900868-007	Carbon, Total Organic	N/A		Water	14.34 mg/L	10 ml	28.7 mg/L	2	0.2	1.0			2/19/19 18:54	Y	I
K1900868-009	Carbon, Total Organic	N/A		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/19/19 20:33	N	I
K1901013-003	Carbon, Total Organic	N/A		Water	12.88 mg/L	10 ml	644 mg/L	50	4	25			2/19/19 22:11	N	II
K1901154-003	Carbon, Total Organic	N/A		Drinking Water	0.90 mg/L	10 ml	0.90 mg/L	1	0.07	0.50			2/19/19 23:31	N	I
K1901230-001	Carbon, Total Organic	N/A		Water	1.95 mg/L	10 ml	1.95 mg/L	1	0.07	0.50			2/20/19 01:43	N	II
K1901246-002	Carbon, Total Organic	N/A		Drinking Water	0.56 mg/L	10 ml	0.56 mg/L	1	0.07	0.50			2/20/19 02:48	N	I
K1901258-001	Carbon, Total Organic	N/A		Drinking Water	0.59 mg/L	10 ml	0.59 mg/L	1	0.07	0.50			2/20/19 03:20	N	I
K1901286-001	Carbon, Total Organic	N/A		Water	4.26 mg/L	10 ml	4.26 mg/L	1	0.07	0.50			2/19/19 21:05	N	I
K1901293-001	Carbon, Total Organic	N/A		Water	22.77 mg/L	10 ml	1140 mg/L	50	4	25			2/20/19 06:36	N	II
K1901293-002	Carbon, Total Organic	N/A		Water	15.50 mg/L	10 ml	775 mg/L	50	4	25			2/20/19 07:41	N	II
K1901293-003	Carbon, Total Organic	N/A		Water	10.61 mg/L	10 ml	531 mg/L	50	4	25			2/20/19 08:13	N	II
K1901342-001	Carbon, Total Organic	N/A		Water	1.91 mg/L	10 ml	1.91 mg/L	1	0.07	0.50			2/20/19 03:52	N	II
K1901343-001	Carbon, Total Organic	N/A		Water	0.66 mg/L	10 ml	0.66 mg/L	1	0.07	0.50			2/20/19 05:31	N	II
K1901382-001	Carbon, Total Organic	N/A		Water	20.04 mg/L	10 ml	20.0 mg/L	1	0.07	0.50			2/20/19 09:17	N	II
K1901382-002	Carbon, Total Organic	N/A		Water	0.74 mg/L	10 mL	0.74 mg/L	1	0.07	0.50			2/20/19 17:26:00	N	II
KQ1902122-01	Carbon, Total Organic	MS	K1900868-007	Water	40.42 mg/L	10 ml	80.8 mg/L	2	0.2	1.0	104		2/19/19 19:26	N	I
KQ1902122-02	Carbon, Total Organic	DUP	K1900868-007	Water	14.73 mg/L	10 ml	29.5 mg/L	2	0.2	1.0		3	2/19/19 18:54	N	IV
KQ1902122-03	Carbon, Total Organic	DUP	K1900868-002	Water	3.93 mg/L	10 ml	3.93 mg/L	1	0.07	0.50		3	2/19/19 16:46	N	I
KQ1902122-04	Carbon, Total Organic	DUP	K1900868-003	Water	10.95 mg/L	10 ml	11.0 mg/L	1	0.07	0.50		<1	2/19/19 17:18	N	I
KQ1902122-05	Carbon, Total Organic	DUP	K1900868-004	Water	8.73 mg/L	10 ml	8.73 mg/L	1	0.07	0.50		1	2/19/19 17:50	N	I
KQ1902122-06	Carbon, Total Organic	DUP	K1900868-005	Water	8.10 mg/L	10 ml	8.10 mg/L	1	0.07	0.50		1	2/19/19 18:22	N	I
KQ1902122-07	Carbon, Total Organic	DUP	K1900868-009	Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	2/19/19 20:33	N	IV
KQ1902122-08	Carbon, Total Organic	DUP	K1901286-001	Water	4.08 mg/L	10 ml	4.08 mg/L	1	0.07	0.50		4	2/19/19 21:05	N	IV
KQ1902122-09	Carbon, Total Organic	DUP	K1901013-003	Water	12.91 mg/L	10 ml	645 mg/L	50	4	25		<1	2/19/19 22:11	N	II
KQ1902122-10	Carbon, Total Organic	DUP	K1901154-003	Drinking Water	0.89 mg/L	10 ml	0.89 mg/L	1	0.07	0.50		2	2/19/19 23:31	N	I
KQ1902122-11	Carbon, Total Organic	DUP	K1901230-001	Water	1.88 mg/L	10 ml	1.88 mg/L	1	0.07	0.50		4	2/20/19 01:43	N	II
KQ1902122-12	Carbon, Total Organic	DUP	K1901246-002	Drinking Water	0.52 mg/L	10 ml	0.52 mg/L	1	0.07	0.50		8	2/20/19 02:48	N	I
KQ1902122-13	Carbon, Total Organic	DUP	K1901258-001	Drinking Water	0.52 mg/L	10 ml	0.52 mg/L	1	0.07	0.50		12*	2/20/19 03:20	N	I
KQ1902122-14	Carbon, Total Organic	DUP	K1901342-001	Water	1.89 mg/L	10 ml	1.89 mg/L	1	0.07	0.50		1	2/20/19 03:52	N	II
KQ1902122-15	Carbon, Total Organic	DUP	K1901343-001	Water	0.62 mg/L	10 ml	0.62 mg/L	1	0.07	0.50		6	2/20/19 05:31	N	II

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

02/25/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 625674 **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
KQ1902122-16	Carbon, Total Organic	DUP	K1901293-001	Water	22.81 mg/L	10 ml	1140 mg/L	50	4	25		<1	2/20/19 06:36	N	II
KQ1902122-17	Carbon, Total Organic	DUP	K1901293-002	Water	15.53 mg/L	10 ml	777 mg/L	50	4	25		<1	2/20/19 07:41	N	II
KQ1902122-18	Carbon, Total Organic	DUP	K1901293-003	Water	10.67 mg/L	10 ml	533 mg/L	50	4	25		<1	2/20/19 08:13	N	II
KQ1902122-19	Carbon, Total Organic	DUP	K1901382-001	Water	20.48 mg/L	10 ml	20.5 mg/L	1	0.07	0.50		2	2/20/19 09:17	N	II
KQ1902122-20	Carbon, Total Organic	DUP	K1901382-002	Water	0.73 mg/L	10 mL	0.73 mg/L	1	0.07	0.50		<1	2/20/19 17:26:00	N	II
KQ1902122-21	Carbon, Total Organic	MS	K1901286-001	Water	28.20 mg/L	10 ml	28.2 mg/L	1	0.07	0.50	96		2/19/19 21:37	N	IV
KQ1902122-22	Carbon, Total Organic	MS	K1901013-003	Water	39.43 mg/L	10 ml	1970 mg/L	50	4	25	106		2/19/19 22:43	N	II
KQ1902122-23	Carbon, Total Organic	MS	K1901154-003	Drinking Water	26.69 mg/L	10 ml	26.7 mg/L	1	0.07	0.50	103		2/20/19 00:03	N	I
KQ1902122-24	Carbon, Total Organic	MS	K1901230-001	Water	28.15 mg/L	10 ml	28.1 mg/L	1	0.07	0.50	105		2/20/19 02:15	N	II
KQ1902122-26	Carbon, Total Organic	MS	K1901342-001	Water	27.98 mg/L	10 ml	28.0 mg/L	1	0.07	0.50	104		2/20/19 04:24	N	II
KQ1902122-27	Carbon, Total Organic	MS	K1901343-001	Water	26.96 mg/L	10 ml	27.0 mg/L	1	0.07	0.50	105		2/20/19 06:03	N	II
KQ1902122-28	Carbon, Total Organic	MS	K1901293-001	Water	43.55 mg/L	10 ml	2180 mg/L	50	4	25	83		2/20/19 07:08	N	II
KQ1902122-29	Carbon, Total Organic	MS	K1901382-001	Water	43.15 mg/L	10 mL	43.1 mg/L	1	0.07	0.50	92		2/20/19 16:06:00	N	II
KQ1902122-30	Carbon, Total Organic	MB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/19/19 15:56	N	IV
KQ1902122-31	Carbon, Total Organic	LCS		Water	24.64 mg/L	10 ml	24.6 mg/L	1	0.07	0.50	99		2/19/19 16:13	N	IV
KQ1902122-32	Carbon, Total Organic	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/19/19 15:39	N	IV
KQ1902122-33	Carbon, Total Organic	CCB		Water	-0.01 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/19/19 20:16	N	IV
KQ1902122-34	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/20/19 00:53	N	IV
KQ1902122-35	Carbon, Total Organic	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/20/19 05:14	N	IV
KQ1902122-36	Carbon, Total Organic	CCB		Water	0.32 mg/L	10 ml	0.32 mg/L J	1	0.07	0.50			2/20/19 10:06	N	IV
KQ1902122-37	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			2/20/19 20:07:00	N	IV
KQ1902122-38	Carbon, Total Organic	CCV		Water	24.97 mg/L	10 ml	25.0 mg/L	1					2/19/19 15:23	N	IV
KQ1902122-39	Carbon, Total Organic	CCV		Water	25.05 mg/L	10 ml	25.0 mg/L	1					2/19/19 19:59	N	IV
KQ1902122-40	Carbon, Total Organic	CCV		Water	25.03 mg/L	10 ml	25.0 mg/L	1					2/20/19 00:36	N	IV
KQ1902122-41	Carbon, Total Organic	CCV		Water	24.96 mg/L	10 ml	25.0 mg/L	1					2/20/19 04:57	N	IV
KQ1902122-42	Carbon, Total Organic	CCV		Water	25.34 mg/L	10 ml	25.3 mg/L	1					2/20/19 09:49	N	IV
KQ1902122-43	Carbon, Total Organic	CCV		Water	25.23 mg/L	10 mL	25.2 mg/L	1					2/20/19 20:24:00	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:** 625676 **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
K1901413-001	Carbon, Total Organic	N/A		Ground Water	1.63 mg/L	10 ml	1.63 mg/L	1	0.07	0.50			2/20/19 17:58	N	
K1901413-002	Carbon, Total Organic	N/A		Ground Water	2.48 mg/L	10 ml	2.48 mg/L	1	0.07	0.50			2/20/19 18:30	N	IV
K1901413-003	Carbon, Total Organic	N/A		Ground Water	3.81 mg/L	10 ml	3.81 mg/L	1	0.07	0.50			2/20/19 19:02	Y	IV
K1901414-001	Carbon, Total Organic	N/A		Ground Water	1.47 mg/L	10 ml	1.47 mg/L	1	0.07	0.50			2/20/19 20:41	N	IV
K1901414-002	Carbon, Total Organic	N/A		Ground Water	3.25 mg/L	10 ml	3.25 mg/L	1	0.07	0.50			2/20/19 21:46	N	
K1901414-003	Carbon, Total Organic	N/A		Ground Water	0.86 mg/L	10 ml	0.86 mg/L	1	0.07	0.50			2/20/19 22:18	N	IV
K1901414-004	Carbon, Total Organic	N/A		Ground Water	2.81 mg/L	10 ml	2.81 mg/L	1	0.07	0.50			2/20/19 22:50	N	IV
KQ1902128-01	Carbon, Total Organic	MS	K1901413-003	Ground Water	29.58 mg/L	10 ml	29.6 mg/L	1	0.07	0.50	103		2/20/19 19:34	N	IV
KQ1902128-02	Carbon, Total Organic	MS	K1901414-001	Ground Water	27.55 mg/L	10 ml	27.6 mg/L	1	0.07	0.50	104		2/20/19 21:13	N	IV
KQ1902128-03	Carbon, Total Organic	CCB		Ground Water	0.39 mg/L	10 mL	0.39 mg/L J	1	0.07	0.50			2/20/19 10:06:00	N	I
KQ1902128-04	Carbon, Total Organic	CCB		Ground Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/20/19 20:24	N	IV
KQ1902128-05	Carbon, Total Organic	CCB		Ground Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:32	N	IV
KQ1902128-06	Carbon, Total Organic	CCV		Ground Water	25.41 mg/L	10 mL	25.4 mg/L	1					2/20/19 09:49:00	N	IV
KQ1902128-07	Carbon, Total Organic	CCV		Ground Water	25.16 mg/L	10 ml	25.2 mg/L	1					2/20/19 20:07	N	IV
KQ1902128-08	Carbon, Total Organic	CCV		Ground Water	24.78 mg/L	10 ml	24.8 mg/L	1					2/21/19 01:15	N	IV
KQ1902128-09	Carbon, Total Organic	MB		Ground Water	0.04 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			2/20/19 01:10:00	N	IV
KQ1902128-10	Carbon, Total Organic	LCS		Ground Water	24.64 mg/L	10 mL	24.6 mg/L	1	0.07	0.50	99		2/20/19 01:26:00	N	IV
KQ1902128-11	Carbon, Total Organic	DUP	K1901413-001	Ground Water	1.54 mg/L	10 ml	1.54 mg/L	1	0.07	0.50		6	2/20/19 17:58	N	IV
KQ1902128-12	Carbon, Total Organic	DUP	K1901413-002	Ground Water	2.44 mg/L	10 ml	2.44 mg/L	1	0.07	0.50		2	2/20/19 18:30	N	IV
KQ1902128-13	Carbon, Total Organic	DUP	K1901413-003	Ground Water	3.84 mg/L	10 ml	3.84 mg/L	1	0.07	0.50		<1	2/20/19 19:02	N	IV
KQ1902128-14	Carbon, Total Organic	DUP	K1901414-001	Ground Water	1.41 mg/L	10 ml	1.41 mg/L	1	0.07	0.50		4	2/20/19 20:41	N	IV
KQ1902128-15	Carbon, Total Organic	DUP	K1901414-002	Ground Water	3.02 mg/L	10 ml	3.02 mg/L	1	0.07	0.50		7	2/20/19 21:46	N	IV
KQ1902128-16	Carbon, Total Organic	DUP	K1901414-003	Ground Water	0.84 mg/L	10 ml	0.84 mg/L	1	0.07	0.50		3	2/20/19 22:18	N	IV

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

~~02/26~~ 02/25/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 625676 **Method/Testcode:** SM 531 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
KQ1902128-17	Carbon, Total Organic	DUP	K1901414-004	Ground Water	2.60 mg/L	10 ml	2.60 mg/L	1	0.07	0.50		8	2/20/19 22:50	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:** 625678 **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
K1900799-044	Carbon, Dissolved Organic (DOC)	N/A		Water	1.92 mg/L	10 ml	1.92 mg/L	1	0.07	0.50			2/20/19 23:22	N	II
K1900865-001	Carbon, Dissolved Organic (DOC)	N/A		Water	1.00 mg/L	10 ml	1.00 mg/L	1	0.07	0.50			2/21/19 03:56	N	I
K1900865-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.31 mg/L	10 ml	31 mg/L J	100	7	50			2/21/19 05:17	N	I
K1901075-001	Carbon, Dissolved Organic (DOC)	N/A		Water	3.48 mg/L	10 ml	3.48 mg/L	1	0.07	0.50			2/21/19 08:16	N	II
K1901075-002	Carbon, Dissolved Organic (DOC)	N/A		Water	5.11 mg/L	10 ml	5.11 mg/L	1	0.07	0.50			2/21/19 06:21	N	II
K1901312-002	Carbon, Dissolved Organic (DOC)	N/A		Water	2.92 mg/L	10 ml	2.92 mg/L	1	0.07	0.50			2/21/19 08:48	N	II
K1901312-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.07 mg/L	10 ml	2.07 mg/L	1	0.07	0.50			2/21/19 10:08	N	II
KQ1902132-01	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/20/19 20:24	N	II
KQ1902132-02	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 01:32	N	II
KQ1902132-03	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 07:59	N	II
KQ1902132-04	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			2/21/19 14:40	N	II
KQ1902132-05	Carbon, Dissolved Organic (DOC)	CCV		Water	25.16 mg/L	10 ml	25.2 mg/L	1					2/20/19 20:07	N	II
KQ1902132-06	Carbon, Dissolved Organic (DOC)	CCV		Water	24.78 mg/L	10 ml	24.8 mg/L	1					2/21/19 01:15	N	II
KQ1902132-07	Carbon, Dissolved Organic (DOC)	CCV		Water	24.67 mg/L	10 ml	24.7 mg/L	1					2/21/19 07:42	N	II
KQ1902132-08	Carbon, Dissolved Organic (DOC)	CCV		Water	24.30 mg/L	10 ml	24.3 mg/L	1					2/21/19 14:24	N	II
KQ1902132-09	Carbon, Dissolved Organic (DOC)	MB		Water	0.14 mg/L	10 mL	0.14 mg/L J	1	0.07	0.50			2/20/19 10:23:00	N	II
KQ1902132-10	Carbon, Dissolved Organic (DOC)	LCS		Water	23.44 mg/L	10 ml	23.4 mg/L	1	0.07	0.50	94		2/20/19 12:08	N	II
KQ1902132-11	Carbon, Dissolved Organic (DOC)	MS	K1900799-044	Water	21.39 mg/L	10 ml	21.4 mg/L	1	0.07	0.50	78*		2/20/19 23:54	N	II
KQ1902132-12	Carbon, Dissolved Organic (DOC)	MS	K1900865-001	Water	27.19 mg/L	10 ml	27.2 mg/L	1	0.07	0.50	105		2/21/19 04:28	N	I
KQ1902132-13	Carbon, Dissolved Organic (DOC)	MS	K1901075-002	Water	31.36 mg/L	10 ml	31.4 mg/L	1	0.07	0.50	105		2/21/19 06:53	N	II
KQ1902132-14	Carbon, Dissolved Organic (DOC)	MS	K1901312-002	Water	28.47 mg/L	10 ml	28.5 mg/L	1	0.07	0.50	102		2/21/19 09:20	N	II
KQ1902132-15	Carbon, Dissolved Organic (DOC)	DUP	K1900799-044	Water	1.87 mg/L	10 mL	1.87 mg/L	1	0.07	0.50		3	2/20/19 23:22:00	N	II
KQ1902132-16	Carbon, Dissolved Organic (DOC)	DUP	K1900865-001	Water	0.85 mg/L	10 ml	0.85 mg/L	1	0.07	0.50		15*	2/21/19 03:56	N	I

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

02/25/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 625678 **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
KQ1902132-17	Carbon, Dissolved Organic (DOC)	DUP	K1900865-002	Water	0.23 mg/L	10 ml	23 mg/L J	100	7	50		29*	2/21/19 05:17	N	I
KQ1902132-18	Carbon, Dissolved Organic (DOC)	DUP	K1901075-002	Water	5.12 mg/L	10 ml	5.12 mg/L	1	0.07	0.50		<1	2/21/19 06:21	N	II
KQ1902132-19	Carbon, Dissolved Organic (DOC)	DUP	K1901075-001	Water	3.54 mg/L	10 ml	3.54 mg/L	1	0.07	0.50		2	2/21/19 08:16	N	II
KQ1902132-20	Carbon, Dissolved Organic (DOC)	DUP	K1901312-002	Water	2.80 mg/L	10 ml	2.80 mg/L	1	0.07	0.50		4	2/21/19 08:48	N	II
KQ1902132-21	Carbon, Dissolved Organic (DOC)	DUP	K1901312-004	Water	2.03 mg/L	10 ml	2.03 mg/L	1	0.07	0.50		2	2/21/19 10:08	N	II

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

TOC: 625673, 625674, 625676
DOC: 625678

Schedule: 02192019

Version: 12
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/02/20 12:08 - Wednesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Clean)	Clean	Clean		1
(Blank)	Blank	Reagent/Acid Blank		1
D	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Sample	MB1	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Sample	ICS	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Sample	K1900868-002.21	Extended Reaction 021711 (Extended Reaction 021711)	2
4	Sample	K1900868-003.21	Extended Reaction 021711 (Extended Reaction 021711)	2
5	Sample	K1900868-004.21	Extended Reaction 021711 (Extended Reaction 021711)	2
6	Sample	K1900868-005.21	Extended Reaction 021711 (Extended Reaction 021711)	2
7	Sample	K1900868-007.43 2x	Extended Reaction 021711 (Extended Reaction 021711)	2
8	Sample	K1900868-007.43 ms 2x	Extended Reaction 021711 (Extended Reaction 021711)	1
9	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	6
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	K1900868-009.21	Extended Reaction 021711 (Extended Reaction 021711)	2
11	Sample	K1901286-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
12	Sample	K1901286-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
13	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
14	Sample	K1901013-003.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
15	Sample	K1901013-003.01 ms 50x	Extended Reaction 021711 (Extended Reaction 021711)	1
16	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
17	Sample	K1901154-003.02	Extended Reaction 021711 (Extended Reaction 021711)	2
18	Sample	K1901154-003.02 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
19	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	MB2	Extended Reaction 021711 (Extended Reaction 021711)	1
C	Check Standard	[TOC] LCS ER [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Sample	K1901230-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
22	Sample	K1901230-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
23	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
24	Sample	K1901246-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
25	Sample	K1901258-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
26	Sample	K1901342-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
27	Sample	K1901342-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
28	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
D	Check Standard	[TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Sample	K1901343-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
30	Sample	K1901343-001.01 ms	Extended Reaction 021711 (Extended Reaction 021711)	1
31	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
32	Sample	K1901293-001.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
33	Sample	K1901293-001.01 ms 50x	Extended Reaction 021711 (Extended Reaction 021711)	1
34	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	1
35	Sample	K1901293-002.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
36	Sample	K1901293-003.01 50x	Extended Reaction 021711 (Extended Reaction 021711)	2
37	Sample	RB	Extended Reaction 021711 (Extended Reaction 021711)	2
38	Sample	K1901382-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
B	Check Standard	[TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

02/25/19

Schedule: 02192019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps
0	Check Standard	TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
1	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
2	Check Standard	TOC] LCS 021711 [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
3	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
4	Sample	PB5	Extended Reaction 021711 (Extended Reaction 021711)	4
5	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
6	Sample	K1901415-001.01	Extended Reaction 021711 (Extended Reaction 021711)	2
7	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
8	Sample	K1901415-001.01	Extended Reaction 021711 (Extended Reaction 021711)	3
9	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
10	Sample	PB6	Extended Reaction 021711 (Extended Reaction 021711)	1
11	Check Standard	TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
12	Check Standard	TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
13	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
14	Sample	K1901414-001.01 rep	Extended Reaction 021711 (Extended Reaction 021711)	1
15	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
16	Sample	K1901414-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
17	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
18	Sample	K1901414-002.01	Extended Reaction 021711 (Extended Reaction 021711)	2
19	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
20	Sample	K1901397-044.03 rep dup	Extended Reaction 021711 (Extended Reaction 021711)	1
21	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
22	Sample	PB	Extended Reaction 021711 (Extended Reaction 021711)	2
23	Check Standard	TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
24	Check Standard	TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
25	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
26	Check Standard	TOC] LCS 021711 [25.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	4
27	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
28	Sample	K1901365-001.03 rep dup	Extended Reaction 021711 (Extended Reaction 021711)	1
29	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
30	Sample	K1901365-002.03 dup 100x	Extended Reaction 021711 (Extended Reaction 021711)	2
31	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
32	Sample	K1901365-003.03 rep	Extended Reaction 021711 (Extended Reaction 021711)	3
33	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
34	Sample	PB	Extended Reaction 021711 (Extended Reaction 021711)	2
35	Check Standard	TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
36	Check Standard	TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
37	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
38	Sample	K1901415-003.03 dup	Extended Reaction 021711 (Extended Reaction 021711)	2
39	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
40	Sample	K1901415-004.03 rep dup	Extended Reaction 021711 (Extended Reaction 021711)	2
41	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
42	Sample	PB	Extended Reaction 021711 (Extended Reaction 021711)	2
43	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
44	Sample	K1901414-001.14	Extended Reaction 021711 (Extended Reaction 021711)	4
45	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
46	Sample	K1901397-002.04 rep	Extended Reaction 021711 (Extended Reaction 021711)	4
47	Blank	Blank	Extended Reaction 021711 (Extended Reaction 021711)	1
48	Check Standard	TOC] CCV 021711 [25 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1
49	Check Standard	TOC] CCB 021711 [0.0 ppm]	Extended Reaction 021711 (Extended Reaction 021711)	1

Fusion Report - 02192019
Tuesday, February 19, 2019 12:27 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/02/21 16:21 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	02192019	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) Fusion1 (Fusion1) (v7) Fusion1 (Fusion1) (v8) Fusion1 (Fusion1) (v9) Fusion1 (Fusion1) (v10)		
Comment:			

Report Results

02/25/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/02/19 12:27

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.80	16.90	3.10	47.10	07:59
2	TC Clean	21.07	24.16	3.10	49.92	07:16
3	TC Clean	3.20	6.14	2.95	49.87	07:02
4	TC Clean	2.09	5.06	2.97	50.00	03:48

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/02/19 13:01

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.08	14.91	2.83	47.05	08:00

2	TC Clean	5.92	8.87	2.96	50.02	04:06
3	TC Clean	2.31	5.35	3.04	50.02	03:55
4	TC Clean	1.77	4.81	3.03	50.03	03:57

Sample Type: Clean From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/02/19 13:26

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.69	14.78	3.08	47.09	08:00
2	TC Clean	5.18	8.32	3.13	50.02	04:02
3	TC Clean	2.21	5.29	3.09	49.99	03:44
4	TC Clean	1.75	4.67	2.92	50.00	03:43

Sample Type: Blank (Creating v1223) From Schedule Version 7

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/02/19 14:07

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.80	14.66	2.86	47.15	05:47
2	TC Clean	5.59	8.53	2.94	50.01	04:02
3	TC Clean	2.27	5.35	3.08	50.06	03:47
4	TC Clean	1.49	4.47	2.98	49.99	03:46
5	Reagent Blank	8.52	11.51	2.99	50.04	05:06
6	Acid Blank	1.85	4.72	2.87	47.33	06:00

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0099 ppm	0.0000 ppm	0.0000%	2019/02/19 15:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0099	0.0986	14.91	17.81	2.90	50.11	12:32

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

1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	25.0374 ppm (PASS)	0.0000 ppm	0%	2019/02/19 15:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0374	250.3741	203.91	206.98	3.07	50.12	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 8

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/19 15:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	15.48	18.54	3.07	50.15	12:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/19 15:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	14.33	17.32	2.99	50.17	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> LCS ER From Schedule Version 8

	Pos	BAT	Concentration	Dil	Sample ID	Min / Max	Result	Std. Dev.	RSD	Start Time

			(ppm)			(% dev)				
◈	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.7059 ppm (PASS)	0.0000 ppm	0%	2019/02/19 16:13

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7059	247.0590	201.42	204.42	3.00	50.20	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 ppmC

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.3227 ppm	0.0000 ppm	0.0000%	2019/02/19 16:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3227	3.2273	17.26	20.26	3.00	50.20	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1900868-002.21	4.0615 ppm	0.0902 ppm	2.2200%	2019/02/19 16:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1253	41.2530	45.82	48.77	2.95	50.24	12:25
2	TOC	3.9978	39.9776	44.86	47.70	2.84	50.26	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1900868-003.21	11.0138 ppm	0.0141 ppm	0.1300%	2019/02/19 17:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.0038	110.0379	97.48	100.48	3.00	50.28	12:29
2	TOC	11.0238	110.2376	97.64	100.58	2.94	50.29	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Sample — From Schedule Version 9

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	5	TOC	K1900868-004.21	8.8518 ppm	0.0704 ppm	0.8000%	2019/02/19 17:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9016	89.0161	81.70	84.61	2.92	50.32	12:27
2	TOC	8.8020	88.0202	80.95	83.70	2.75	50.24	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1900868-005.21	8.1137 ppm	0.0845 ppm	1.0400%	2019/02/19 18:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.0539	80.5395	75.33	78.41	3.08	50.24	12:29
2	TOC	8.1735	81.7350	76.23	79.19	2.96	50.24	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1900868-007.43 2x	14.6022 ppm	0.2727 ppm	1.8700%	2019/02/19 18:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.4094	144.0936	123.06	126.00	2.94	50.26	12:27
2	TOC	14.7950	147.9505	125.96	128.96	3.00	50.30	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1900868-007.43 ms 2x	40.4860 ppm	0.0000 ppm	0.0000%	2019/02/19 19:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	40.4860	404.8603	318.93	321.99	3.06	50.31	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	RB	0.7260 ppm	0.0000 ppm	0.0000%	2019/02/19 19:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7260	7.2599	20.29	23.30	3.01	50.28	12:33

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 — 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 021711 [25 ppm]	0 / infinity (NA / NA)	25.1182 ppm (PASS)	0.0000 ppm	0%	2019/02/19 19:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1182	251.1822	204.52	207.48	2.96	50.29	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 — From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0560 ppm (PASS)	0.0000 ppm	0%	2019/02/19 20:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0560	0.5603	16.27	19.25	2.98	50.30	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	0 ppmC

Sample Type: Sample — From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K1900868-009.21	0.0957 ppm	0.0006 ppm	0.5900%	2019/02/19 20:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0953	0.9533	15.55	18.58	3.03	50.28	12:30
2	TOC	0.0961	0.9613	15.56	18.43	2.87	50.29	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1901286-001.01	4.2419 ppm	0.1263 ppm	2.9800%	2019/02/19 21:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.3313	43.3126	47.37	50.32	2.95	50.30	12:27
2	TOC	4.1526	41.5259	46.02	48.99	2.97	50.29	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1901286-001.01 ms	28.2706 ppm	0.0000 ppm	0.0000%	2019/02/19 21:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2706	282.7059	227.18	230.08	2.90	50.27	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	RB	0.3649 ppm	0.0000 ppm	0.0000%	2019/02/19 21:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3649	3.6493	17.57	20.56	2.99	50.31	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1901013-003.01 50x	12.9632 ppm	0.0206 ppm	0.1600%	2019/02/19 22:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.9486	129.4861	112.09	114.98	2.89	50.25	12:24
2	TOC	12.9778	129.7777	112.31	115.22	2.90	50.25	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1901013-003.01 ms 50x	39.4978 ppm	0.0000 ppm	0.0000%	2019/02/19 22:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	39.4978	394.9777	311.51	314.10	2.59	50.23	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

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

		Type			(ppmC)		
◆	16	TOC	RB	0.4391 ppm	0.1559 ppm	35.5000%	2019/02/19 22:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5493	5.4932	18.96	21.93	2.97	50.20	12:27
2	TOC	0.3289	3.2885	17.30	20.15	2.84	50.19	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1901154-003.02	0.9648 ppm	0.0136 ppm	1.4100%	2019/02/19 23:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9744	9.7442	22.15	24.98	2.83	50.16	12:24
2	TOC	0.9552	9.5525	22.01	24.86	2.85	50.19	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1901154-003.02 ms	26.7579 ppm	0.0000 ppm	0.0000%	2019/02/20 00:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.7579	267.5792	215.82	218.87	3.05	50.12	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	RB	0.2066 ppm	0.0000 ppm	0.0000%	2019/02/20 00:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2066	2.0663	16.39	19.21	2.83	50.13	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	25.0965 ppm (PASS)	0.0000 ppm	0%	2019/02/20 00:36

	Base		Rep							Run

Pos	Analysis Type	ID	#	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Time
B	TOC	25 ppm	1	25.0965	250.9652	204.36	207.39	3.03	50.12	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0434 ppm (PASS)	0.0000 ppm	0%	2019/02/20 00:53

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0434	0.4338	16.18	19.11	2.93	50.11	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	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	0.0439 ppm	0.0000 ppm	0.0000%	2019/02/20 01:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0439	0.4395	15.16	18.09	2.93	50.11	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> LCS ER 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 ER [25.0 ppm]	0 / infinity (NA / NA)	24.6367 ppm (PASS)	0.0000 ppm	0%	2019/02/20 01:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.6367	246.3667	200.90	203.77	2.87	50.09	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1901230-001.01	1.9824 ppm	0.0499 ppm	2.5200%	2019/02/20 01:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0177	20.1765	29.99	32.84	2.85	50.07	12:29
2	TOC	1.9471	19.4709	29.46	32.37	2.91	50.09	12:26

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1901230-001.01 ms	28.2163 ppm	0.0000 ppm	0.0000%	2019/02/20 02:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2163	282.1627	226.77	229.70	2.93	50.09	12:30

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	RB	0.1186 ppm	0.0000 ppm	0.0000%	2019/02/20 02:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1186	1.1863	15.72	18.78	3.06	50.09	12:34

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1901246-002.01	0.6102 ppm	0.0315 ppm	5.1700%	2019/02/20 02:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6325	6.3253	19.58	22.45	2.87	50.08	12:30
2	TOC	0.5879	5.8793	19.25	22.17	2.92	50.07	12:24

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1901258-001.01	0.6268 ppm	0.0459 ppm	7.3300%	2019/02/20 03:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6593	6.5929	19.78	22.75	2.96	50.07	12:28

2	TOC	0.5943	5.9432	19.30	22.22	2.92	50.07	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1901342-001.01	1.9731 ppm	0.0146 ppm	0.7400%	2019/02/20 03:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9834	19.8344	29.73	32.59	2.86	50.07	12:30
2	TOC	1.9628	19.6280	29.58	32.54	2.96	50.06	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1901342-001.01 ms	28.0546 ppm	0.0000 ppm	0.0000%	2019/02/20 04:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.0546	280.5465	225.56	228.59	3.04	50.06	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	RB	0.1053 ppm	0.0000 ppm	0.0000%	2019/02/20 04:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1053	1.0532	15.62	18.65	3.03	50.05	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 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 021711 [25 ppm]	0 / infinity (NA / NA)	25.0335 ppm (PASS)	0.0000 ppm	0%	2019/02/20 04:57

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0335	250.3355	203.88	206.98	3.09	50.05	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 9

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/20 05:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	15.23	18.14	2.90	50.03	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	0 ppmC

Sample Type: Sample From Schedule Version 9

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1901343-001.01	0.7080 ppm	0.0283 ppm	4.0000%	2019/02/20 05:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7280	7.2799	20.30	23.20	2.89	50.03	12:30
2	TOC	0.6879	6.8791	20.00	22.96	2.96	50.06	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1901343-001.01 ms	27.0258 ppm	0.0000 ppm	0.0000%	2019/02/20 06:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.0258	270.2579	217.83	220.69	2.86	50.05	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	RB	0.0402 ppm	0.0000 ppm	0.0000%	2019/02/20 06:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0402	0.4022	15.13	18.12	2.99	50.06	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

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

◈	32	TOC	K1901293-001.01 50x	22.8634 ppm	0.0275 ppm	0.1200%	2019/02/20 06:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	22.8439	228.4392	186.42	189.52	3.10	50.07	12:29
2	TOC	22.8828	228.8280	186.71	189.81	3.10	50.07	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1901293-001.01 ms 50x	43.6149 ppm	0.0000 ppm	0.0000%	2019/02/20 07:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	43.6149	436.1494	342.44	345.24	2.81	50.08	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	RB	0.5702 ppm	0.0000 ppm	0.0000%	2019/02/20 07:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5702	5.7022	19.12	22.00	2.88	50.03	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1901293-002.01 50x	15.5854 ppm	0.0251 ppm	0.1600%	2019/02/20 07:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.5676	155.6762	131.76	134.86	3.10	50.05	12:26
2	TOC	15.6032	156.0317	132.03	135.02	2.99	50.06	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1901293-003.01 50x	10.7112 ppm	0.0384 ppm	0.3600%	2019/02/20 08:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.6840	106.8401	95.08	98.02	2.94	50.03	12:28
2	TOC	10.7383	107.3832	95.49	98.52	3.03	50.04	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC)	Extended Reaction	Extended Reaction

(v1223) 021711 (v4) 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	RB	0.2236 ppm	0.1259 ppm	56.2900%	2019/02/20 08:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3126	3.1261	17.18	20.07	2.88	50.03	12:28
2	TOC	0.1346	1.3461	15.84	18.88	3.04	50.03	12:25

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

Sample Type: Sample — From Schedule Version 10

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1901382-001.01	20.3308 ppm	0.3091 ppm	1.5200%	2019/02/20 09:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.1123	201.1228	165.90	168.89	2.99	50.06	12:25
2	TOC	20.5494	205.4936	169.18	172.17	2.98	50.06	12:27

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 — 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 021711 [25 ppm]	0 / infinity (NA / NA)	25.4114 ppm (PASS)	0.0000 ppm	0%	2019/02/20 09:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4114	254.1138	206.72	209.73	3.01	50.07	12:28

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 — From Schedule Version 10

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.3909 ppm (PASS)	0.0000 ppm	0%	2019/02/20 10:06

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.3909	3.9086	18.79	21.92	3.13	50.02	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	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	0.1354 ppm	0.0000 ppm	0.0000%	2019/02/20 10:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1354	1.3541	15.85	18.55	2.70	50.01	12:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

BCP 2/21/19

Sample Type: Check Standard --> LCS ER From Schedule Version 10

NK, Schedule aborted

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	ppm (FAIL)		%	2019/02/20 10:40

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

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 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
v1222	1.7273	1.7390	0.0000	0.0000	0.0000	2019/02/15 16:06	Fusion1 (Fusion1)
v1223	2.8390	1.8540	0.0000	0.0000	0.0000	2019/02/19 14:42	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version: v26
Calibration curve formula: TOC: y = 7.511x + 15.850
Ver Creation: 2019/01/31 18:04
r^2 value: TOC: r^2 = 0.99984
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	14.6070	0.0000		2019/01/31 16:25
0.50 ppm	19.2770	0.5000		2019/01/31 16:42
1.00 ppm	21.9140	1.0000		2019/01/31 16:58
5.00 ppm	53.0870	5.0000		2019/01/31 17:14
10.0 ppm	94.7080	10.0000		2019/01/31 17:31
25.0 ppm	204.1870	25.0000		2019/01/31 17:47
50.0 ppm	390.4490	50.0000		2019/01/31 18:03

Methods

Name: Extended Reaction 021711 (TOC)

Version: v4
Operator: Fusion1 (Fusion1)
Ver Creation: 2019/01/31 11:21
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	4.00 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	2019/02/20 10:43

Fusion Report - 02192019
Wednesday, February 20, 2019 12:08 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/02/21 16:21 - Thursday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	02192019	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) (v12)		
Comment:			

Report Results

02/25/19

Sample Type: Check Standard --> LCS ER

From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	23.5061 ppm (PASS)	0.0000 ppm	0%	2019/02/20 12:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.5061	235.0610	192.41	195.10	2.69	50.00	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 ppmC

Sample Type: Sample

From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1901382-001.01 ms	43.1488 ppm	0.0000 ppm	0.0000%	2019/02/20 16:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	43.1488	431.4884	338.93	341.87	2.93	50.14	12:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	41	TOC	RB	0.0220 ppm	0.0440 ppm	200.0000%	2019/02/20 16:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0880	0.8801	15.49	18.54	3.04	50.04	12:26
2	TOC	0.0000	0.0000	13.84	16.84	3.00	50.01	12:30
3	TOC	0.0000	0.0000	13.36	16.17	2.81	50.01	12:27
4	TOC	0.0000	0.0000	13.73	16.59	2.86	50.08	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1901382-002.01	0.7357 ppm	0.0043 ppm	0.5900%	2019/02/20 17:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7388	7.3877	20.38	23.22	2.83	50.06	12:25
2	TOC	0.7326	7.3265	20.34	23.12	2.78	50.09	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1901413-001.01	1.6535 ppm	0.0631 ppm	3.8100%	2019/02/20 17:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6981	16.9813	27.59	30.44	2.86	50.09	12:29
2	TOC	1.6089	16.0893	26.92	29.96	3.04	50.08	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1901413-002.01	2.5284 ppm	0.0288 ppm	1.1400%	2019/02/20 18:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5487	25.4873	33.98	36.72	2.74	50.06	12:29
2	TOC	2.5080	25.0799	33.67	36.46	2.79	50.11	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1901413-003.01	3.8992 ppm	0.0216 ppm	0.5500%	2019/02/20 19:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	3.8839	38.8393	44.01	46.93	2.92	50.05	12:25
2	TOC	3.9144	39.1441	44.24	47.05	2.82	49.94	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	K1901413-003.01 ms	29.6501 ppm	0.0000 ppm	0.0000%	2019/02/20 19:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.6501	296.5013	237.54	240.30	2.75	49.95	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	RB	0.1703 ppm	0.0000 ppm	0.0000%	2019/02/20 19:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1703	1.7029	16.11	18.87	2.76	49.87	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	25.2273 ppm (PASS)	0.0000 ppm	0%	2019/02/20 20:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.2273	252.2726	205.34	207.97	2.63	49.78	12:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/20 20:24

	Base		Rep							Run

Pos	Analysis Type	ID	#	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Time
D	TOC	0.0 ppm	1	0.0000	0.0000	15.37	18.08	2.71	49.92	12:29

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample

From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1901414-001.01	1.5055 ppm	0.0422 ppm	2.8000%	2019/02/20 20:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5353	15.3531	26.36	29.09	2.73	49.96	12:30
2	TOC	1.4757	14.7567	25.92	28.75	2.83	49.95	12:30

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1901414-001.01 ms	27.6204 ppm	0.0000 ppm	0.0000%	2019/02/20 21:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.6204	276.2037	222.30	225.10	2.80	49.94	12:31

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	RB	0.1662 ppm	0.0000 ppm	0.0000%	2019/02/20 21:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1662	1.6616	16.08	19.00	2.92	49.91	12:29

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC) (v1223)
Method: Extended Reaction 021711 (v4)
Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1901414-002.01	3.2049 ppm	0.1591 ppm	4.9600%	2019/02/20 21:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.3174	33.1744	39.75	42.74	2.99	49.90	12:27
2	TOC	3.0924	30.9244	38.06	40.89	2.83	49.89	12:26

Dilution: 1:10
Blank Contribution: (TC) 14.8329 (IC)
Method: Extended Reaction
Calibration: Extended Reaction

(v1223) 021711 (v4) 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1901414-003.01	0.9184 ppm	0.0177 ppm	1.9300%	2019/02/20 22:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9309	9.3088	21.83	24.48	2.66	49.90	12:29
2	TOC	0.9059	9.0585	21.64	24.47	2.83	49.84	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1901414-004.01	2.7753 ppm	0.1470 ppm	5.3000%	2019/02/20 22:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8793	28.7930	36.46	39.50	3.04	49.93	12:27
2	TOC	2.6713	26.7134	34.90	37.80	2.90	49.95	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1900799-044.03 doc	1.8956 ppm	0.0372 ppm	1.9600%	2019/02/20 23:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9219	19.2193	29.27	32.08	2.81	49.93	12:28
2	TOC	1.8693	18.6934	28.87	31.65	2.78	49.92	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1900799-044.03 ms doc	21.4591 ppm	0.0000 ppm	0.0000%	2019/02/20 23:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.4591	214.5906	176.02	178.79	2.78	49.89	12:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	RB	0.0358 ppm	0.0506 ppm	141.4200%	2019/02/21 00:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0715	0.7150	15.37	18.17	2.80	49.94	12:30
2	TOC	0.0000	0.0000	13.95	16.73	2.78	49.94	12:27

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	FB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 00:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.63	16.50	2.86	49.94	12:28
2	TOC	0.0000	0.0000	13.73	16.79	3.05	49.88	12:25

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711

From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.8477 ppm (PASS)	0.0000 ppm	0%	2019/02/21 01:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8477	248.4769	202.49	205.40	2.92	49.92	12:31

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711

From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/21 01:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	14.06	16.91	2.85	49.91	12:32

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

STD Conc - Pos D: 0 ppmC

Sample Type: Sample

From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 01:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.02	15.75	2.74	49.89	12:26
2	TOC	0.0000	0.0000	13.16	16.19	3.03	49.90	12:28
3	TOC	0.0000	0.0000	13.14	15.83	2.68	49.89	12:26
4	TOC	0.0000	0.0000	12.58	15.37	2.79	49.90	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> LCS ER

From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS ER [25.0 ppm]	0 / infinity (NA / NA)	24.5559 ppm (PASS)	0.1476 ppm	0.60%	2019/02/21 02:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7160	247.1602	201.50	204.25	2.76	49.91	12:28
C	TOC	25.0 ppm	2	24.3586	243.5856	198.81	201.56	2.75	49.90	12:26
C	TOC	25.0 ppm	3	24.5821	245.8209	200.49	203.41	2.92	49.88	12:25
C	TOC	25.0 ppm	4	24.5669	245.6691	200.38	203.21	2.84	49.91	12:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	25 ppmC

Sample Type: Sample

From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1900865-001.03 doc	0.9951 ppm	0.1007 ppm	10.1200%	2019/02/21 03:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0663	10.6628	22.84	25.68	2.84	49.89	12:27
2	TOC	0.9238	9.2383	21.77	24.62	2.85	49.92	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1900865-001.03 ms doc	27.2617 ppm	0.0000 ppm	0.0000%	2019/02/21 04:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.2617	272.6170	219.60	222.25	2.64	49.89	12:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 04:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	13.62	16.54	2.92	49.88	12:27
2	TOC	0.0000	0.0000	13.48	16.19	2.71	49.89	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1900865-002.03 doc 100x	0.3389 ppm	0.0554 ppm	16.3600%	2019/02/21 05:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3781	3.7811	17.67	20.39	2.71	49.88	12:30
2	TOC	0.2997	2.9970	17.08	20.06	2.98	49.92	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 05:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	12.48	15.24	2.76	49.90	12:25
2	TOC	0.0000	0.0000	11.55	14.53	2.98	49.93	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1901075-002.02 doc	5.1862 ppm	0.0074 ppm	0.1400%	2019/02/21 06:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.1809	51.8092	53.75	56.78	3.03	49.91	12:30
2	TOC	5.1914	51.9143	53.83	56.76	2.93	49.91	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC)	Extended Reaction	Extended Reaction

(v1223) 021711 (v4) 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	65	TOC	K1901075-002.02 ms doc	31.4271 ppm	0.0000 ppm	0.0000%	2019/02/21 06:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.4271	314.2706	250.89	253.86	2.97	49.92	12:29

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	66	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 07:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	14.02	17.01	2.99	49.90	12:27
2	TOC	0.0000	0.0000	12.87	15.83	2.96	49.91	12:29

Dilution: 1:10

Blank Contribution: (TC) 14.8329 (IC) (v1223)

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.7412 ppm (PASS)	0.0000 ppm	0%	2019/02/21 07:42

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7412	247.4118	201.69	204.61	2.92	49.92	12:32

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: Extended Reaction 021711 (v4)

Calibration: Extended Reaction 021711 (v26)

STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/21 07:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	13.31	16.18	2.86	49.92	12:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	0 ppmC

Sample Type: Sample From Schedule Version 12

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	67	TOC	K1901075-001.02 doc	3.5784 ppm	0.0394 ppm	1.1000%	2019/02/21 08:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5506	35.5056	41.50	44.53	3.03	49.89	12:26
2	TOC	3.6063	36.0634	41.92	44.95	3.03	49.93	12:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	68	TOC	K1901312-002.02 doc	2.9288 ppm	0.0851 ppm	2.9100%	2019/02/21 08:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9890	29.8900	37.28	40.31	3.03	49.85	12:29
2	TOC	2.8686	28.6865	36.38	39.34	2.96	49.92	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	69	TOC	K1901312-002.02 ms doc	28.5389 ppm	0.0000 ppm	0.0000%	2019/02/21 09:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.5389	285.3886	229.20	232.23	3.03	49.89	12:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	70	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/02/21 09:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	12.86	15.92	3.06	49.89	12:26
2	TOC	0.0000	0.0000	12.14	15.05	2.91	49.87	12:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1901312-004.02 doc	2.1194 ppm	0.0324 ppm	1.5300%	2019/02/21 10:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1423	21.4227	30.92	33.84	2.92	49.88	12:30
2	TOC	2.0965	20.9647	30.58	33.55	2.97	49.88	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	K1900657-001.14	1.2982 ppm	0.0565 ppm	4.3500%	2019/02/21 10:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3797	13.7968	25.20	28.02	2.82	49.85	12:29
2	TOC	1.2733	12.7330	24.40	27.40	3.01	49.89	12:27
3	TOC	1.2890	12.8901	24.52	27.27	2.76	49.92	12:30
4	TOC	1.2509	12.5094	24.23	27.26	3.03	49.91	12:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1900657-002.04	0.9715 ppm	0.0923 ppm	9.5000%	2019/02/21 11:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0961	10.9610	23.07	26.05	2.98	49.94	12:27
2	TOC	0.9851	9.8507	22.23	25.16	2.93	49.92	12:29
3	TOC	0.8907	8.9068	21.52	24.54	3.02	50.01	12:28
4	TOC	0.9141	9.1411	21.70	24.48	2.78	50.00	12:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1900657-002.04 ms	12.2664 ppm	0.0924 ppm	0.7500%	2019/02/21 12:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.2407	122.4074	106.78	109.61	2.83	50.02	12:29
2	TOC	12.2553	122.5525	106.88	109.71	2.82	50.09	12:29
3	TOC	12.1750	121.7497	106.28	109.18	2.90	50.04	12:24
4	TOC	12.3948	123.9478	107.93	110.77	2.83	50.06	12:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	RB	0.0607 ppm	0.0859 ppm	141.4200%	2019/02/21 13:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1214	1.2143	15.74	18.59	2.84	50.03	12:27
2	TOC	0.0000	0.0000	14.14	17.12	2.99	50.06	12:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 14.8329 (IC) (v1223)	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)

Sample Type: Check Standard --> CCV 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 021711 [25 ppm]	0 / infinity (NA / NA)	24.3743 ppm (PASS)	0.0000 ppm	0%	2019/02/21 14:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3743	243.7427	198.93	201.76	2.83	50.02	12:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	50 ppmC

Sample Type: Check Standard --> CCB 021711 From Schedule Version 12

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:2	[TOC] CCB 021711 [0.0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/02/21 14:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0.0 ppm	1	0.0000	0.0000	12.99	15.97	2.98	50.02	12:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	Extended Reaction 021711 (v4)	Extended Reaction 021711 (v26)	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
v1223	2.8390	1.8540	0.0000	0.0000	0.0000	2019/02/19 14:42	Fusion1 (Fusion1)

Calibrations

Name: Extended Reaction 021711 (TOC)

Version: v26
Calibration curve formula: TOC: y = 7.511x + 15.850
Ver Creation: 2019/01/31 18:04
r^2 value: TOC: r^2 = 0.99984
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
0.0 ppm	14.6070	0.0000		2019/01/31 16:25
0.50 ppm	19.2770	0.5000		2019/01/31 16:42
1.00 ppm	21.9140	1.0000		2019/01/31 16:58
5.00 ppm	53.0870	5.0000		2019/01/31 17:14
10.0 ppm	94.7080	10.0000		2019/01/31 17:31
25.0 ppm	204.1870	25.0000		2019/01/31 17:47
50.0 ppm	390.4490	50.0000		2019/01/31 18:03

Methods

Name: Extended Reaction 021711 (TOC)

Version: v4
Operator: Fusion1 (Fusion1)
Ver Creation: 2019/01/31 11:21
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	4.00 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	2019/02/21 14:59

ALS Environmental

StarLIMS Run: 625673, 625674, 625676, 625678

Analysis: TOC

Method: 9060, 9060A, 415.1, SM 5310 C

CCV: 11-GEN-05-74N 50 ppm LCS: 11-GEN-05-74L 25.0 ppm

ICAL Date: 1/24/19

ICAL ID: 11-GEN-05-74O

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-70O 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-75H

21 % H3PO4: 11-GEN-05-75F

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F

FILTER ID: NA

Analyzed By: BCD	Date Analyzed: 2/19/19
Reviewed By:	Date Reviewed: 02/25/19

LABORATORY REPORT

February 26, 2019

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

RE: HS19020720

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on February 15, 2019. For your reference, these analyses have been assigned our service request number P1900794.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Kaneko

By Kate Kaneko at 11:57 am, 02/26/19

Kate Kaneko
Laboratory Director

Client: ALS Laboratory Group Service Request No: P1900794
Project: HS19020720

CASE NARRATIVE

The samples were received intact under chain of custody on February 15, 2019 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The percent recoveries and relative percent difference for the matrix spike and its duplicate for the sample labeled P1900794-003 (35BWW04-190213) were outside the DOD control limits due to matrix interference. However, all quality control parameters were within limits for the laboratory control sample and it's duplicate.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P1900794-001	Methane

Client: ALS Laboratory Group Service Request No: P1900794
Project: HS19020720

The percent recoveries for the matrix spike and its duplicate for the sample labelled 35BWW04-190213 (P1900794-003) were outside the DOD quality control limits. However, all quality control parameters were within limits for the laboratory control sample and it's duplicate.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1521096
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Service Request: P1900794
Project ID: HS19020720

Date Received: 2/15/2019
Time Received: 09:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35BWW12-190213	P1900794-001	Water	2/13/2019	08:15	X	X
35BWW12-190213-FD	P1900794-002	Water	2/13/2019	08:15	X	X
35BWW04-190213	P1900794-003	Water	2/13/2019	09:30	X	X

P1900794

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

COC ID: 10750

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

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:	HS19020720
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19020720-01**	**35BWW12-190213**	**Groundwater**	**13 Feb 2019 08:15**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			28 Feb 2019
2.	**HS19020720-02**	**35BWW12-190213-FD**	**Groundwater**	**13 Feb 2019 08:15**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			28 Feb 2019
3.	**HS19020720-03**	**35BWW04-190213**	**Groundwater**	**13 Feb 2019 09:30**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			28 Feb 2019

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

MS/MSD HS19020720-03

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. MANLUAN — Date/Time: 2/14/19 18:00

Received By: — Date/Time: 2/15/19 0800

Cooler ID(s): — Temperature(s): 2°C not ICE

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1900794

Project: HS19020720

Sample(s) received on: 2/15/19 Date opened: 2/15/19 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C Thermometer ID CO907034581 Wet Ice			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☒	☐	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☒	☐
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1900794-001.01	40mL VOA NP		6		A	MR 02/20/19
P1900794-001.02	40mL VOA NP				A	
P1900794-001.03	40mL VOA NP				A	
P1900794-001.04	40ml VOA HCL		1		A	MR 02/19/19
P1900794-001.05	40ml VOA HCL				A	
P1900794-001.06	40ml VOA HCL				A	
P1900794-002.01	40mL VOA NP		6		A	MR 02/20/19
P1900794-002.02	40mL VOA NP				A	
P1900794-002.03	40mL VOA NP				A	
P1900794-002.04	40ml VOA HCL		1		A	MR 02/19/19
P1900794-002.05	40ml VOA HCL				A	
P1900794-002.06	40ml VOA HCL				A	
P1900794-003.01	40mL VOA NP		6		A	MR 02/20/19
P1900794-003.02	40mL VOA NP		6		A	MR 02/20/19
P1900794-003.03	40mL VOA NP		6		A	MR 02/20/19

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1900794

Project: HS19020720

Sample(s) received on: 2/15/19 Date opened: 2/15/19 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1900794-003.04	40ml VOA HCL		1		A	MR 02/21/19
P1900794-003.05	40ml VOA HCL		1		A	MR 02/21/19
P1900794-003.06	40ml VOA HCL		1		A	MR 02/21/19
P1900794-003.07	40mL VOA NP				A	
P1900794-003.08	40mL VOA NP				A	
P1900794-003.09	40mL VOA NP				A	
P1900794-003.10	40mL VOA NP				A	
P1900794-003.11	40mL VOA NP				A	
P1900794-003.12	40mL VOA NP				A	
P1900794-003.13	40ml VOA HCL				A	
P1900794-003.14	40ml VOA HCL				A	
P1900794-003.15	40ml VOA HCL				A	
P1900794-003.16	40ml VOA HCL				A	
P1900794-003.17	40ml VOA HCL				A	
P1900794-003.18	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS19020720** ALS Project ID: P1900794

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date(s) Collected: 2/13/19
Date Received: 2/15/19
Date Analyzed: 2/20/19

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35BWW12-190213	P1900794-001	0.050	**570,000**	2,000	1,700	740	
35BWW12-190213-FD	P1900794-002	0.050	**640,000**	2,000	1,700	740	
35BWW04-190213	P1900794-003	0.050	**800,000**	2,000	1,700	740	
Method Control Sample	P190220-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW04-190213**
Client Project ID: **HS19020720**

ALS Project ID: P1900794
ALS Sample ID: P1900794-003MS
P1900794-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/13/19
Date Received: 2/15/19
Date Analyzed: 2/20/19
Volume(s) Analyzed: 0.050 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	45,800	797,000	826,000	802,000	**63**	**11**	80-122	141	30	**N, R**

N = The matrix spike sample recovery is not within control limits. See case narrative.
R = Duplicate precision not met.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1900794
Client Project ID: **HS19020720** ALS Sample ID: P190220-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Magaly Rodriguez Date Analyzed: 2/20/19
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	18,600	18,900	**81**	**83**	80-122	2	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW12-190213**
Client Project ID: **HS19020720**

ALS Project ID: P1900794
ALS Sample ID: P1900794-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/13/19
Date Received: 2/15/19
Date Analyzed: 2/19/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.2**	1.3	1.0	0.51	**J, B**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and associated method blank.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW12-190213-FD**
Client Project ID: **HS19020720**

ALS Project ID: P1900794
ALS Sample ID: P1900794-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/13/19
Date Received: 2/15/19
Date Analyzed: 2/19/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.3**	1.3	1.0	0.51	**B**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
B = Analyte detected in both the sample and associated method blank.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW04-190213**
Client Project ID: **HS19020720**

ALS Project ID: P1900794
ALS Sample ID: P1900794-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/13/19
Date Received: 2/15/19
Date Analyzed: 2/21/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS19020720**

ALS Project ID: P1900794
ALS Sample ID: P190219-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 2/19/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.56**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS19020720**

ALS Project ID: P1900794
ALS Sample ID: P190221-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 2/21/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.52**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW04-190213**
Client Project ID: **HS19020720**

ALS Project ID: P1900794
ALS Sample ID: P1900794-003MS
P1900794-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/13/19
Date Received: 2/15/19
Date Analyzed: 2/21/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	ND	1.74	1.66	**69**	**66**	73-125	4	30	**N**
74-85-1	Ethene	4.40	ND	2.63	2.76	**60**	**63**	72-133	5	30	**N**
74-84-0	Ethane	4.72	ND	2.79	2.87	**59**	**61**	74-131	3	30	**N**

N = The matrix spike recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS19020720**

ALS Project ID: P1900794
ALS Sample ID: P190219-LCS
P190219-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 2/19/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.44	2.50	**98**	**100**	73-125	2	26	
74-85-1	Ethene	4.37	4.51	4.52	**103**	**103**	72-133	0	11	
74-84-0	Ethane	4.69	4.75	4.76	**101**	**101**	74-131	0	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS19020720**

ALS Project ID: P1900794
ALS Sample ID: P190219-LCS
P190221-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 2/21/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.50	2.51	**100**	**100**	73-125	0	26	
74-85-1	Ethene	4.37	4.45	4.50	**102**	**103**	72-133	1	11	
74-84-0	Ethane	4.69	4.70	4.74	**100**	**101**	74-131	1	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:50:59
Operator : MR
Sample : P1900794-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 15:57:47 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

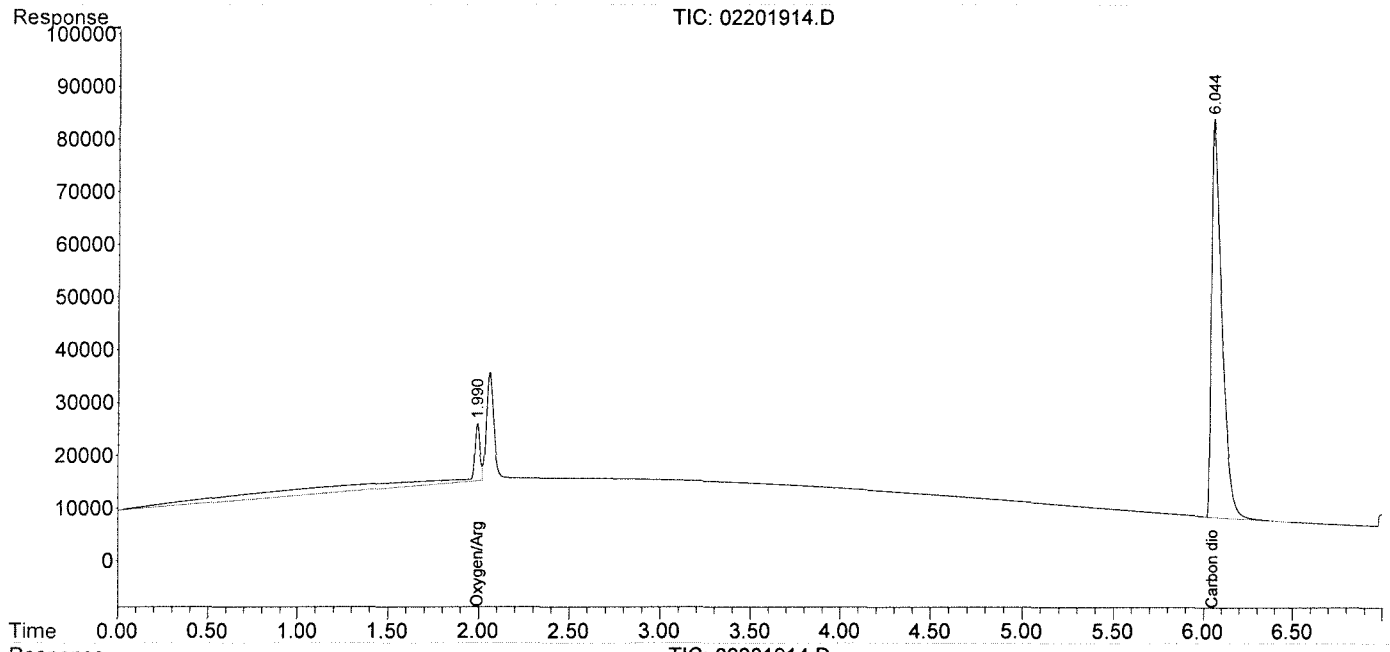
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.990f	1137676	0.239	ppm
2)	Carbon monoxide	1.990f	1137676	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.045	3059620	13034.680	ppm
6)	Methane (FID)	1.117	3559	0.377	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

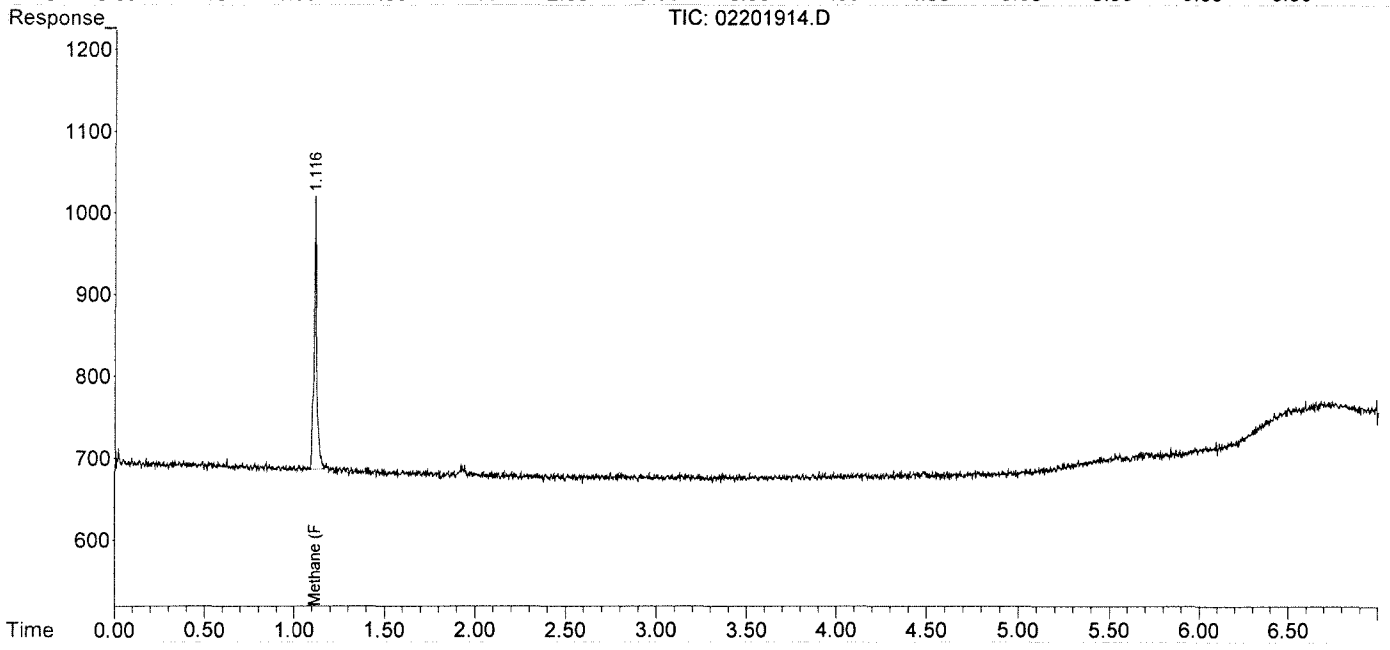
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 15:50:59
Operator : MR
Sample : P1900794-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 15:57:47 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:00:35
Operator : MR
Sample : P1900794-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 16:07:23 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

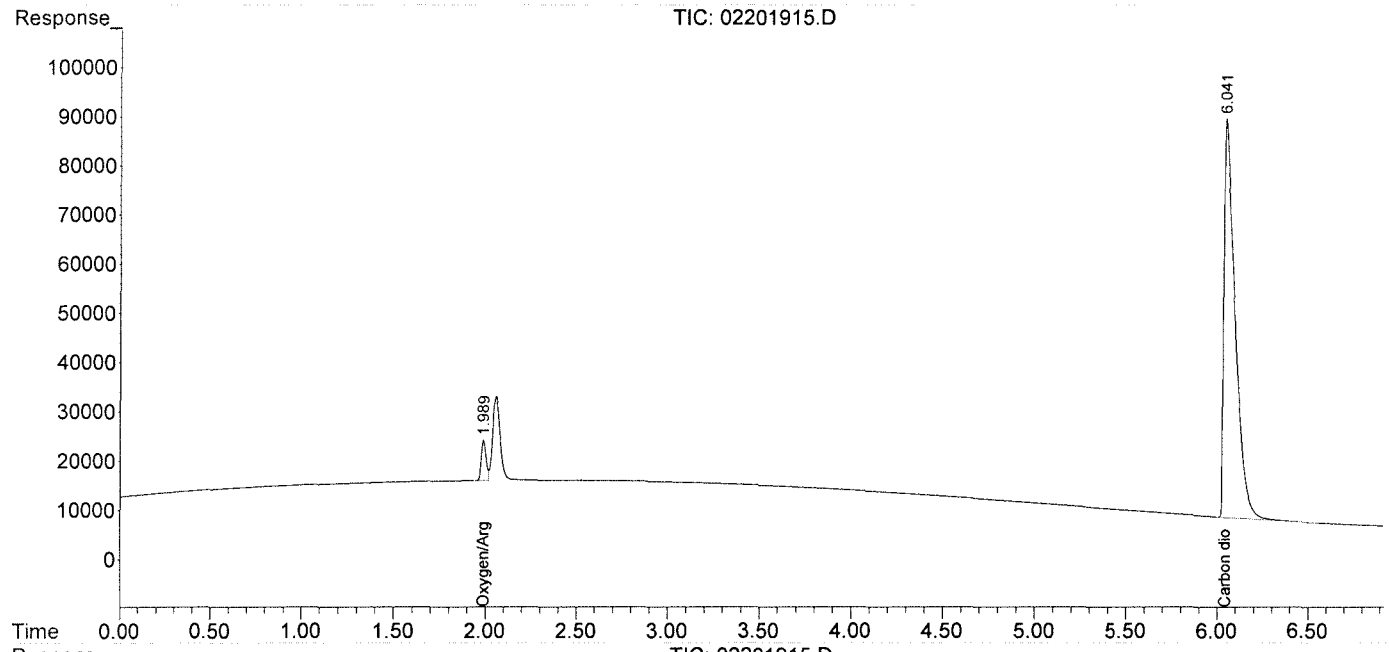
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.989f	148008	0.031	ppm
2)	Carbon monoxide	1.989f	148008	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.042	3429372	14609.907	ppm
6)	Methane (FID)	1.118	3633	0.385	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

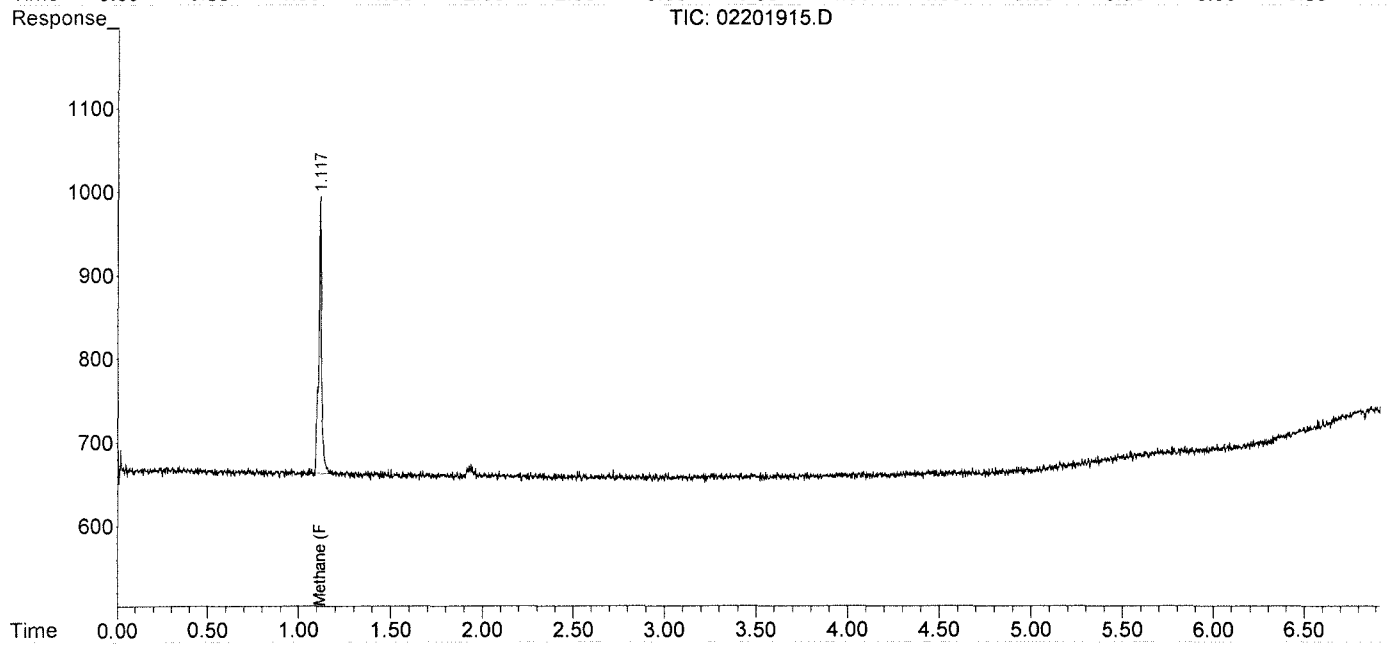
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:00:35
Operator : MR
Sample : P1900794-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 16:07:23 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:09:57
Operator : MR
Sample : P1900794-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 16:20:02 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

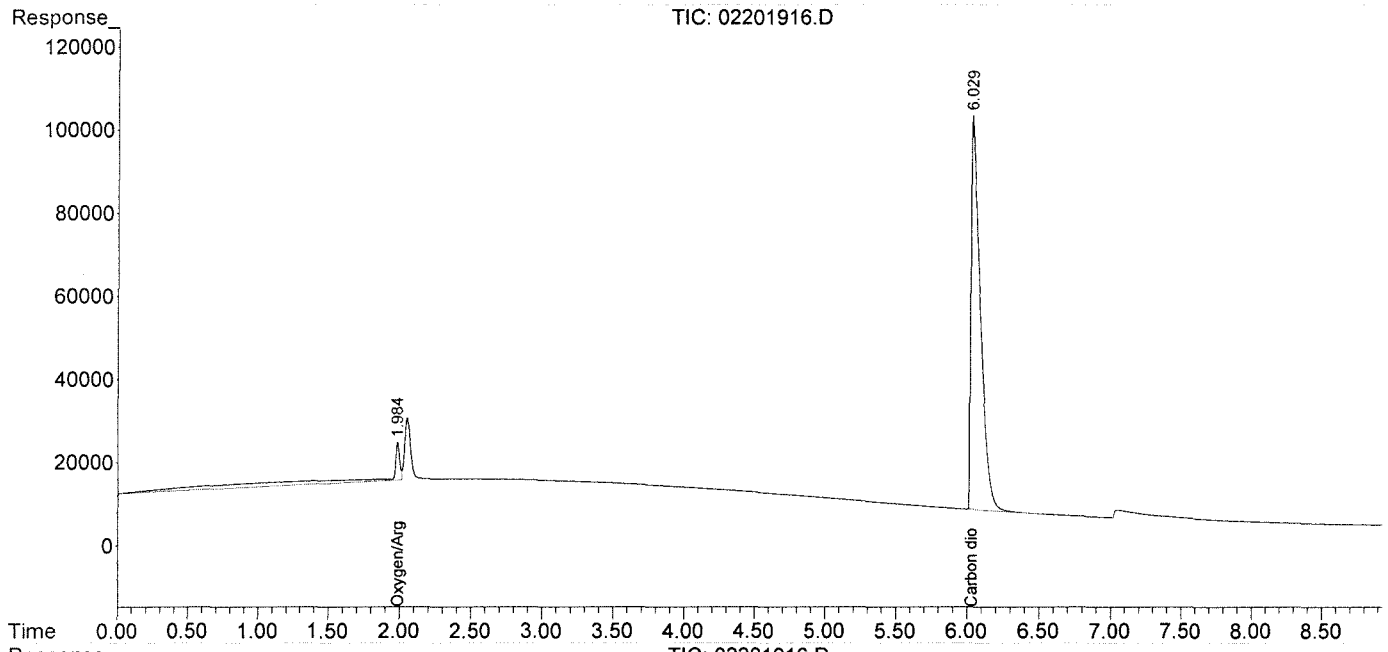
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.985f	896403	0.188	ppm
2)	Carbon monoxide	1.985f	896403	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.030	4285086	18255.445	ppm
6)	Methane (FID)	1.102	1899	0.201	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

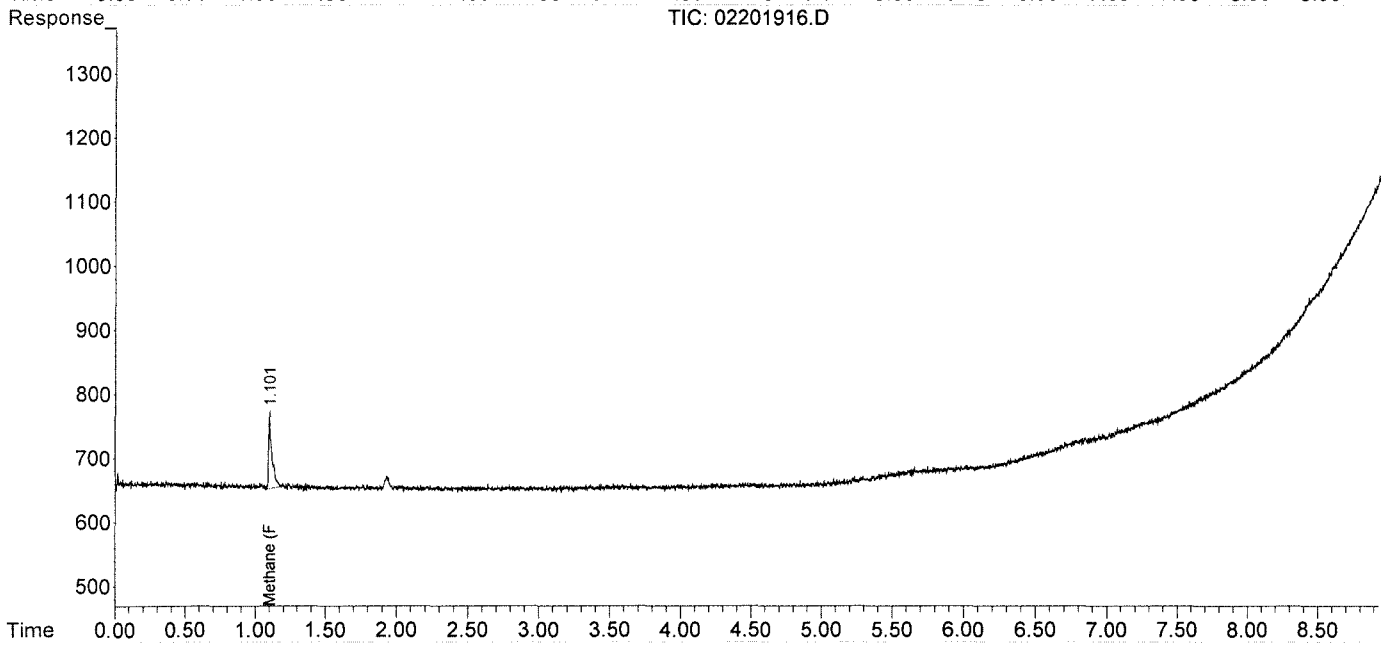
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:09:57
Operator : MR
Sample : P1900794-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 16:20:02 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 12:45:05
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 13:52:59 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

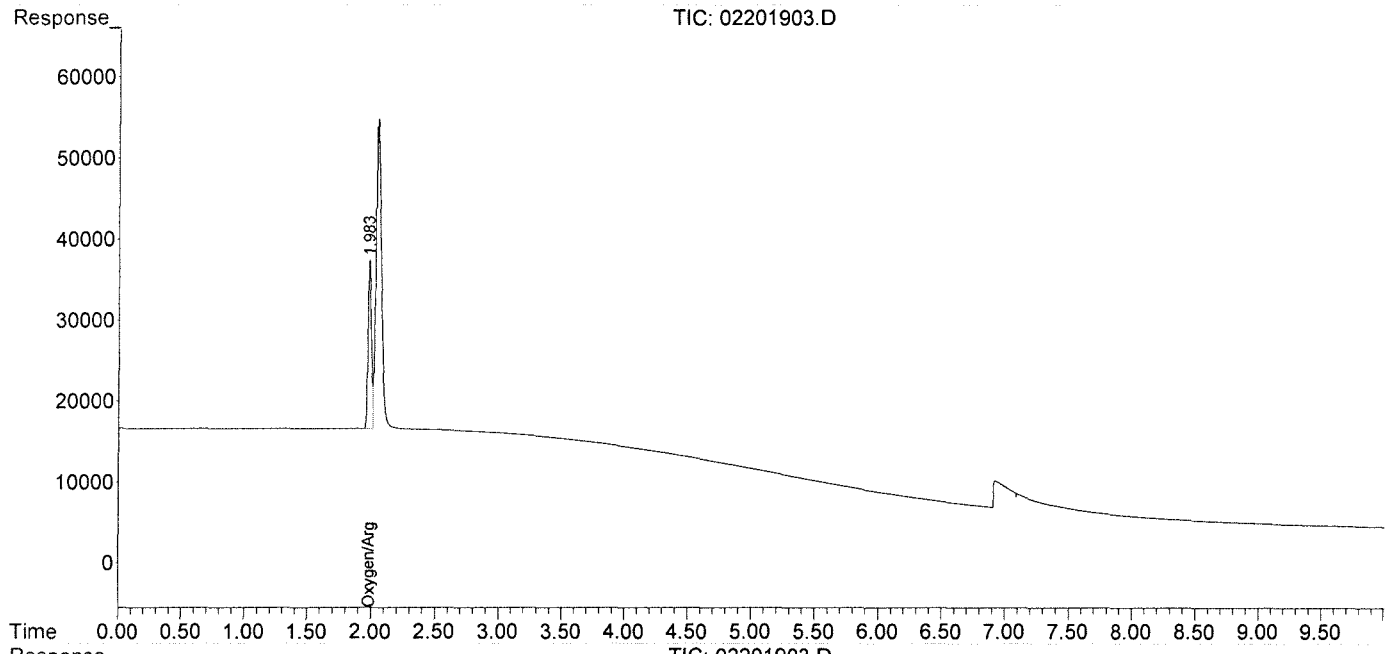
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.984f	377452	0.079	ppm
2)	Carbon monoxide	1.984f	377452	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

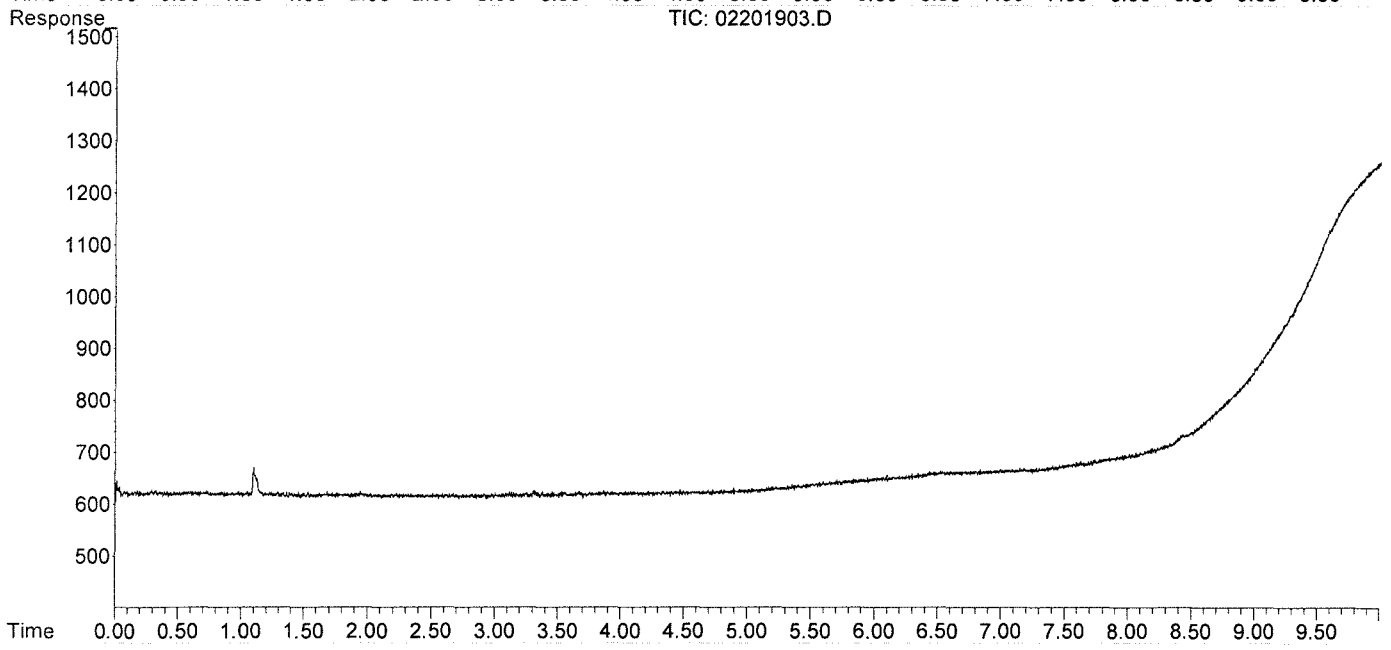
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 12:45:05
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 13:52:59 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:21:27
Operator : MR
Sample : P1900794-003ms 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 16:30:51 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

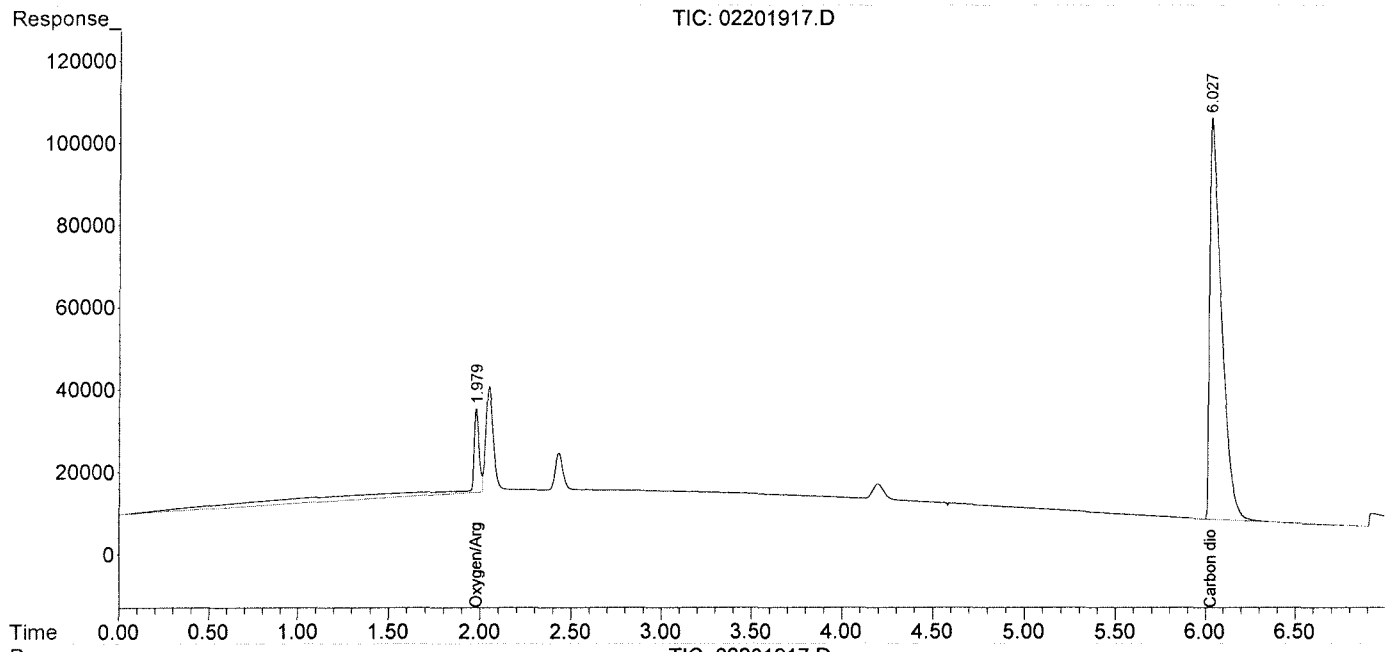
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.979f	1298284	0.273	ppm
2)	Carbon monoxide	1.979f	1298284	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.030	4439902	18914.998	ppm
6)	Methane (FID)	1.107	9533809	1009.102	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

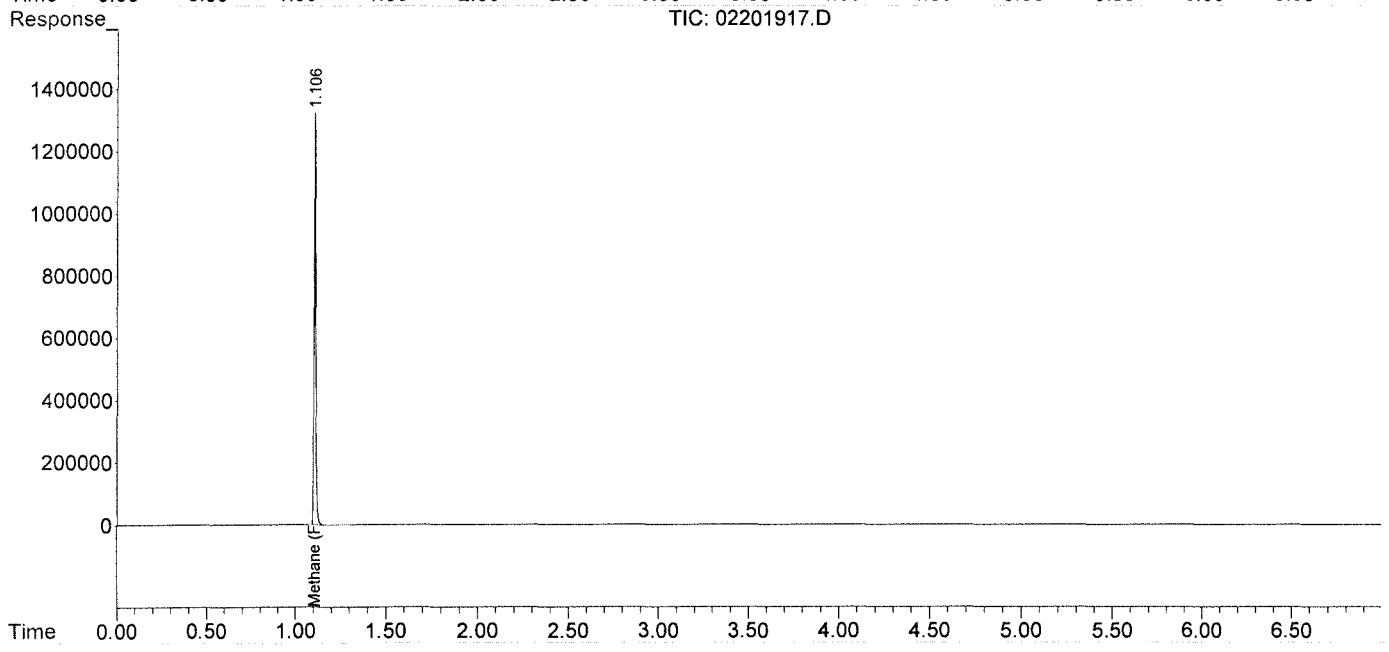
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:21:27
Operator : MR
Sample : P1900794-003ms 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 16:30:51 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:30:36
Operator : MR
Sample : P1900794-003msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 16:37:46 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

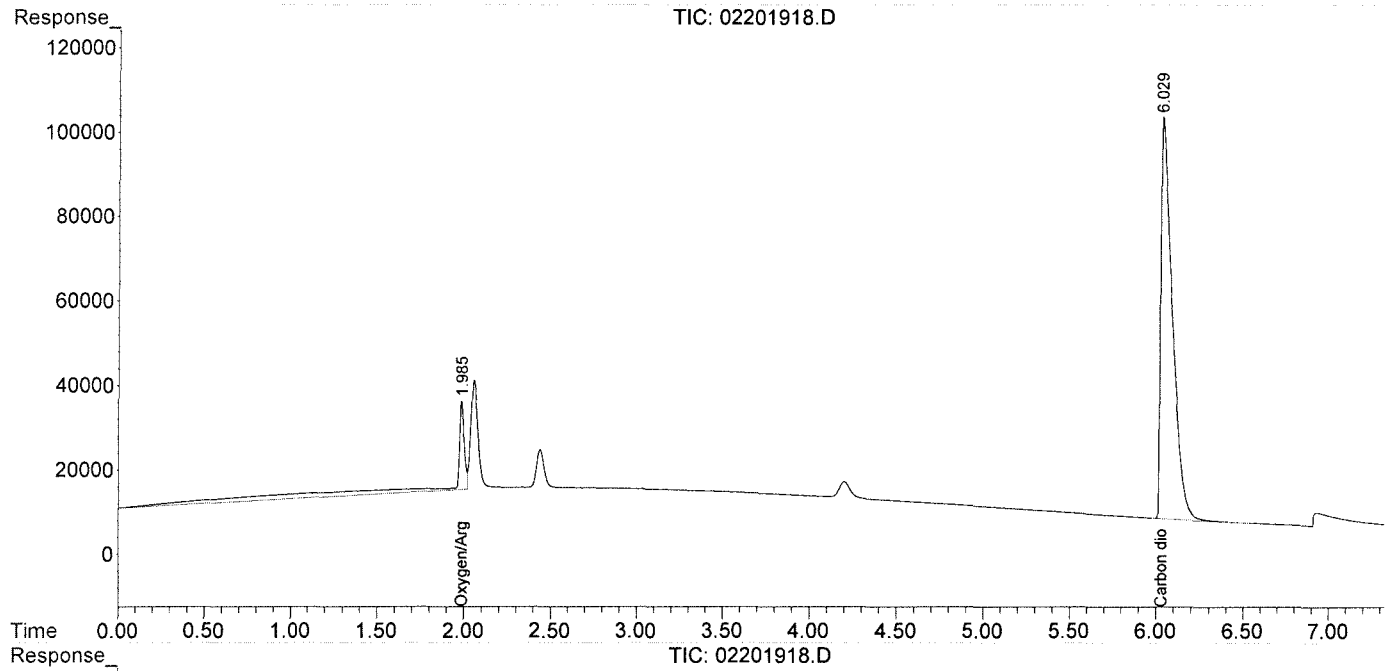
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.986f	1254840	0.264	ppm
2)	Carbon monoxide	1.986f	1254840	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.031	4315313	18384.218	ppm
6)	Methane (FID)	1.115	9690640	1025.702	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

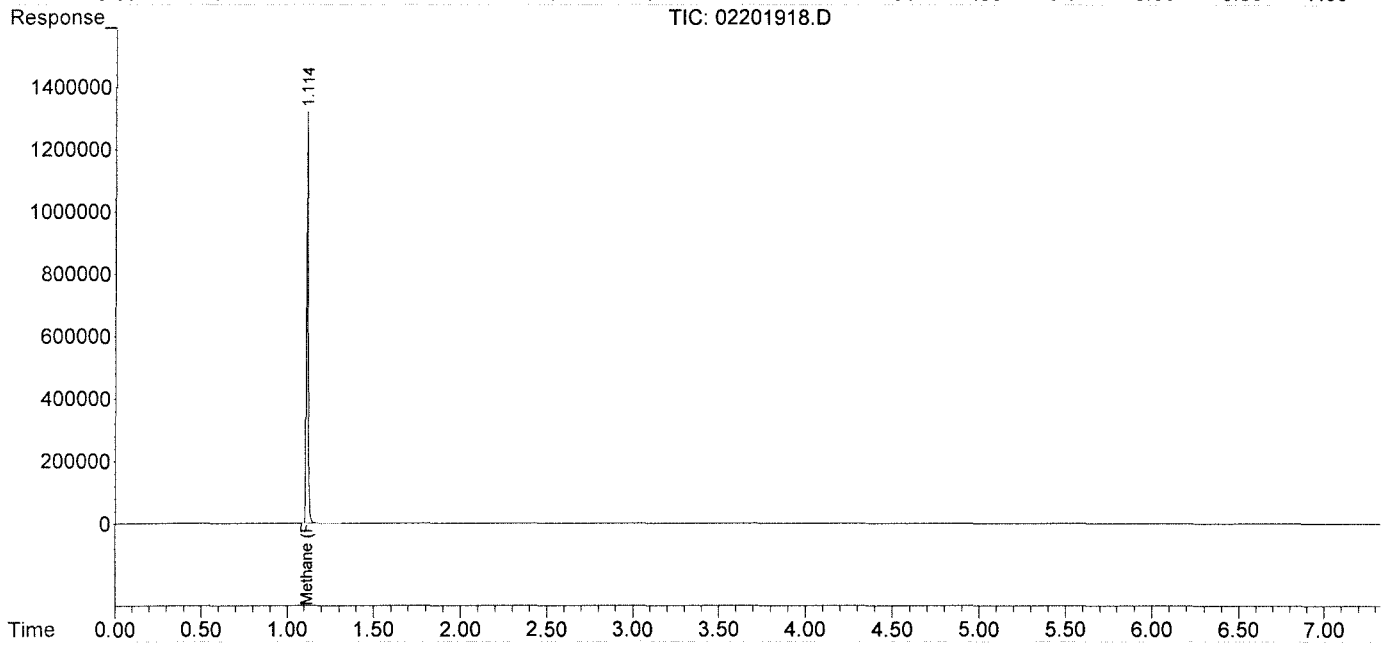
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:30:36
Operator : MR
Sample : P1900794-003msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 20 16:37:46 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 13:49:51
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:50:26 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

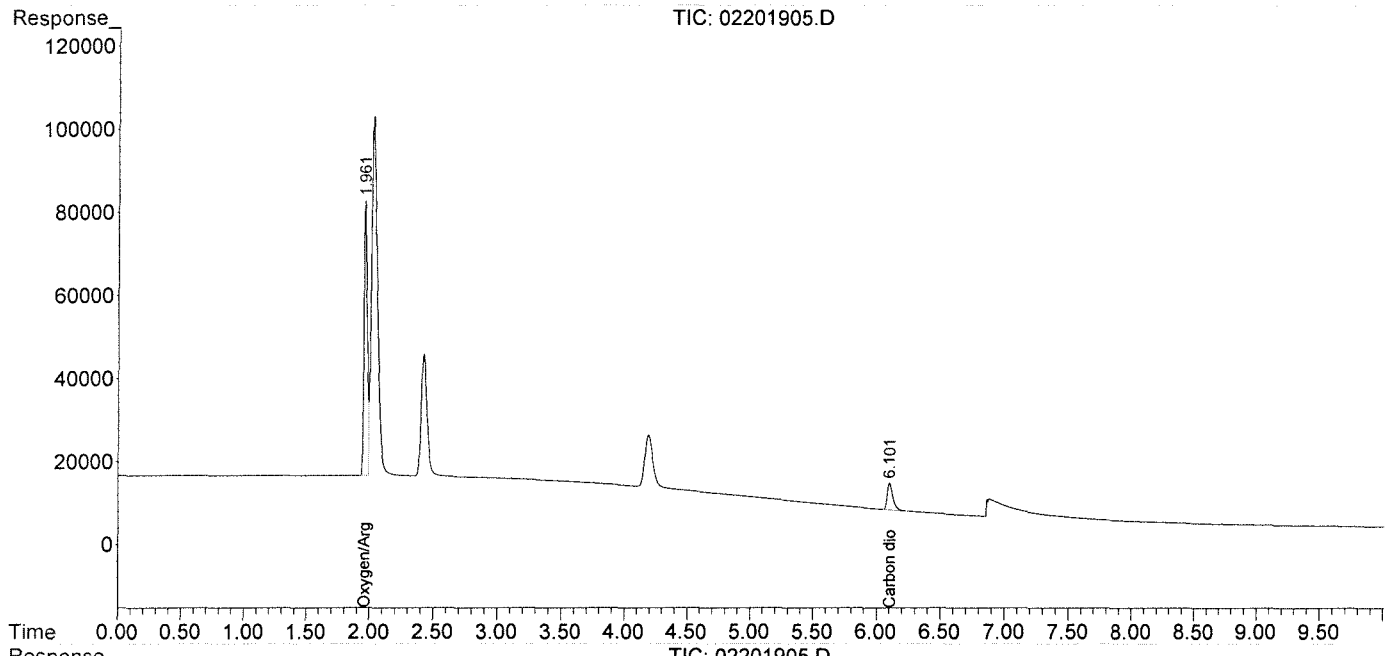
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.961f	1208789	0.254	ppm	
2)	Carbon monoxide	1.961f	1208789	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.101	200567	854.460	ppm	m
6)	Methane (FID)	1.105	33112115	3504.738	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

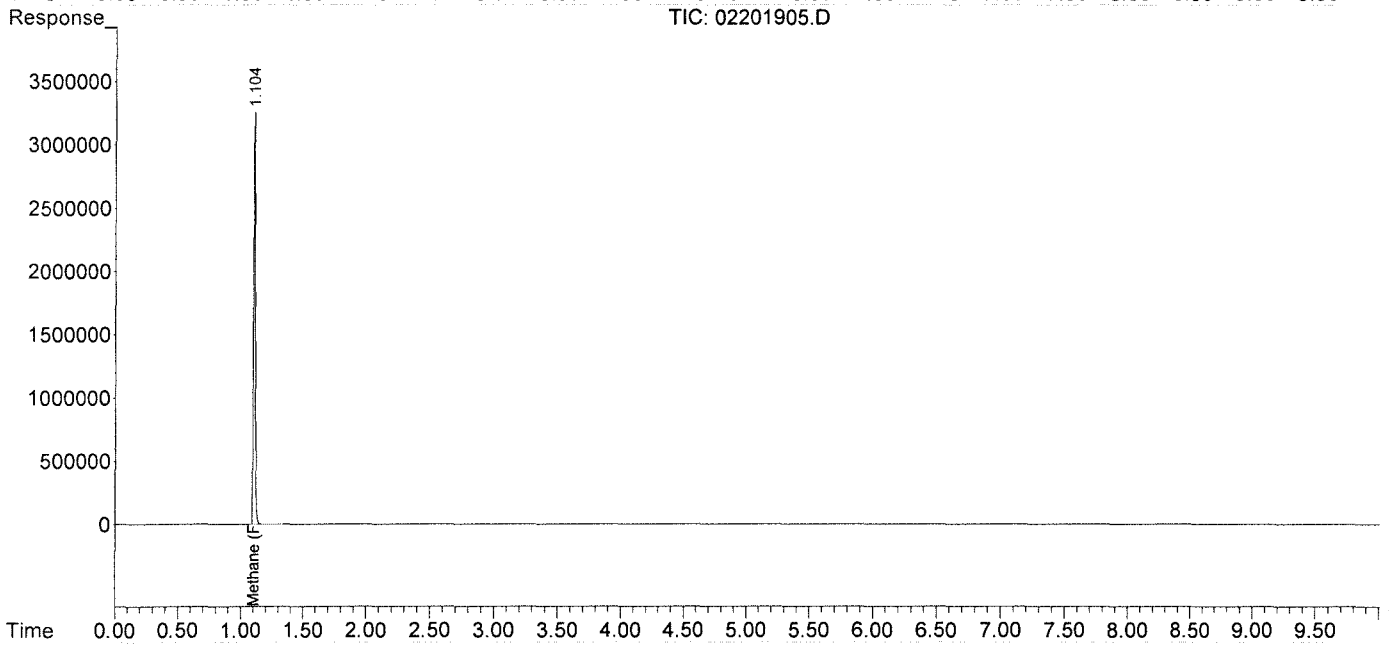
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 13:49:51
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:50:26 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

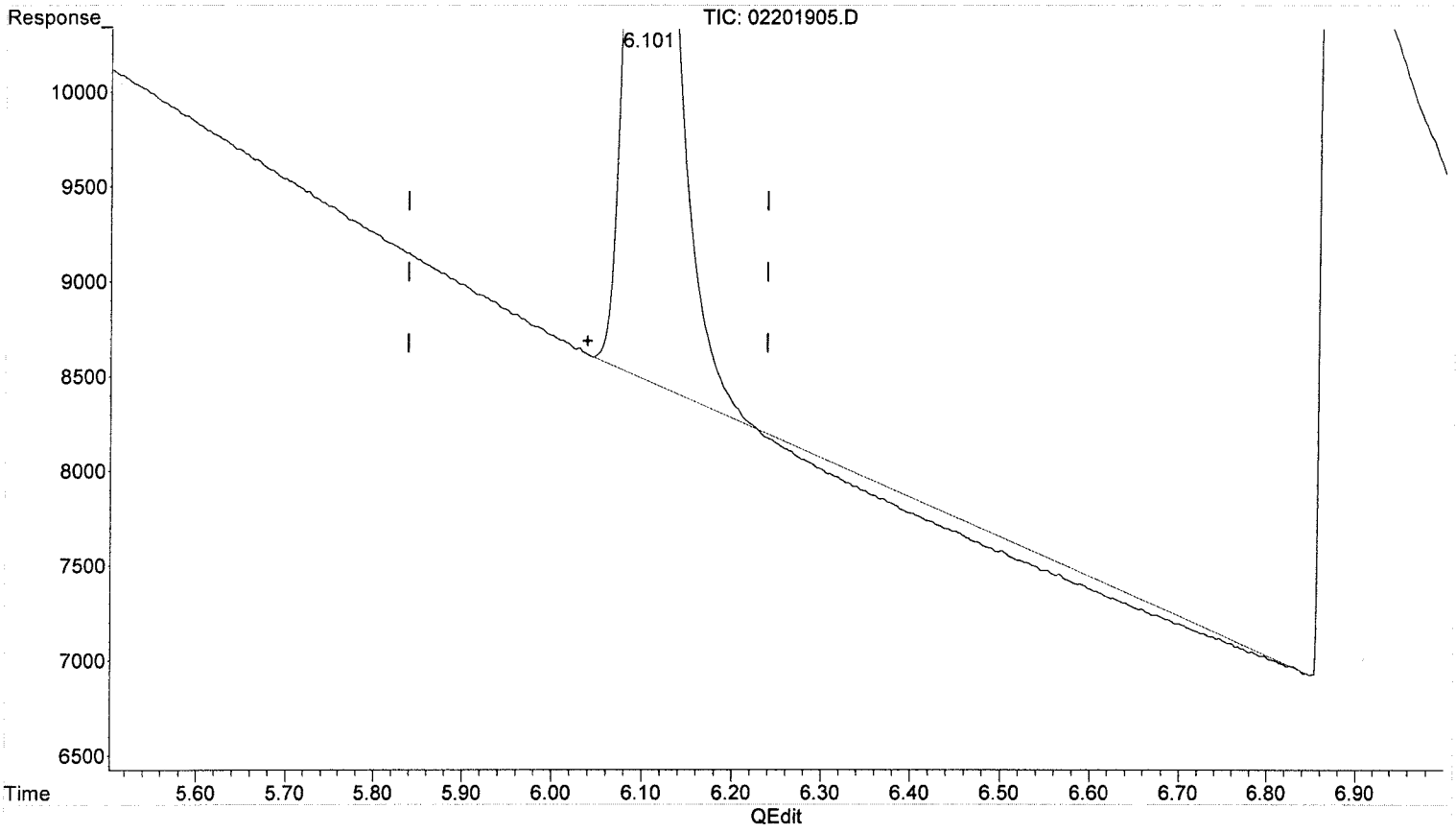




Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 13:49:51
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:50:26 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.102min 756.449 ppm

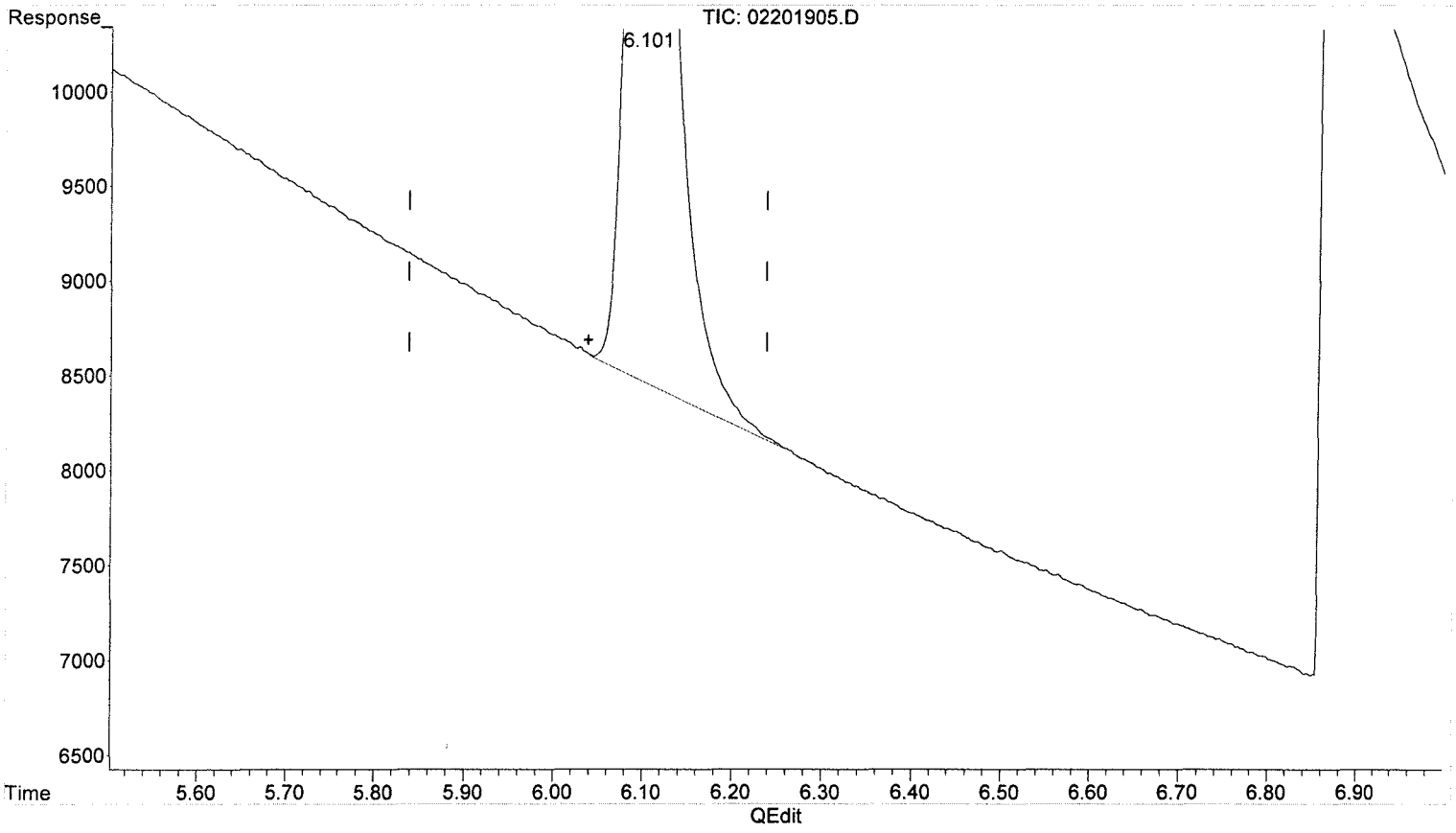
response 177561

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 13:49:51
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:50:26 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
6.101min 854.460 ppm m
response 200567

MR 02/21/19
BLC

(+) = Expected Retention Time
RS082817_CO2.M Thu Feb 21 13:50:49 2019

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:08:06
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:51:13 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

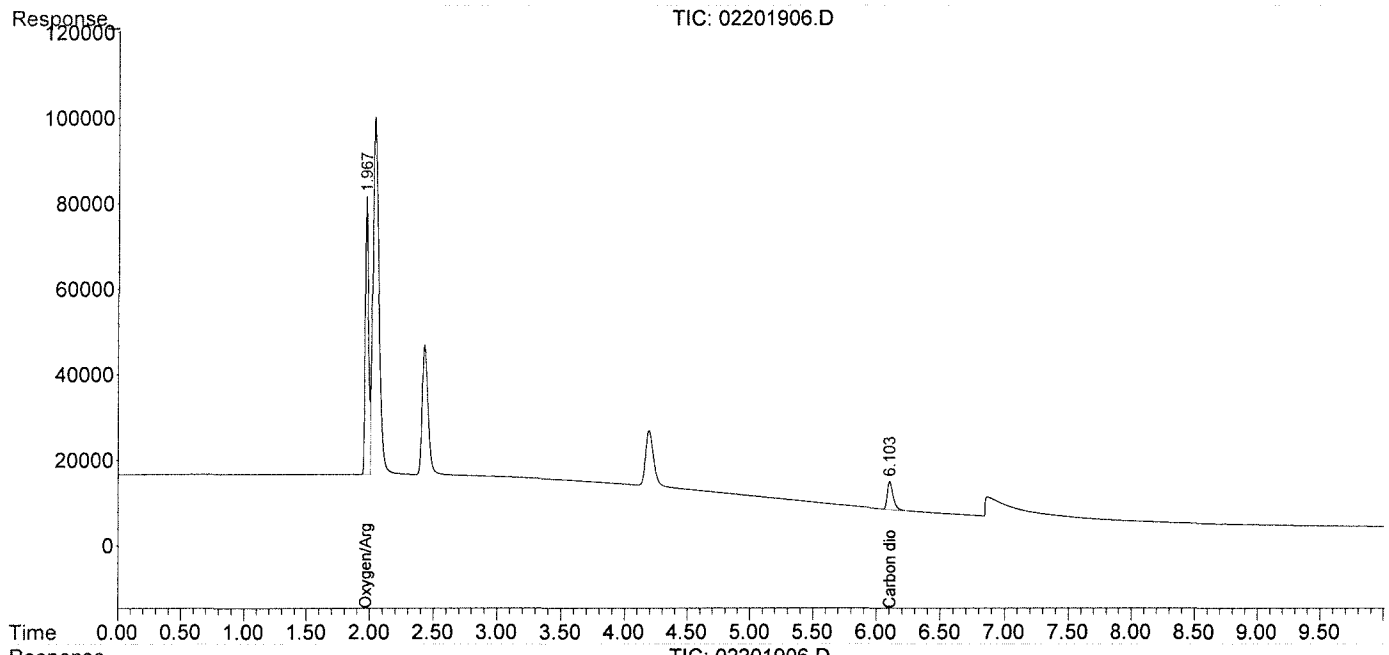
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.969f	1189819	0.250	ppm	
2)	Carbon monoxide	1.969f	1189819	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.103	203147	865.454	ppm	m
6)	Methane (FID)	1.112	34234890	3623.577	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

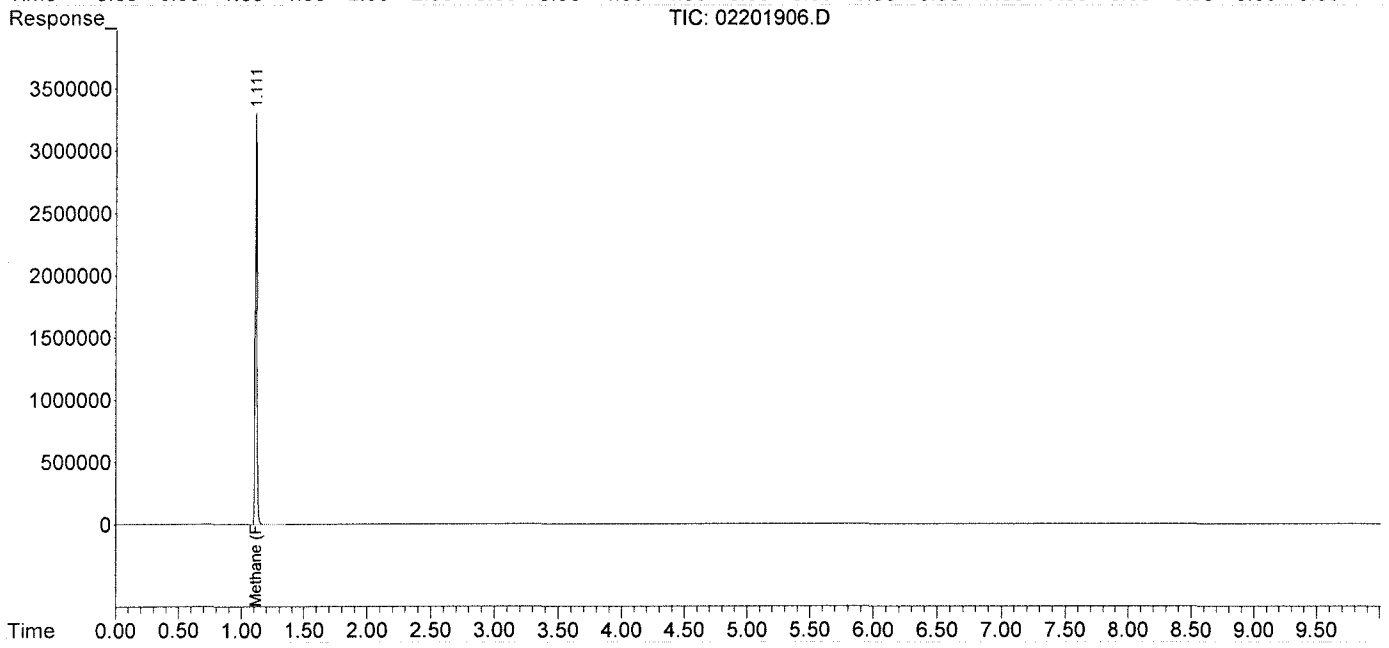
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:08:06
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:51:13 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

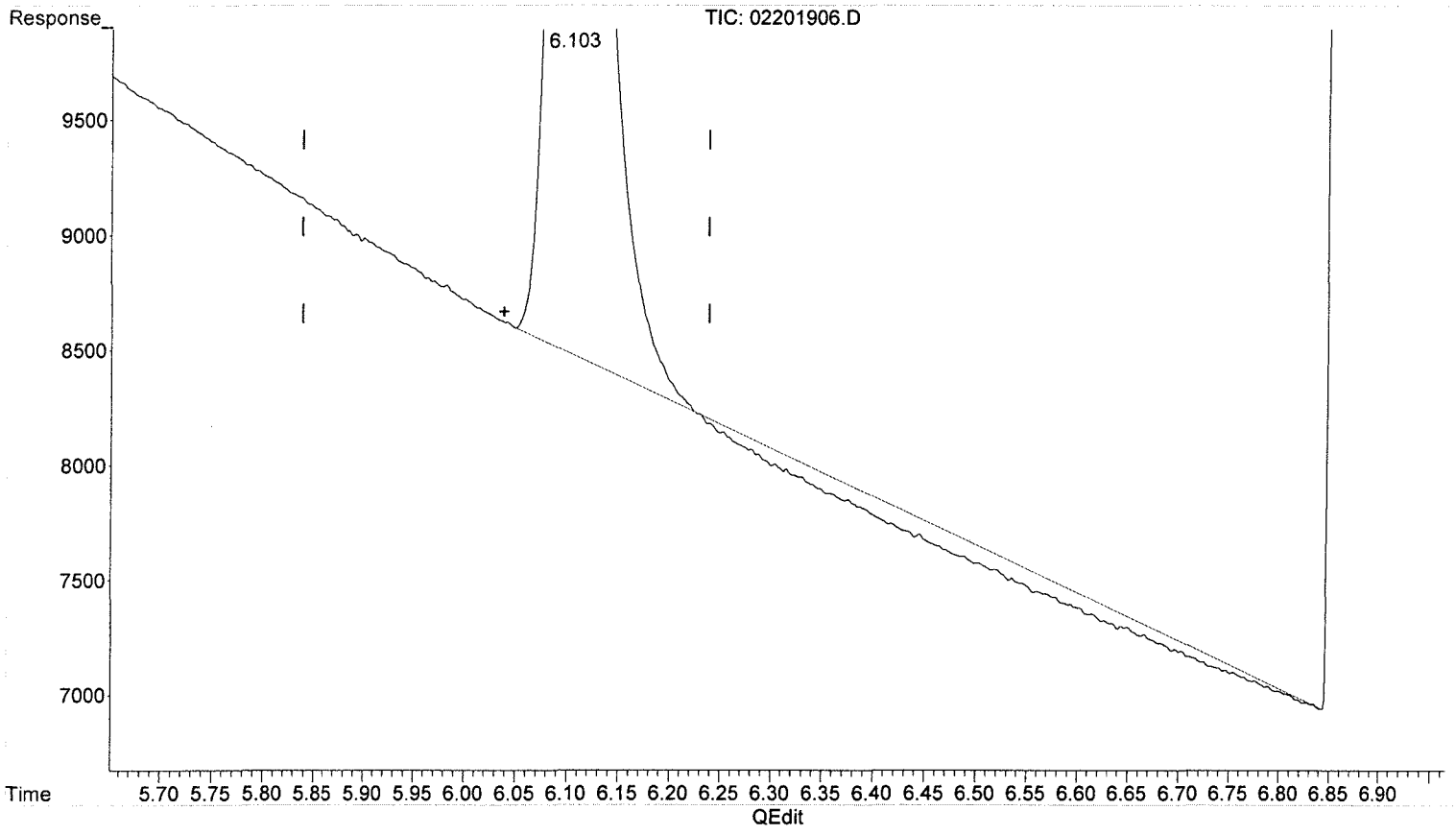




Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:08:06
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:51:13 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.103min 765.996 ppm

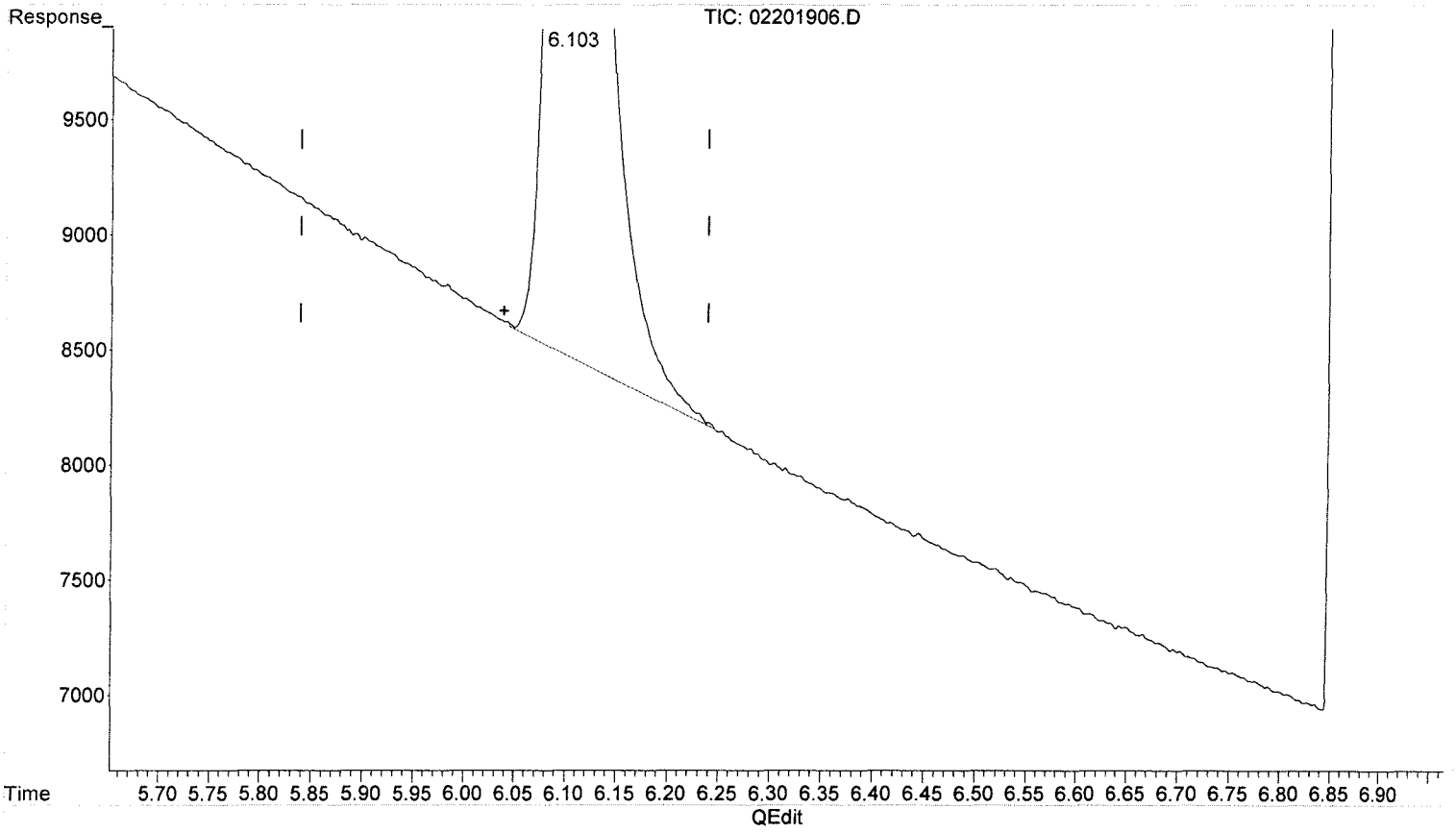
response 179802

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 14:08:06
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:51:13 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.103min 865.454 ppm m

response 203147

MR 02/21/19
BLC

2/21/19

(+) = Expected Retention Time

Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

dit Compounds -- Compound #4 -- Carbon dioxide

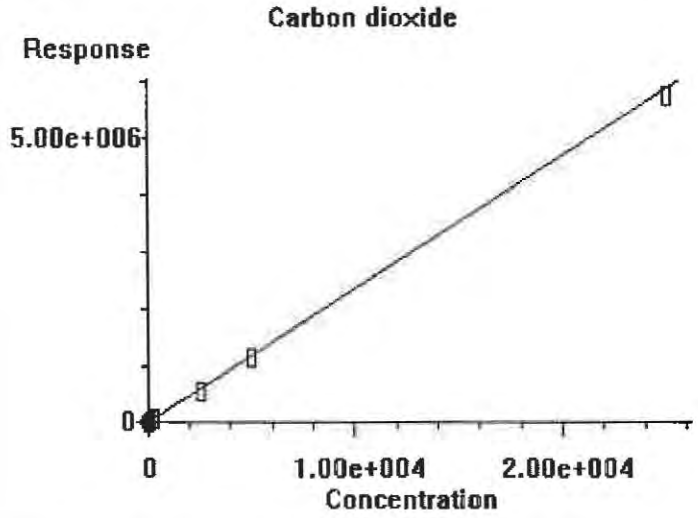
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

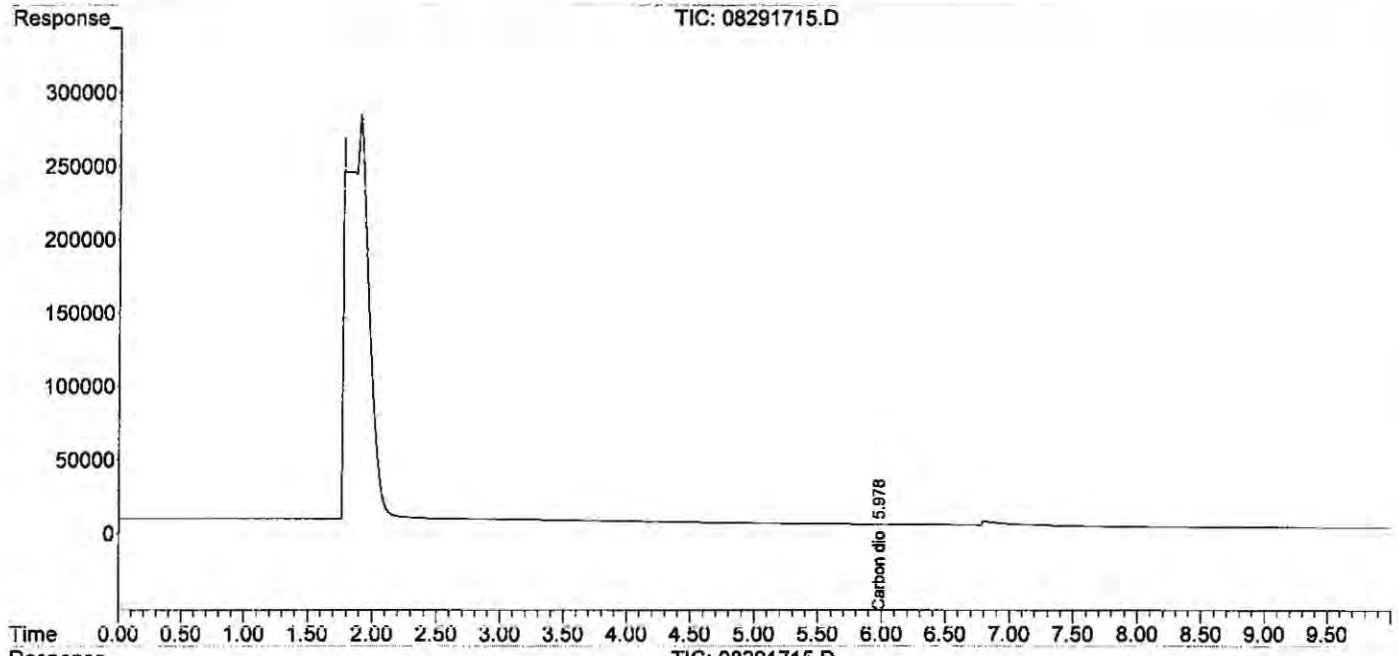
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

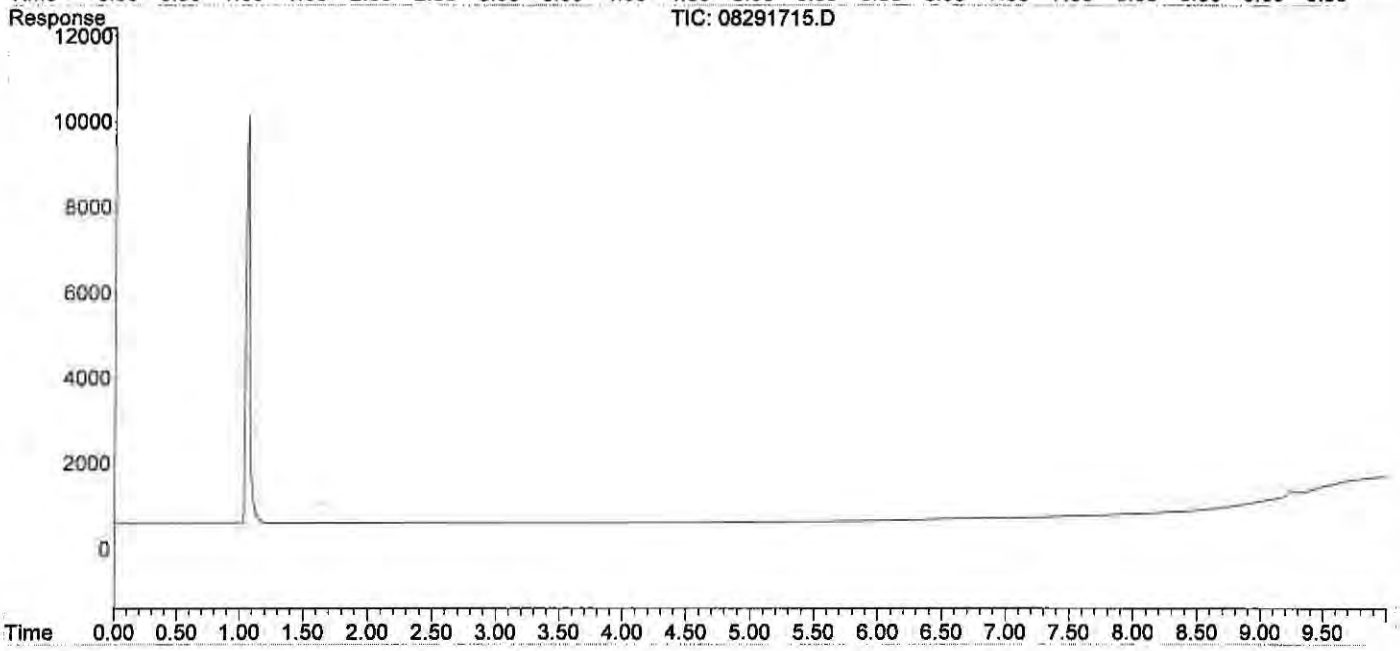
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



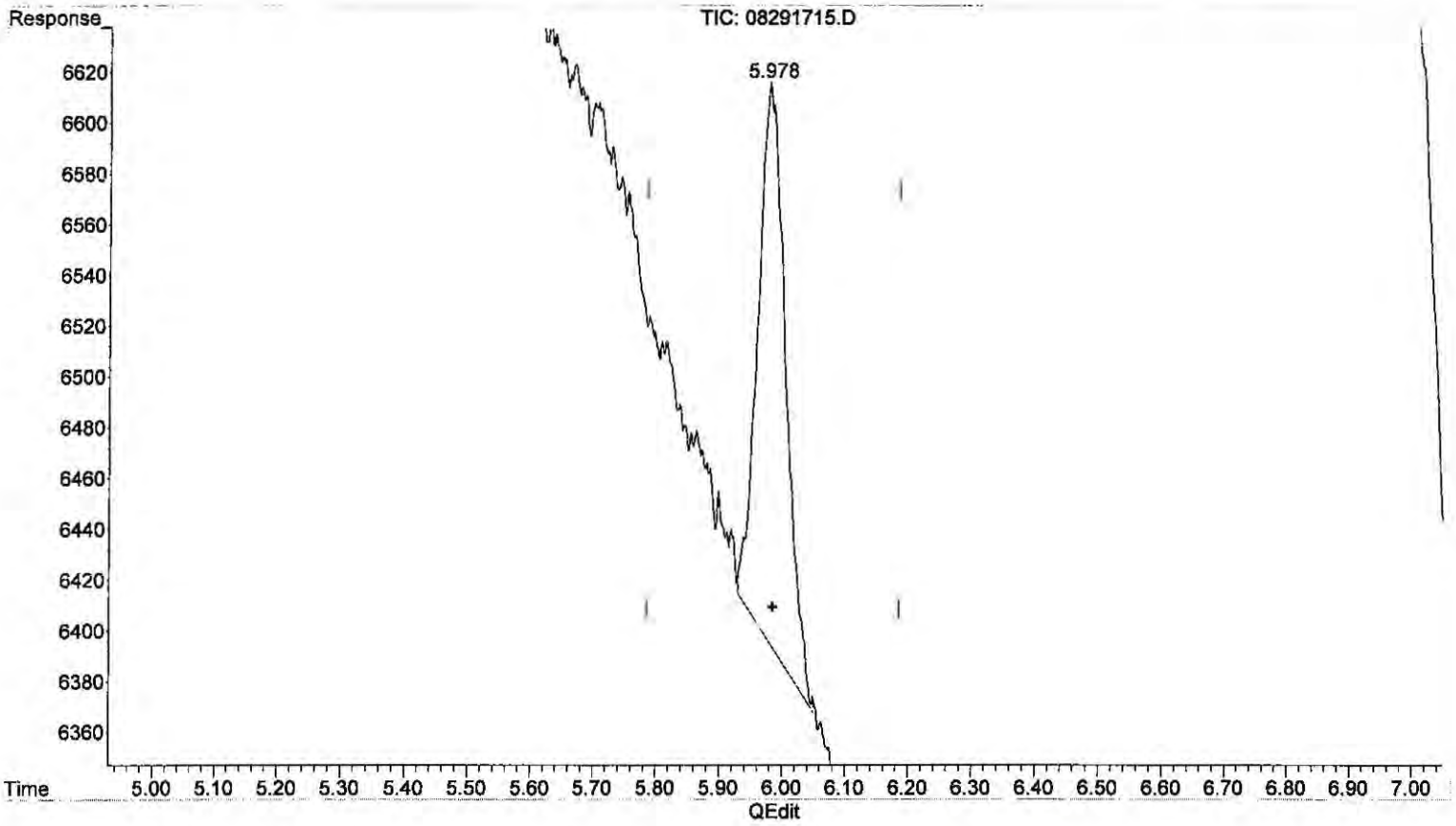


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.978min 27.870 ppm m

response 6794

(+) = Expected Retention Time

RS082817_CO2.M Wed Aug 30 13:17:47 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

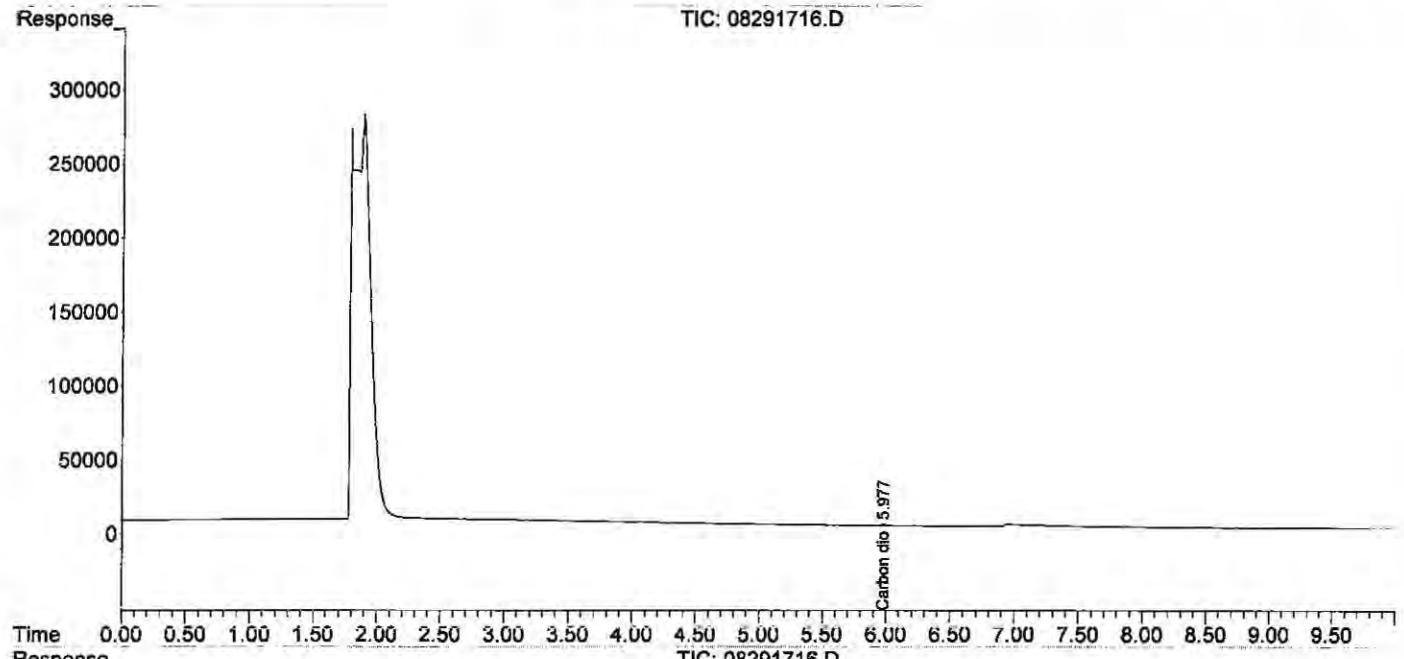
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

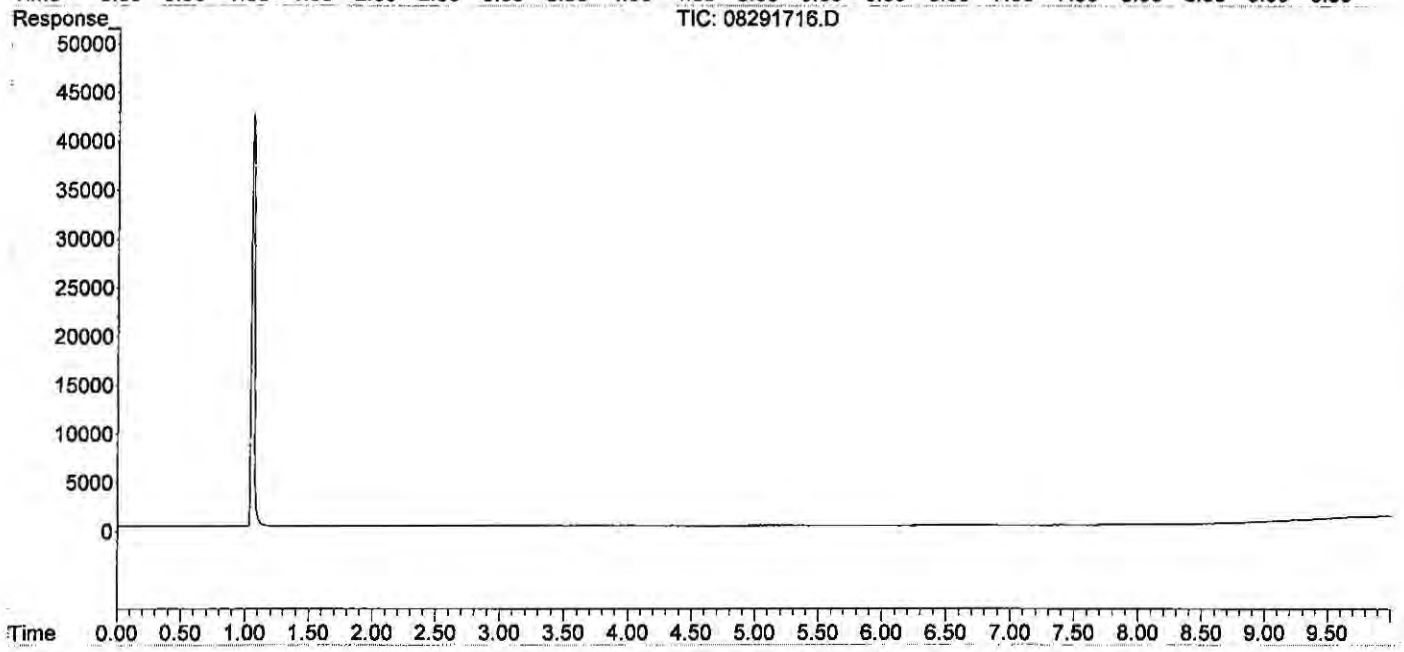
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

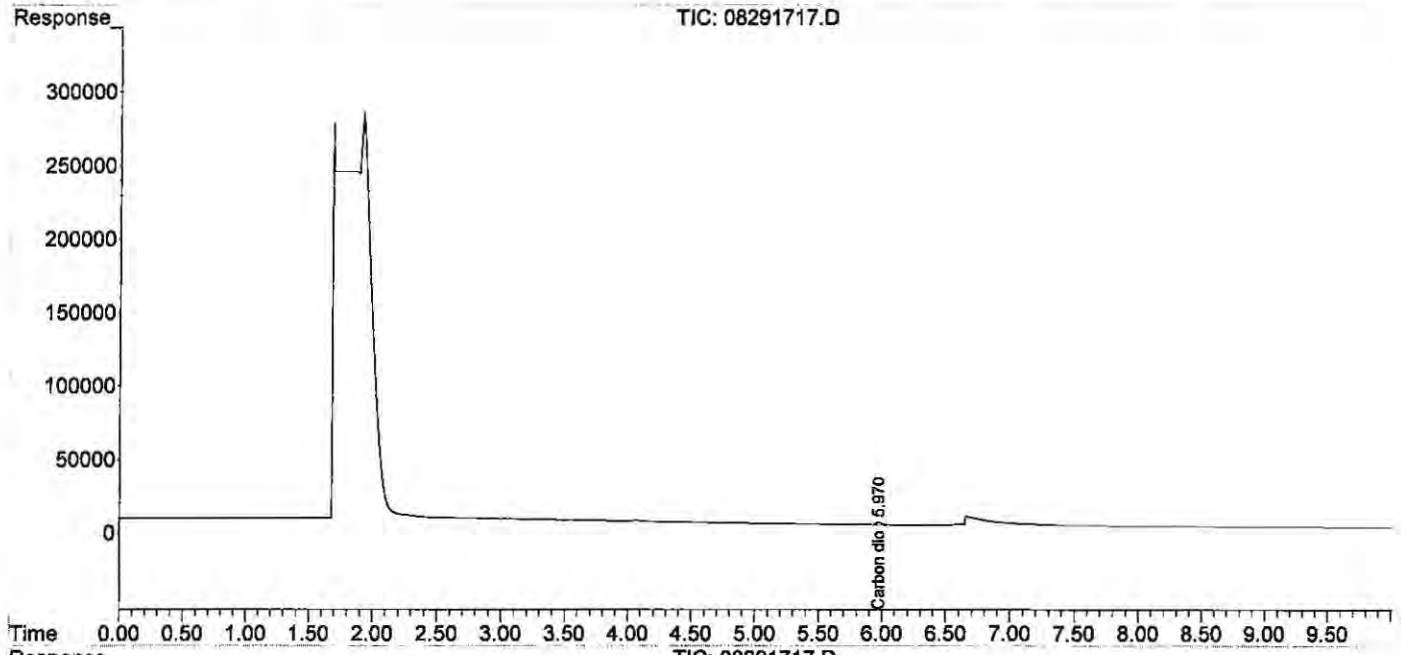
(f)=RT Delta > 1/2 Window (m)=manual int.

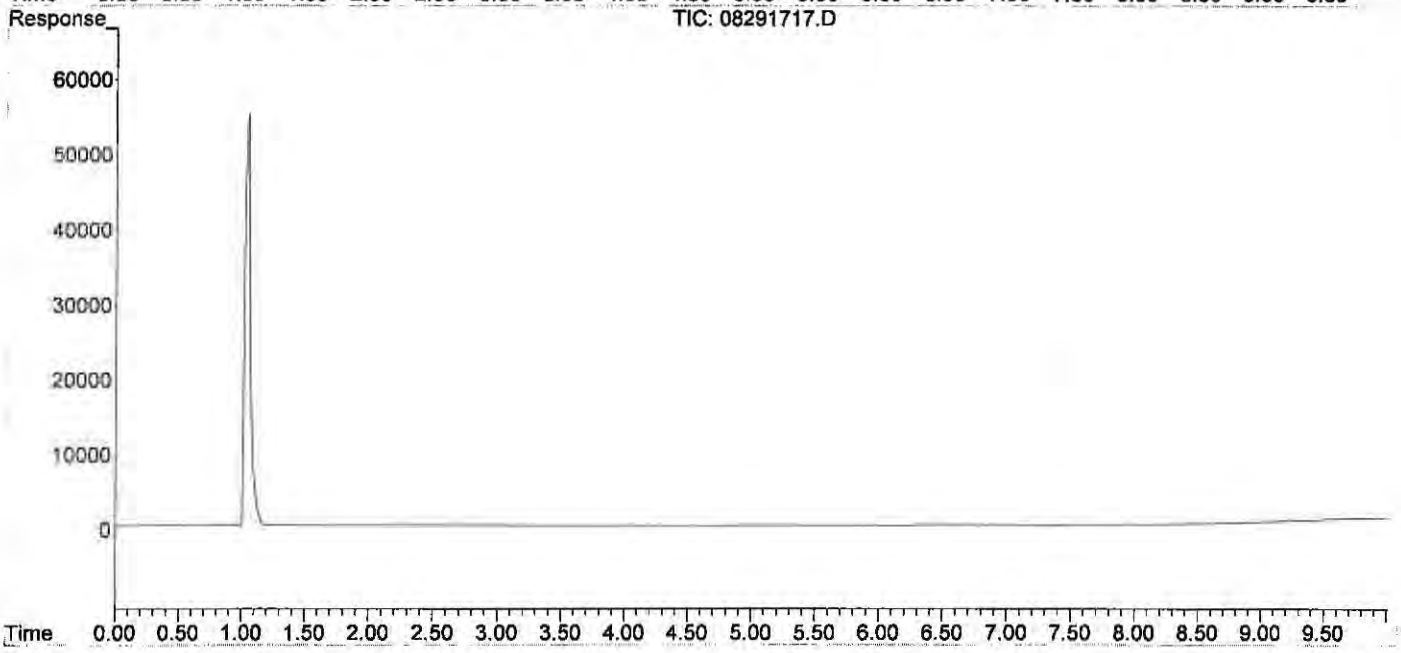
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



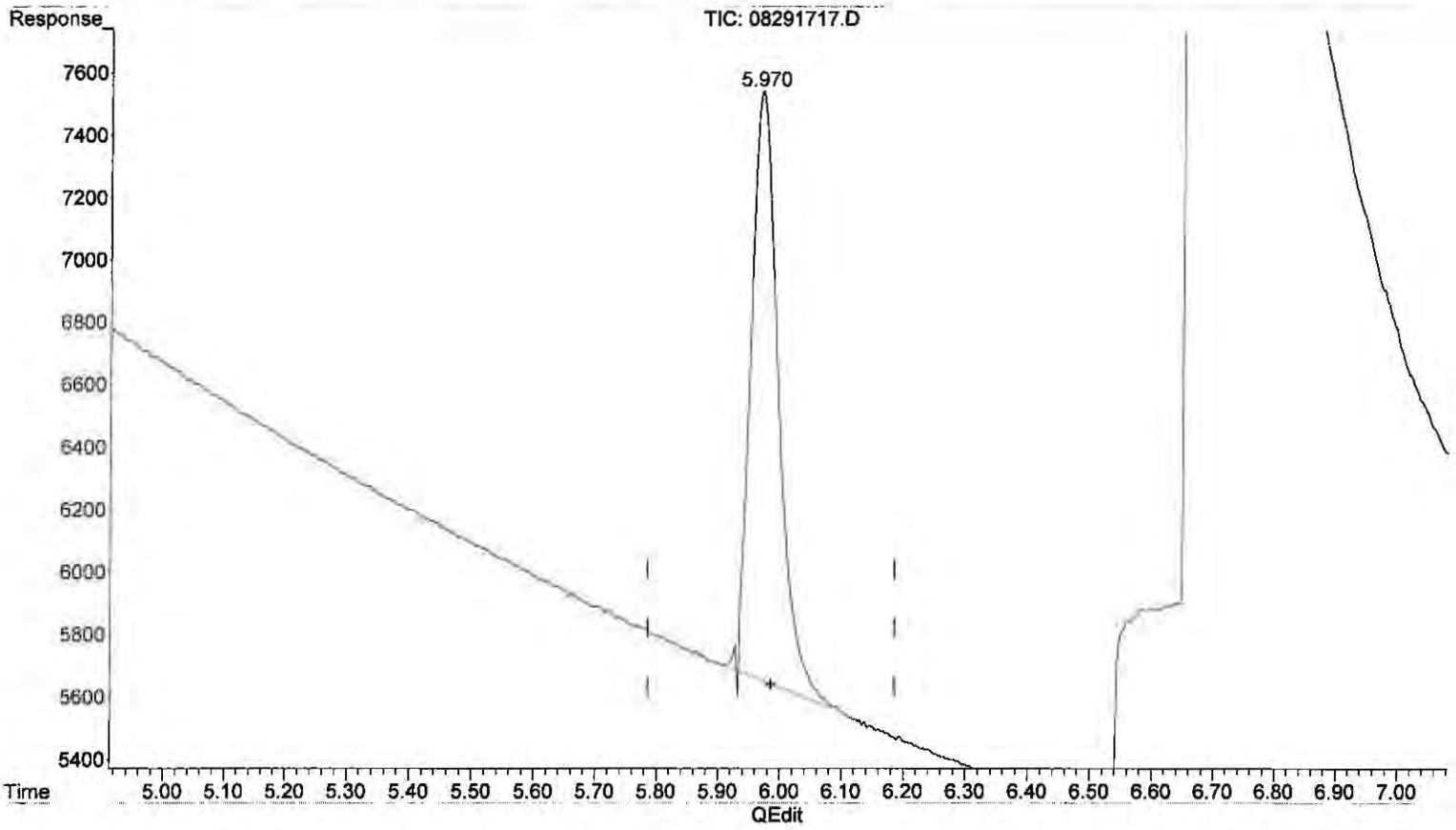


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

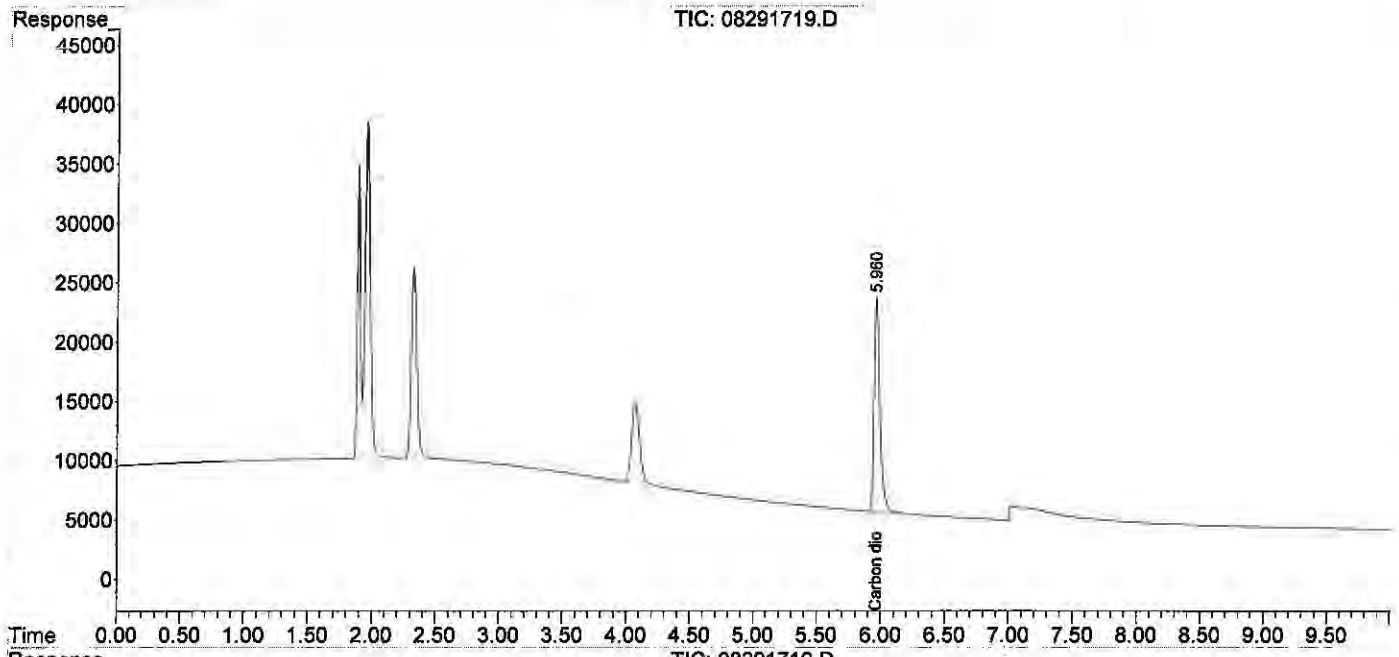
(f)=RT Delta > 1/2 Window (m)=manual int.

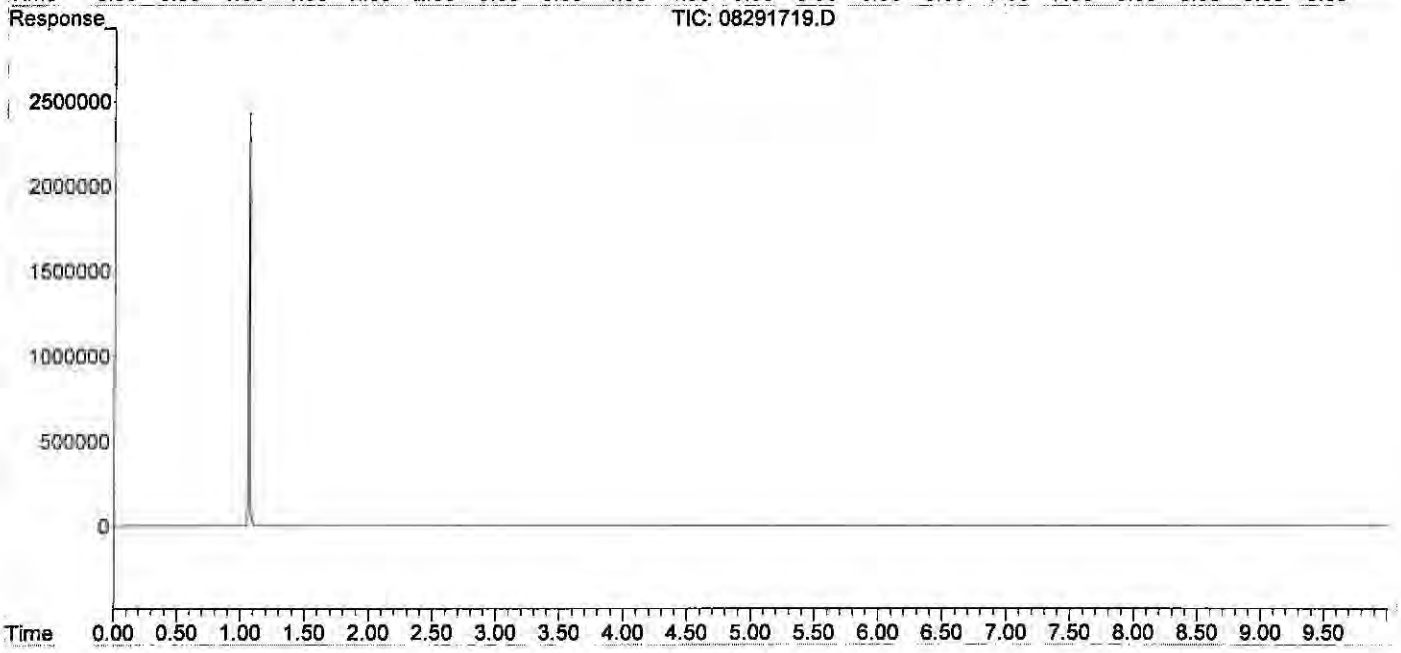
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

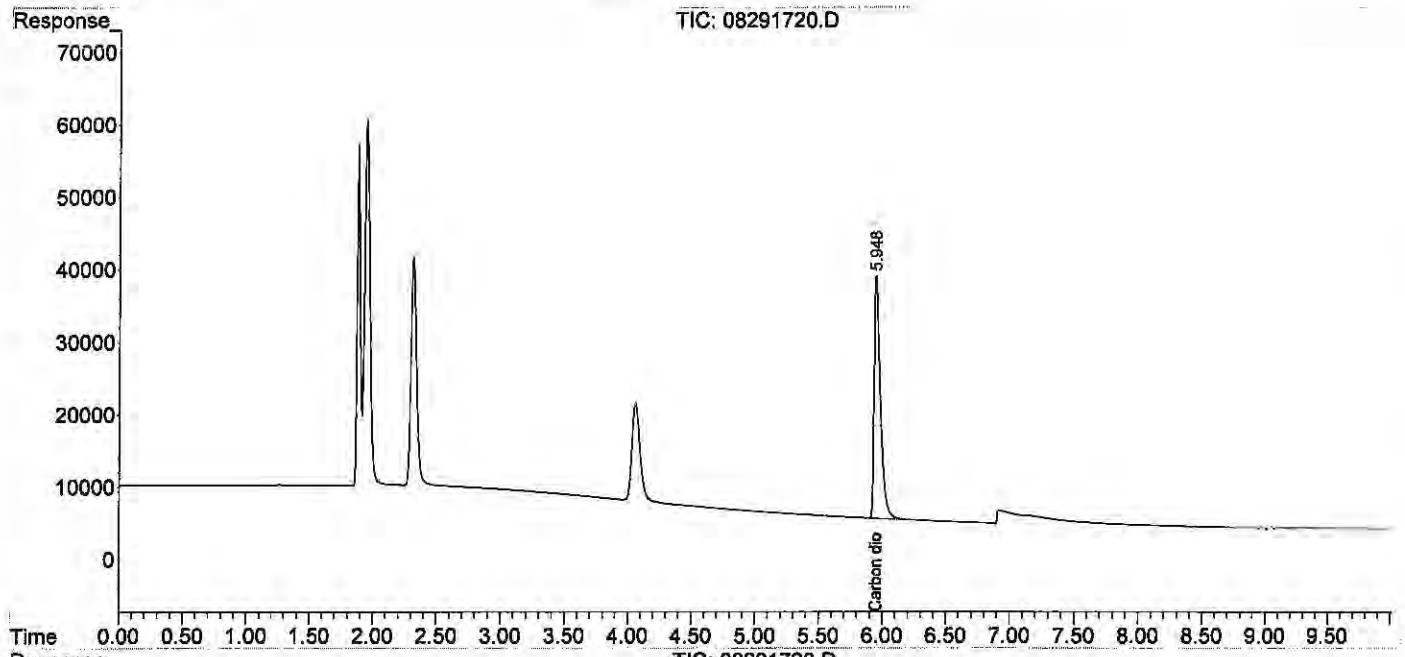
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

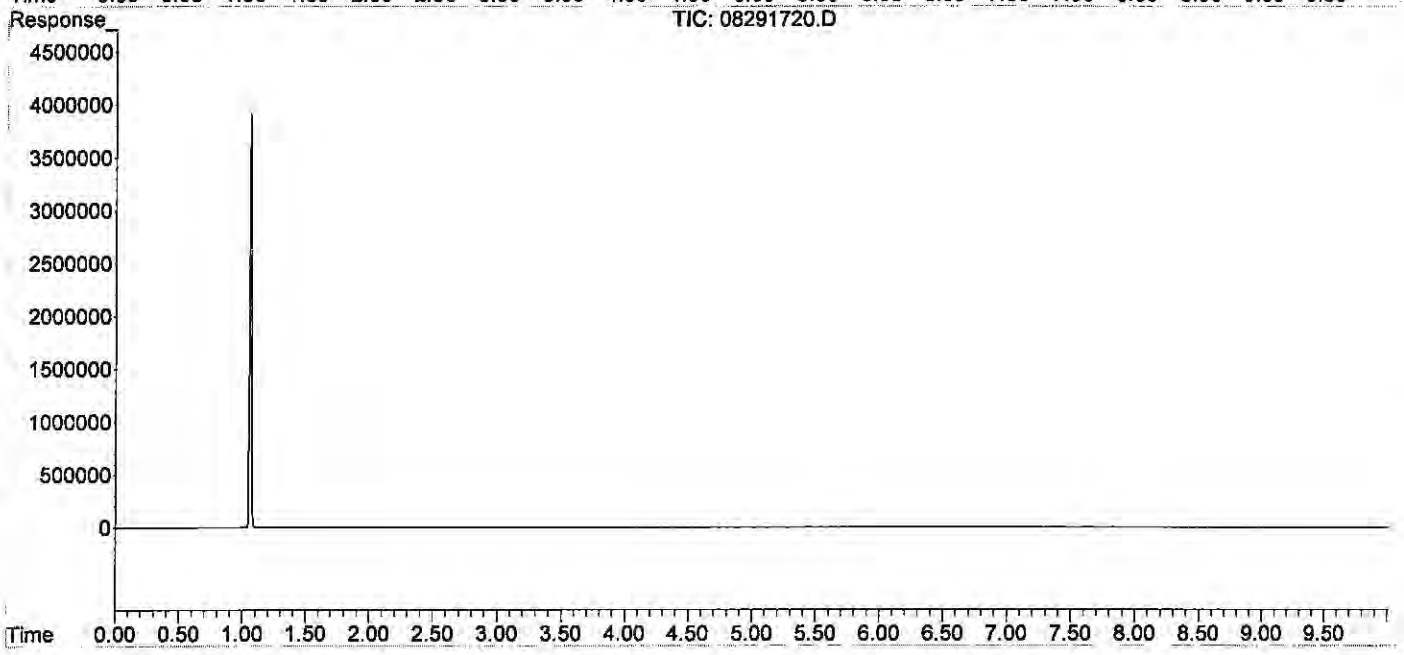
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

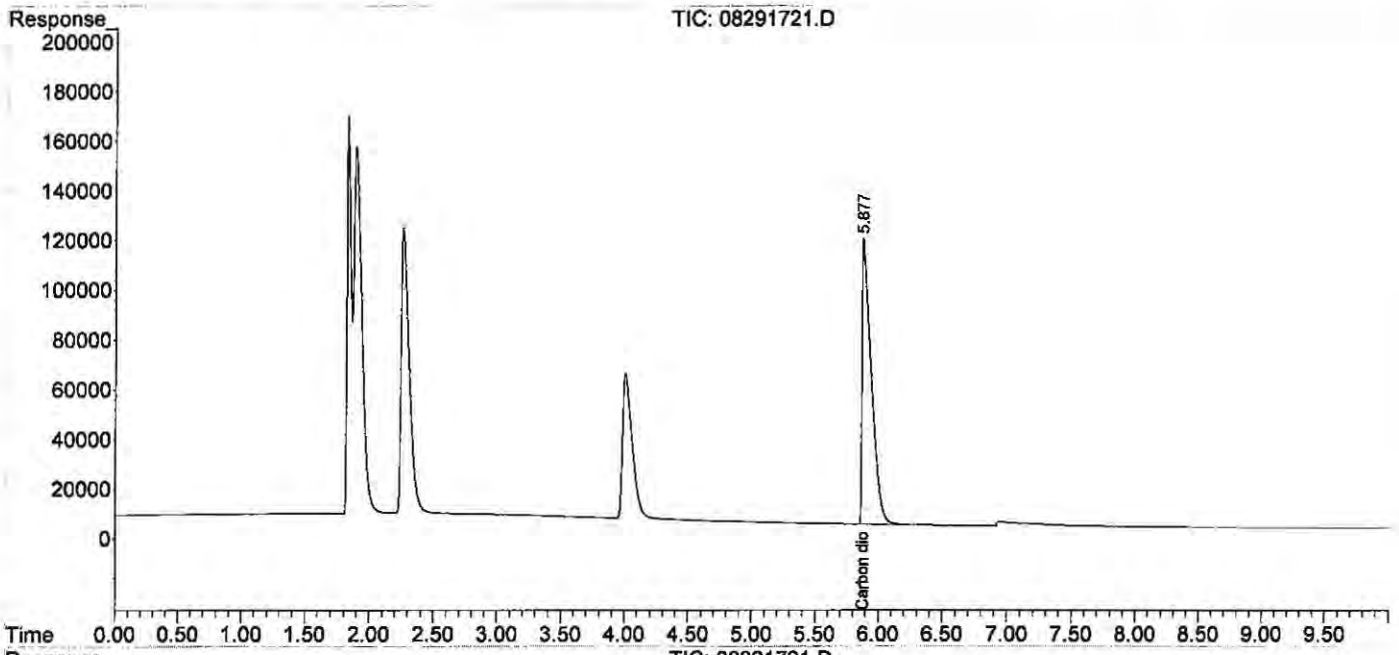
(f)=RT Delta > 1/2 Window (m)=manual int.

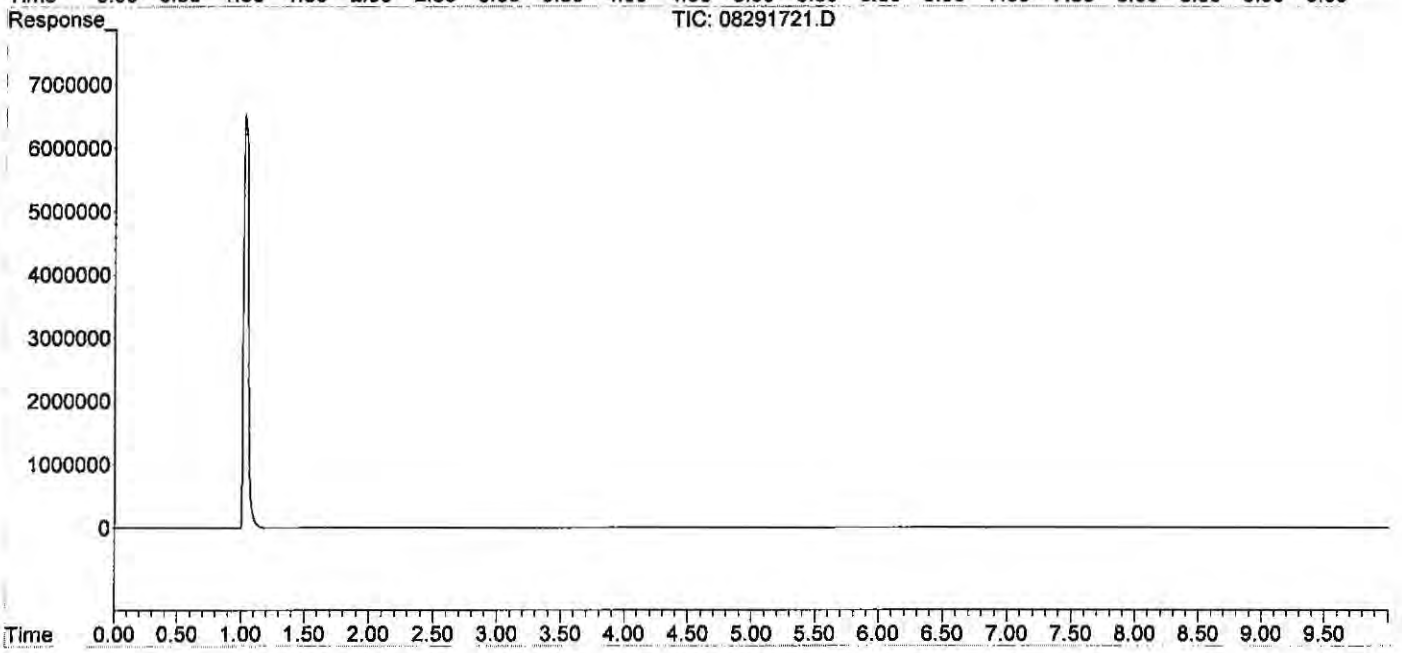
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.886	536422	0.113	ppm	actual %D
2)	Carbon monoxide	1.886	536422	N.D.	ppm	
3)	Methane (TCD)	4.059f	626500	66244.710	ppm	
4)	Carbon dioxide	5.947	1163775	4957.948	ppm	5000 99.16
6)	Methane (FID)	1.062	37290742	3947.023	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

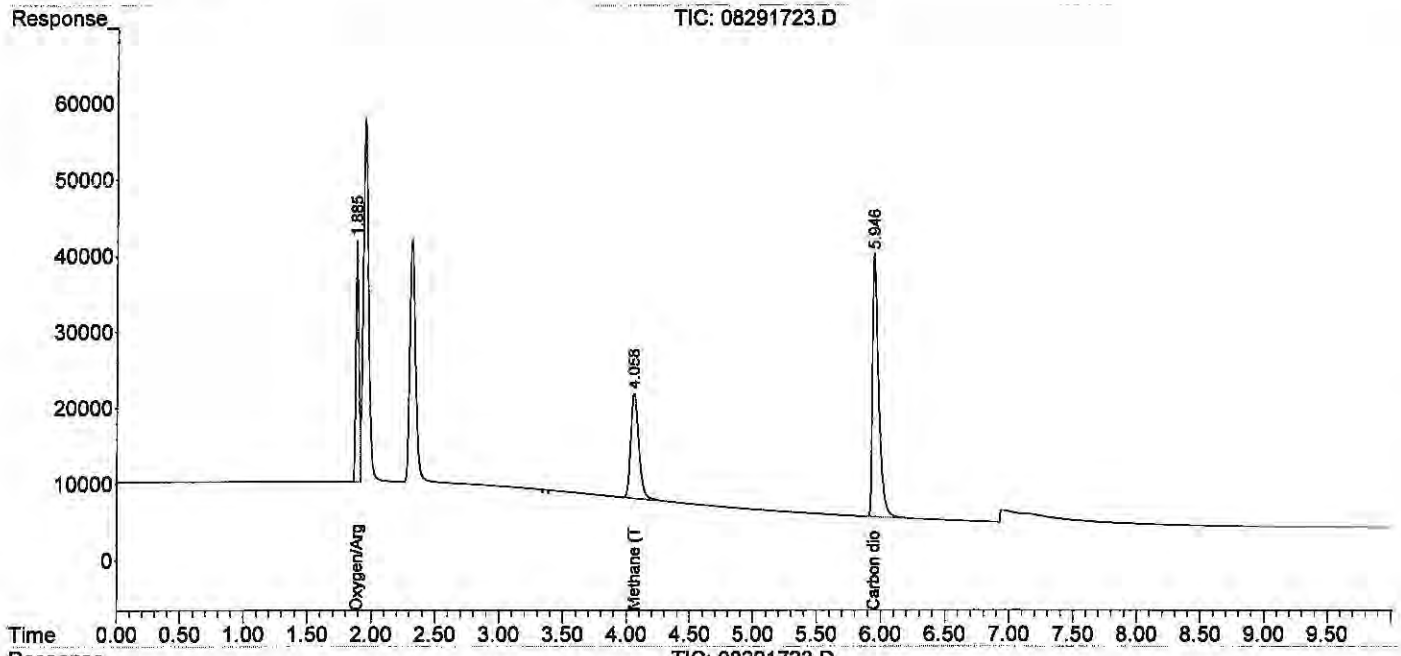
(f)=RT Delta > 1/2 Window (m)=manual int.

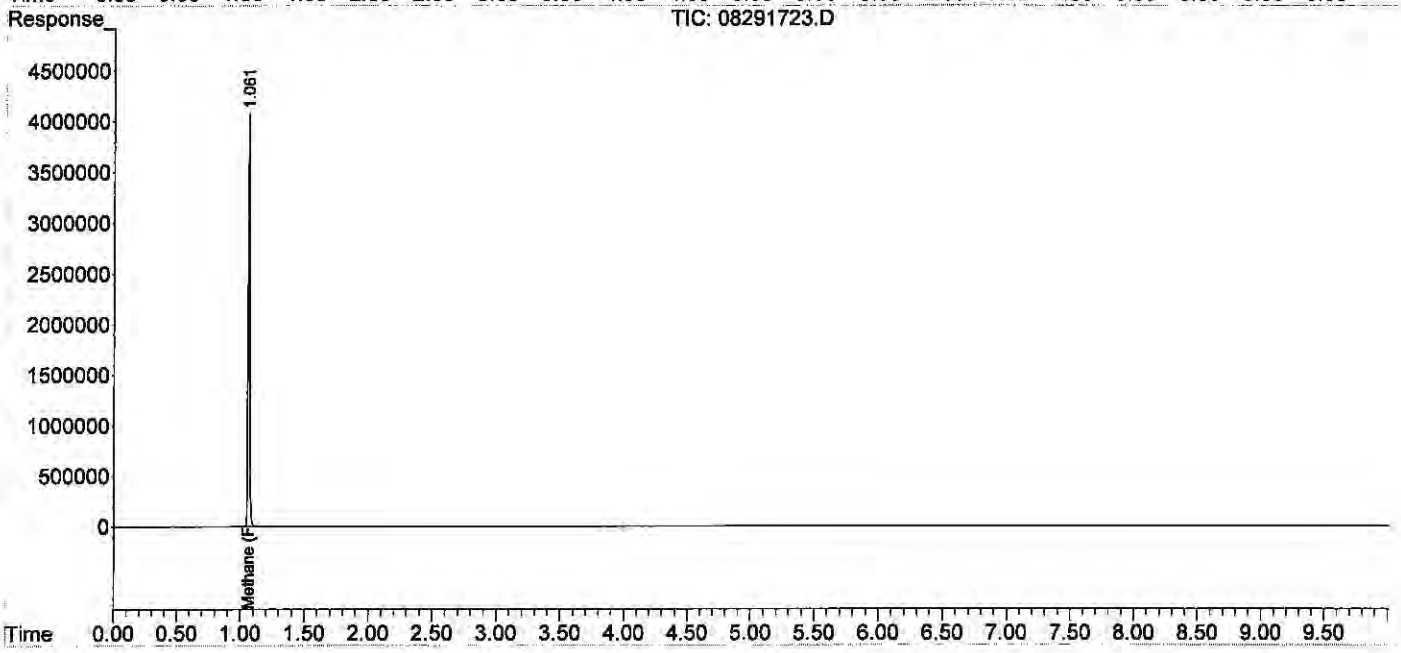
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : MR | Instrument : GC#10
Service Request: P1900794 | Date Analysis : 02/20/19 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-01311901	0.100	5029.130
ACTUAL		5000.00
%Difference		0.6%
mcs 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
tcd lcs s32-10081801	0.100	854.460
tcd lcsd s32-10081801	0.100	865.454
P1900794-001 50ul	0.050	13034.68
P1900794-002 50ul	0.050	14609.91
P1900794-003 50ul	0.050	18255.45
P1900794-003ms 50ul	0.050	18915.00
P1900794-003msd 50ul	0.050	18384.22
std s32-01311901		4888.995
ACTUAL		5000.00
%Difference		2.2%

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	0.000
tcd lcs s32-10081801	8544.600
tcd lcsd s32-10081801	8654.540
P1900794-001 50ul	260693.60
P1900794-002 50ul	292198.14
P1900794-003 50ul	365108.90
P1900794-003ms 50ul	378299.96
P1900794-003msd 50ul	367684.36

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 11:58:18
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:49:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.972f	623985	0.131	ppm	
2)	Carbon monoxide	1.972f	623985	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.075	1180484	5029.130	ppm	m
6)	Methane (FID)	1.107	37136893	3930.739	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

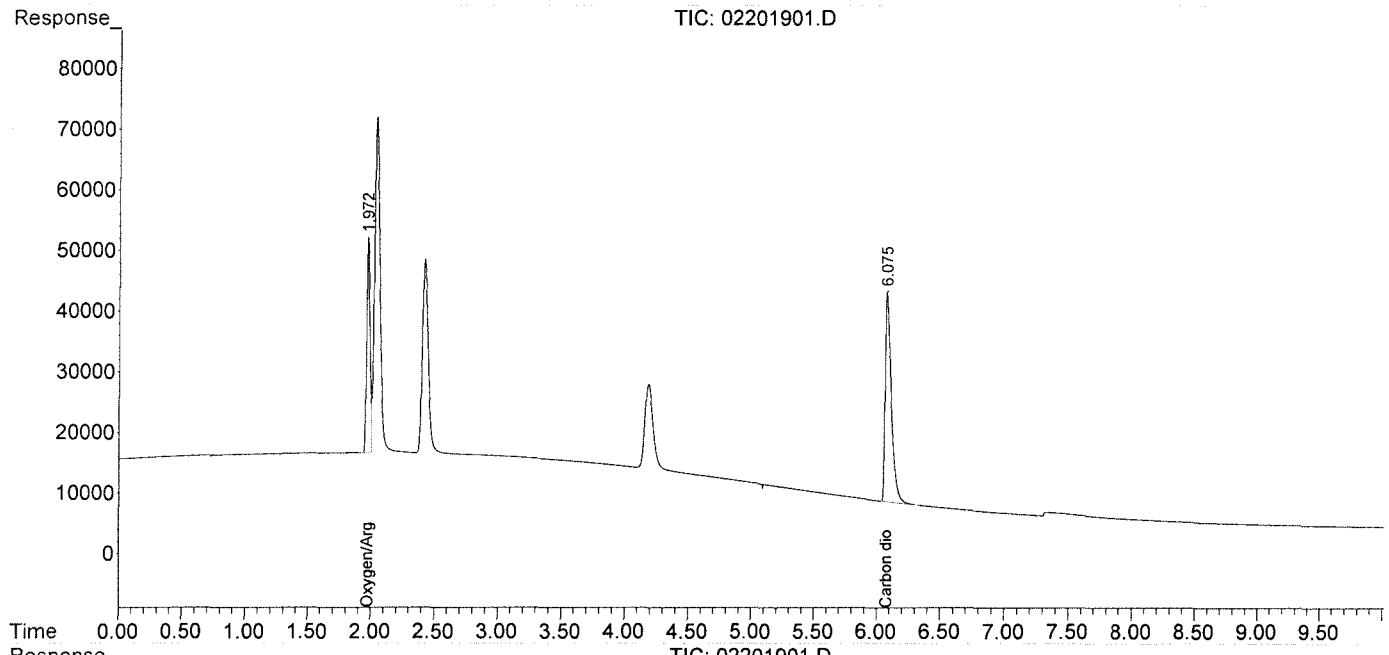
(f)=RT Delta > 1/2 Window (m)=manual int.

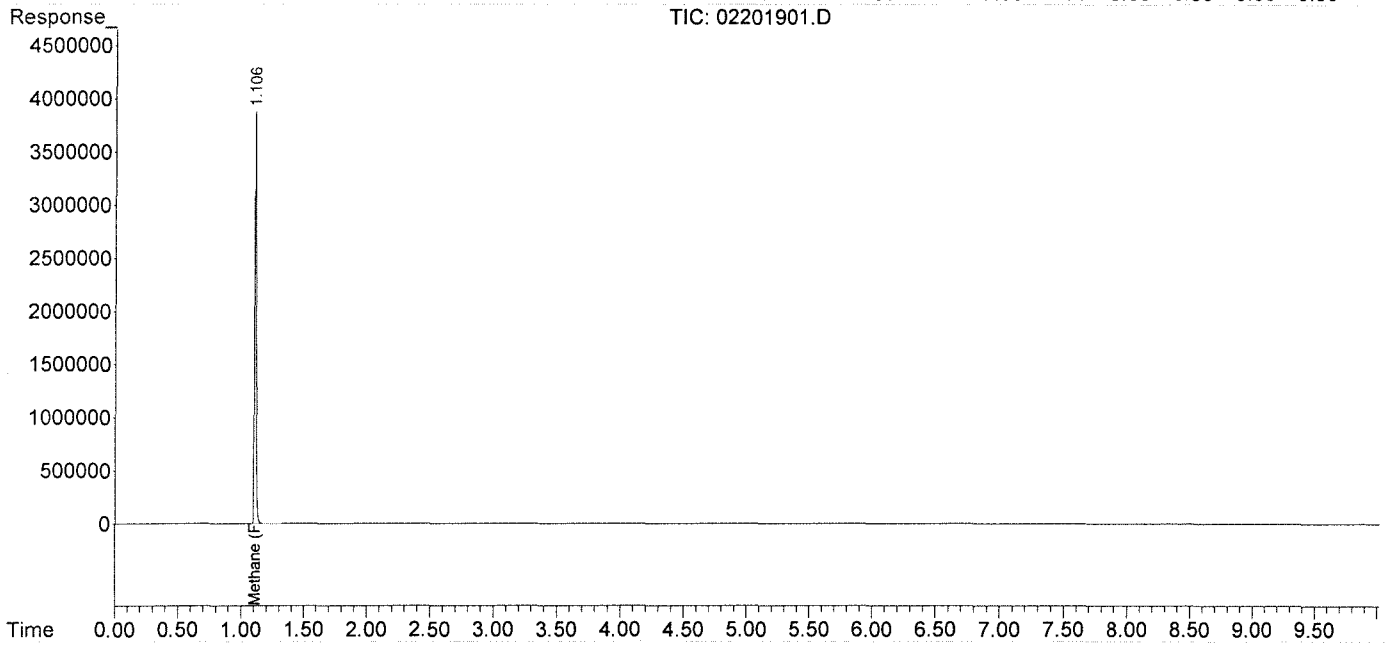
MR 02/21/19

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 11:58:18
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:49:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

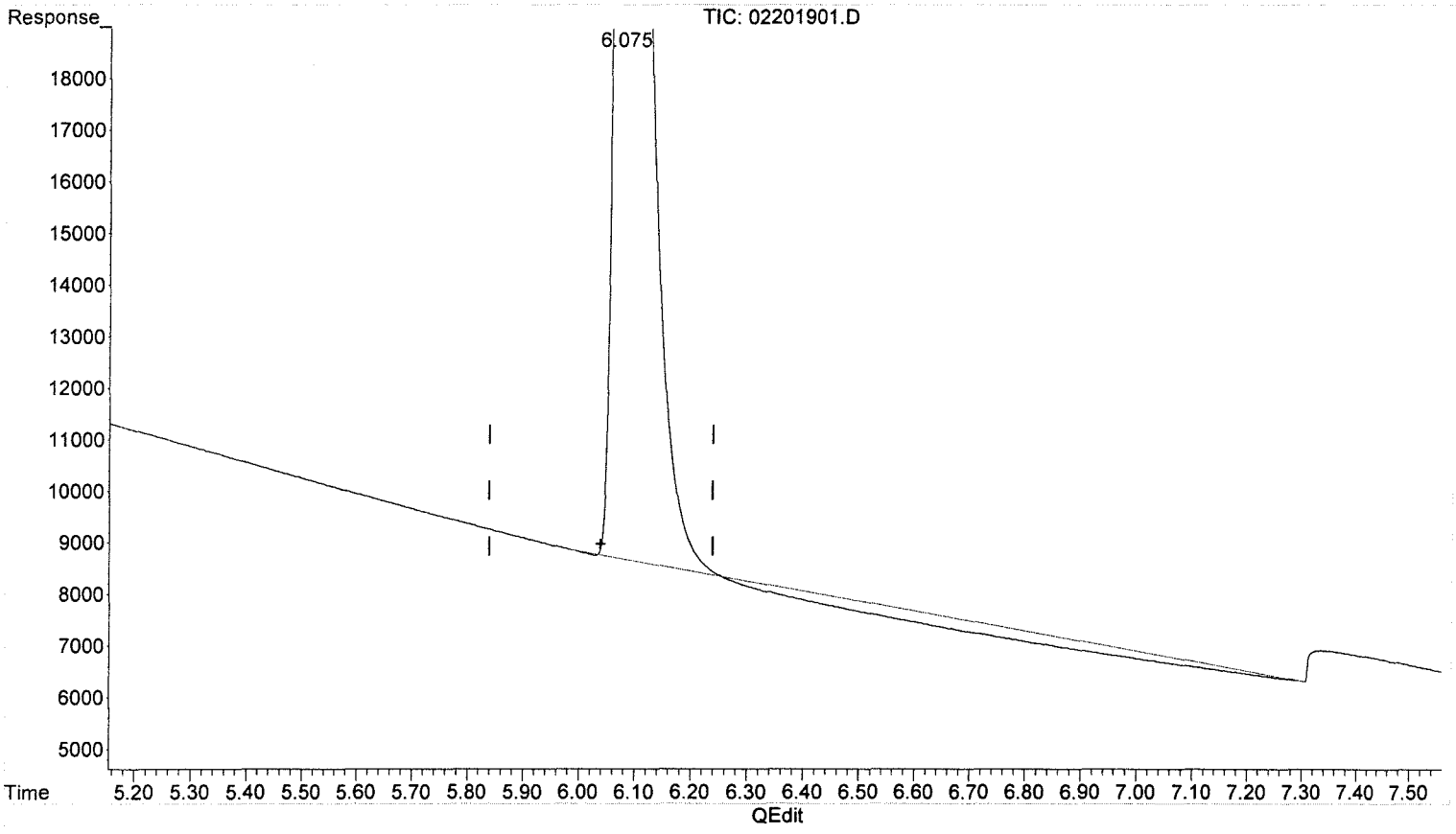




Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 11:58:18
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:49:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.077min 4580.731 ppm

response 1075231

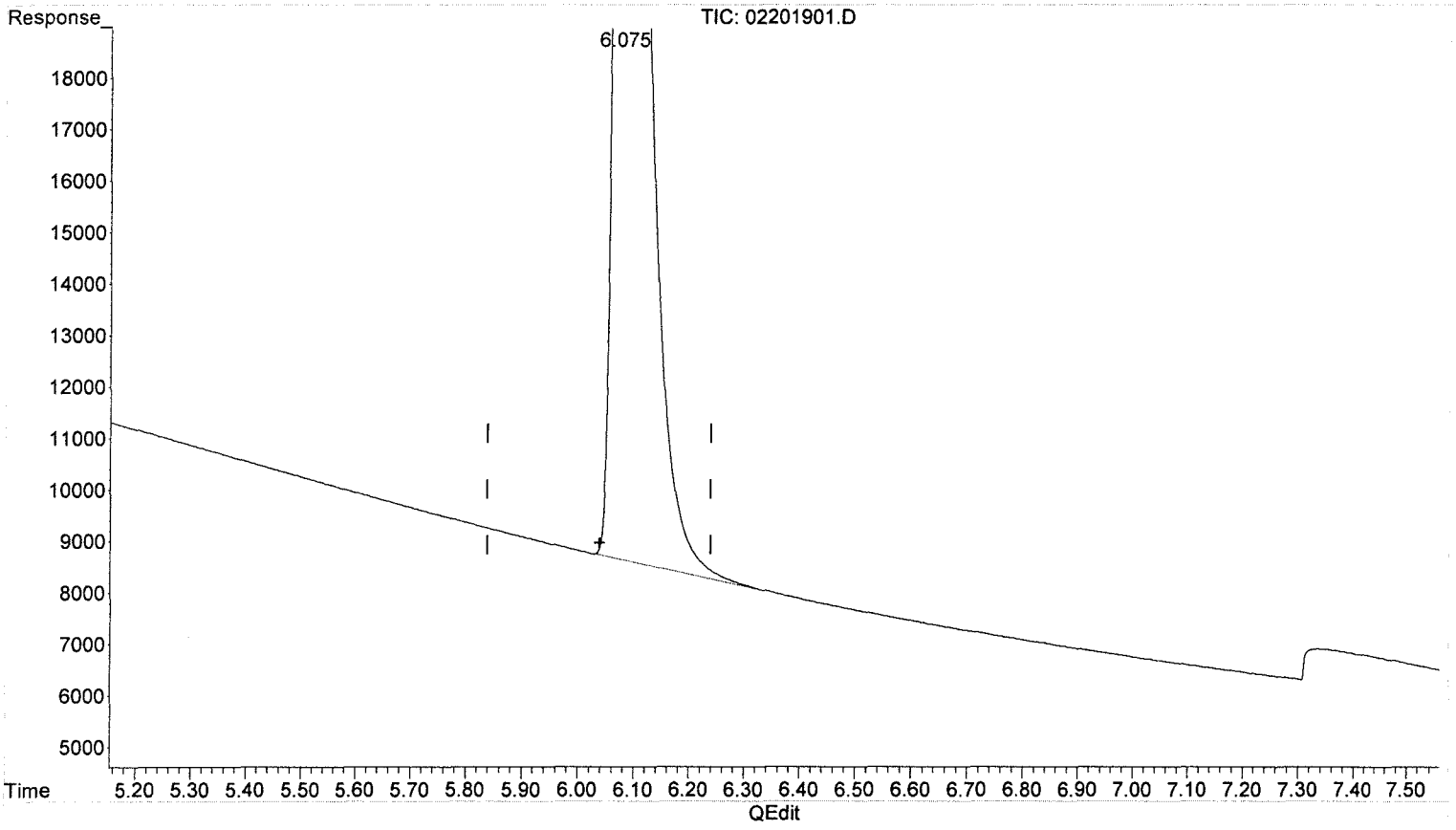
MR 02/21/19

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 11:58:18
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 13:49:03 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide
6.075min 5029.130 ppm m
response 1180484

MR 02/21/19
BLC

2/22/19

(+) = Expected Retention Time
RS082817_CO2.M Thu Feb 21 13:49:32 2019 Page: 1

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:40:37
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 15:03:00 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

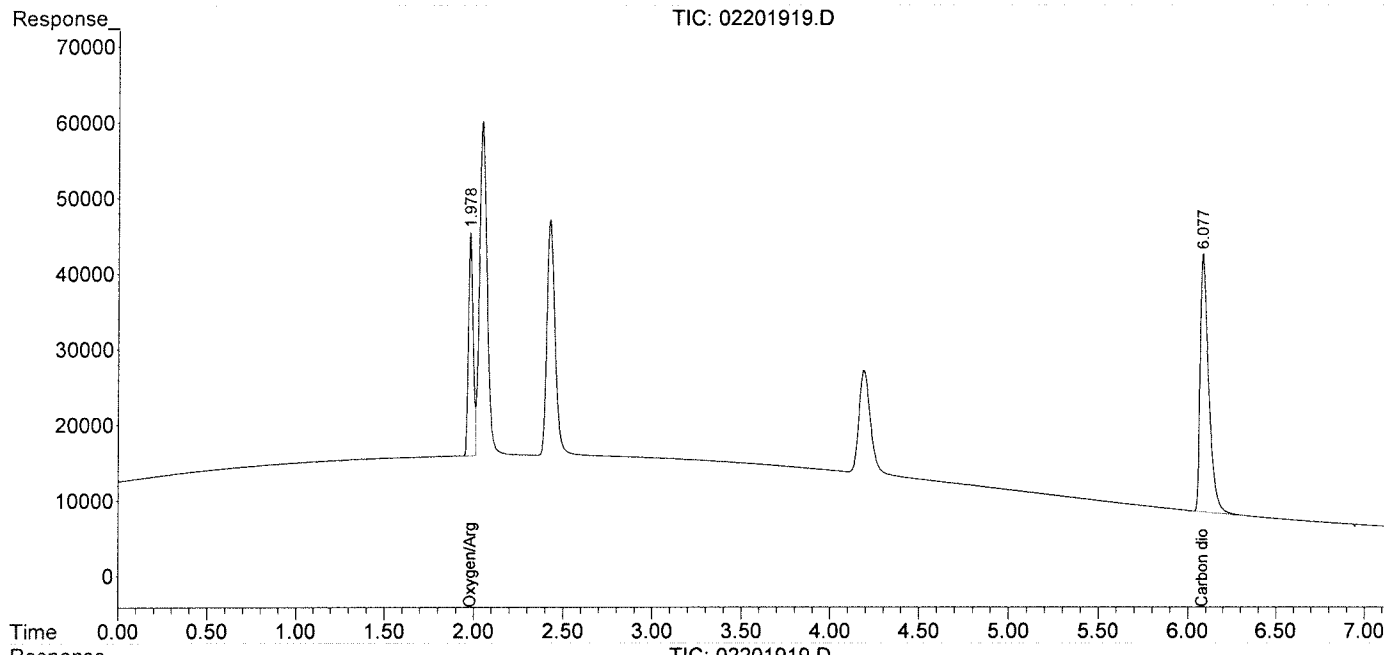
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.978f	524108	0.110	ppm	
2)	Carbon monoxide	1.978f	524108	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.077	1147590	4888.995	ppm	m
6)	Methane (FID)	1.110	35509466	3758.484	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

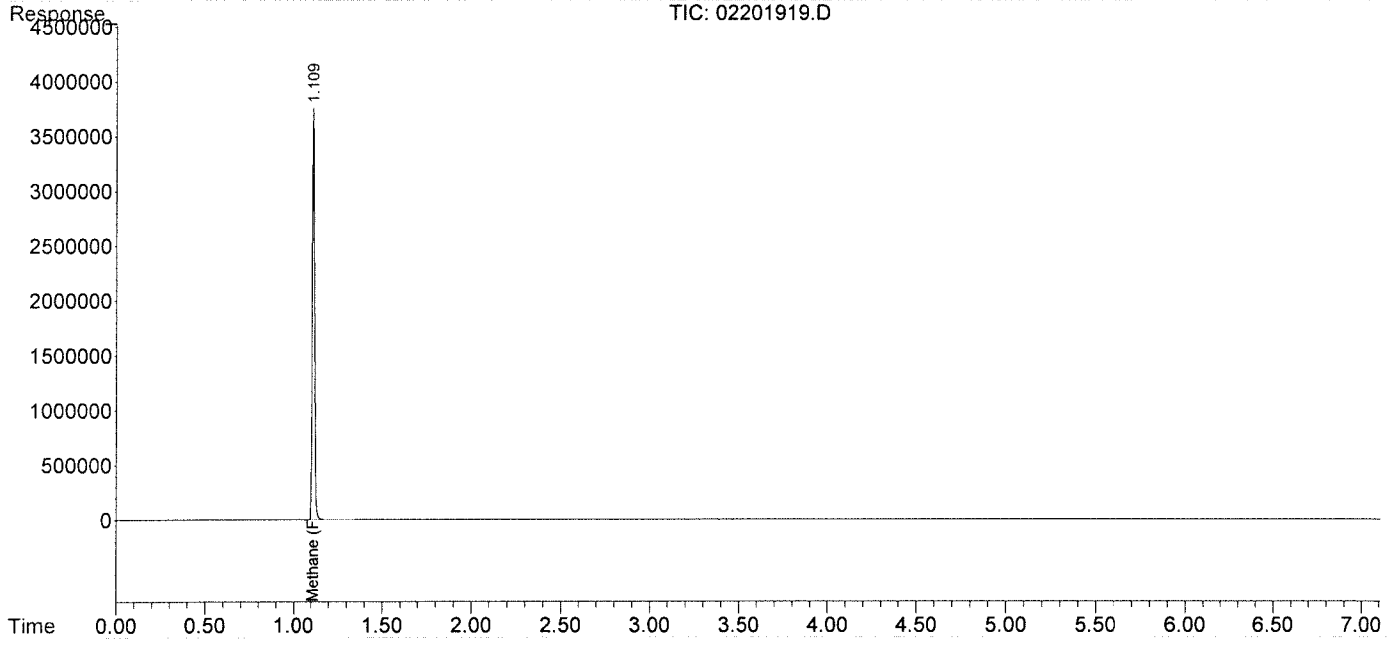
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:40:37
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 15:03:00 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

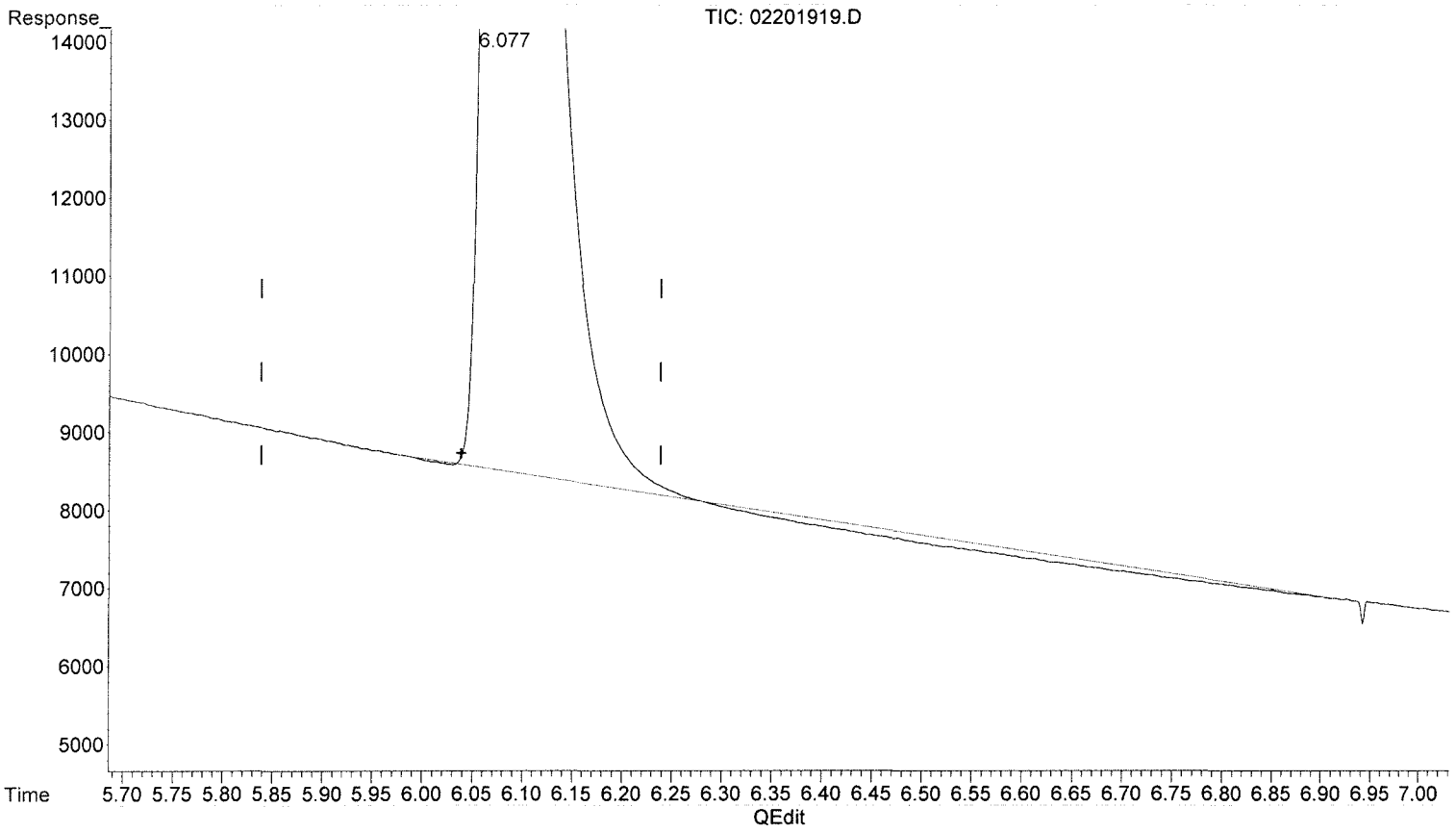




Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:40:37
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 15:03:00 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.078min 4755.886 ppm

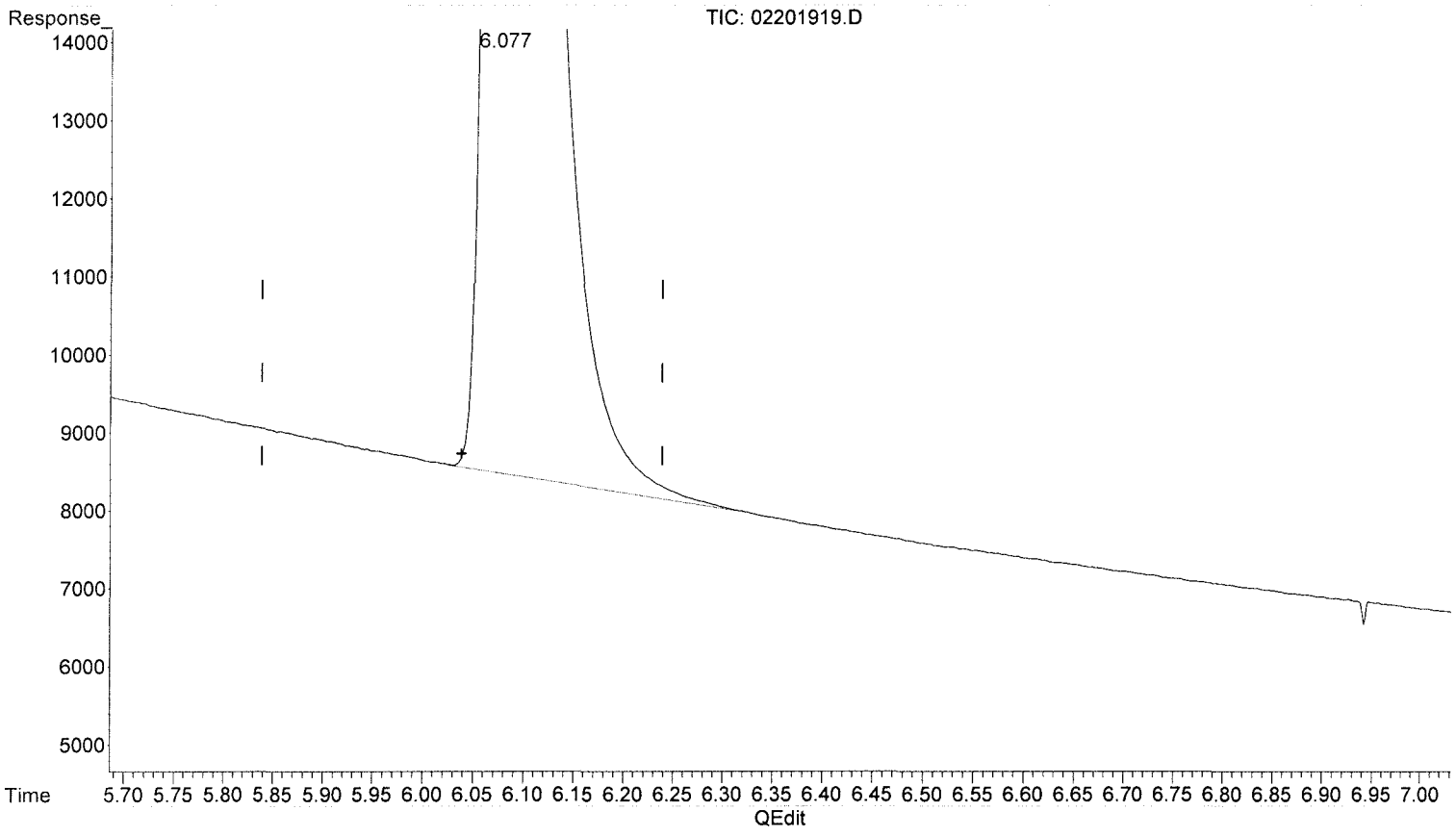
response 1116345

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_02\20\
Data File : 02201919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 20-Feb-2019, 16:40:37
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 15:03:00 2019
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.077min 4888.995 ppm m

response 1147590

(+) = Expected Retention Time

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2019_02\20\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	20-Feb-19, 11:58:18	02201901.D	std s32-01311901		MR	RSKBOTH.M	pass
2	20-Feb-19, 12:20:54	02201902.D	rb 0.1ml		MR	RSKBOTH.M	pass
3	20-Feb-19, 12:45:05	02201903.D	mcs 0.1ml		MR	RSKBOTH.M	pass
4	20-Feb-19, 13:30:12	02201904.D	XXtcd lcs		MR	RSKBOTH.M	
5	20-Feb-19, 13:49:51	02201905.D	tcd lcs s32-10081801		MR	RSKBOTH.M	pass
6	20-Feb-19, 14:08:06	02201906.D	tcd lcsd s32-10081801		MR	RSKBOTH.M	pass
7	20-Feb-19, 14:22:03	02201907.D	XXP1900793-001 0.1		MR	RSKBOTH.M	
8	20-Feb-19, 14:35:37	02201908.D	P1900793-001 50ul		MR	RSKBOTH.M	
9	20-Feb-19, 14:52:23	02201909.D	P1900793-002 50ul		MR	RSKBOTH.M	
10	20-Feb-19, 15:05:50	02201910.D	XXP1900793-003 50u		MR	RSKBOTH.M	
11	20-Feb-19, 15:19:09	02201911.D	P1900793-004 50ul		MR	RSKBOTH.M	
12	20-Feb-19, 15:28:16	02201912.D	P1900793-003 0.1ml		MR	RSKBOTH.M	
13	20-Feb-19, 15:38:00	02201913.D	std s32-01311901		MR	RSKBOTH.M	pass
14	20-Feb-19, 15:50:59	02201914.D	P1900794-001 50u		MR	RSKBOTH.M	
15	20-Feb-19, 16:00:35	02201915.D	P1900794-002 50u		MR	RSKBOTH.M	
16	20-Feb-19, 16:09:57	02201916.D	P1900794-003 50u		MR	RSKBOTH.M	
17	20-Feb-19, 16:21:27	02201917.D	P1900794-003ms		MR	RSKBOTH.M	
18	20-Feb-19, 16:30:36	02201918.D	P1900794-003msd		MR	RSKBOTH.M	
19	20-Feb-19, 16:40:37	02201919.D	std s32-01311901		MR	RSKBOTH.M	pass

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 14:17:38
Operator : MR
Sample : P1900794-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 11:50:14 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

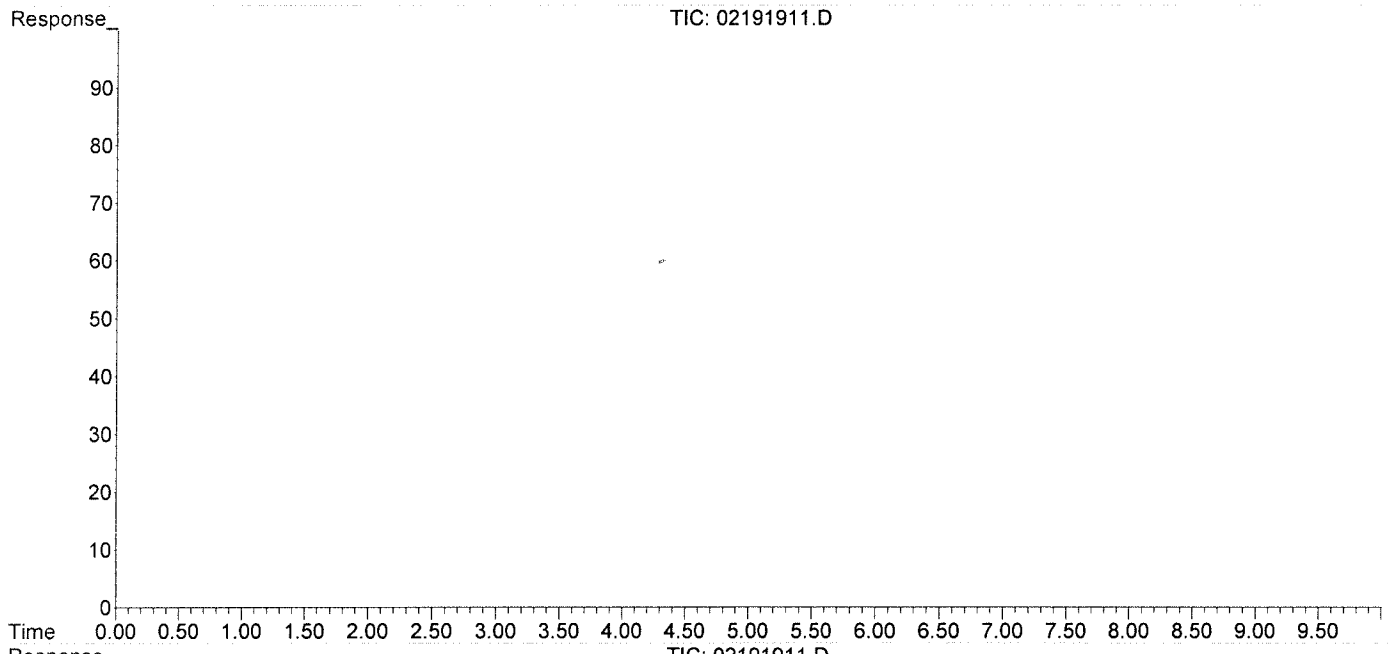
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.117	5810	0.641	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

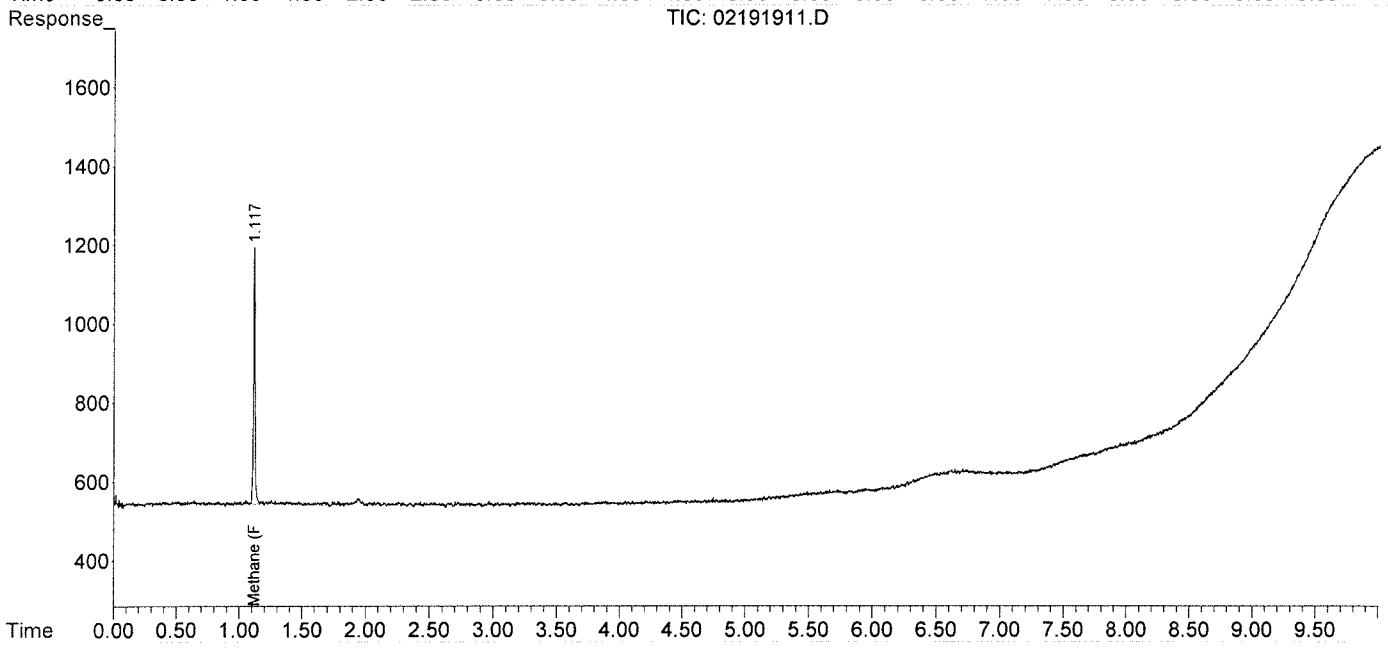
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 14:17:38
Operator : MR
Sample : P1900794-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 11:50:14 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

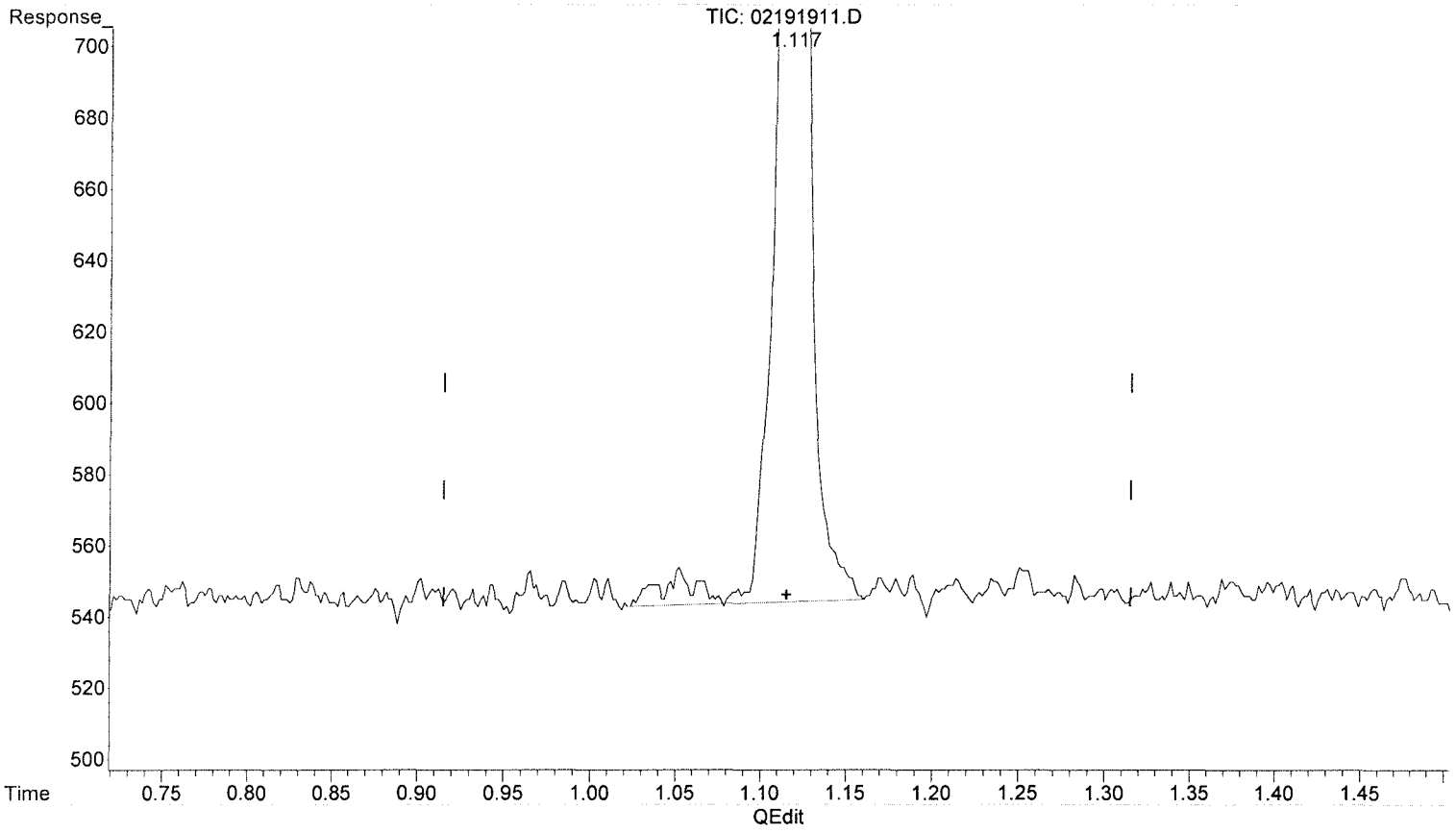




Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 14:17:38
Operator : MR
Sample : P1900794-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 11:50:14 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.118min 0.658 ppm

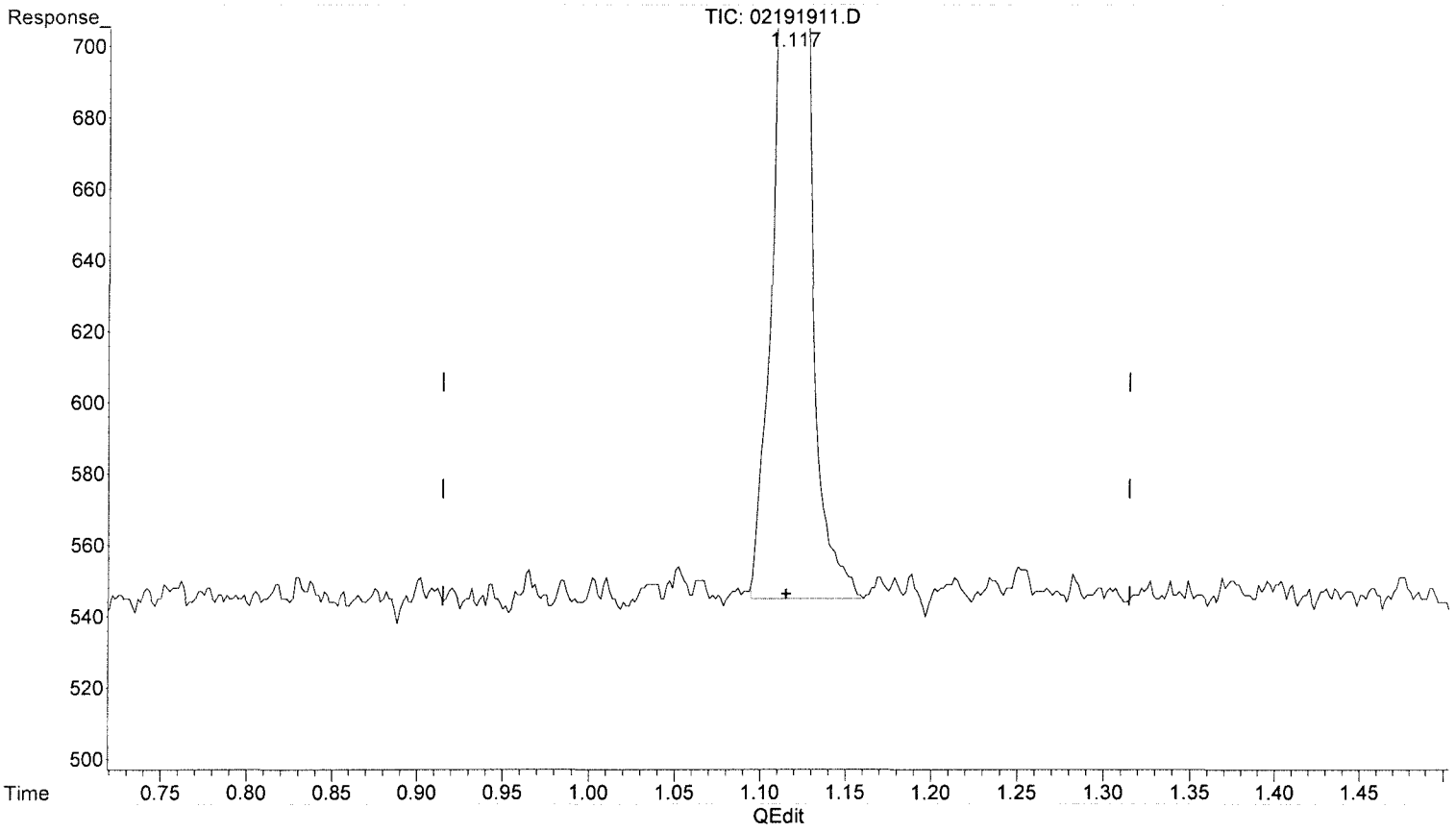
response 5965

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 14:17:38
Operator : MR
Sample : P1900794-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 11:50:14 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.117min 0.641 ppm m

response 5810

MR 02/22/19
BLC

2/22/19

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 14:55:04
Operator : MR
Sample : P1900794-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 11:51:25 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

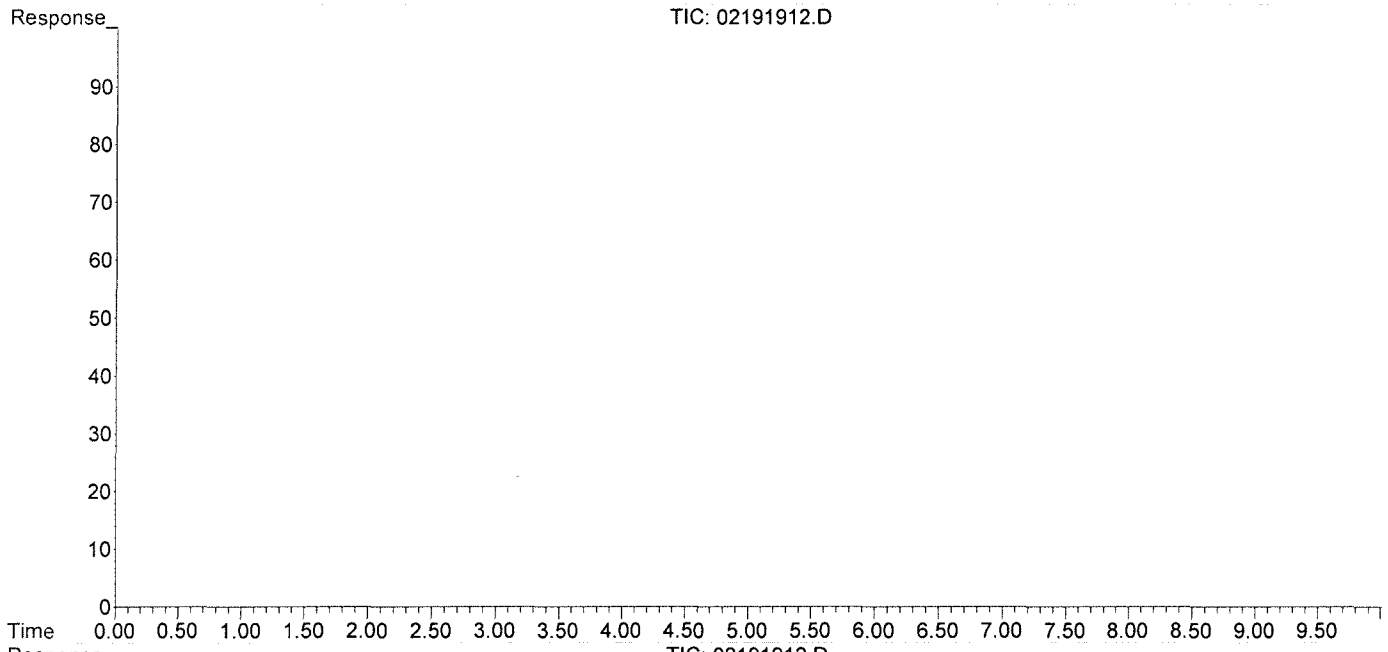
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.118	6221	0.686	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

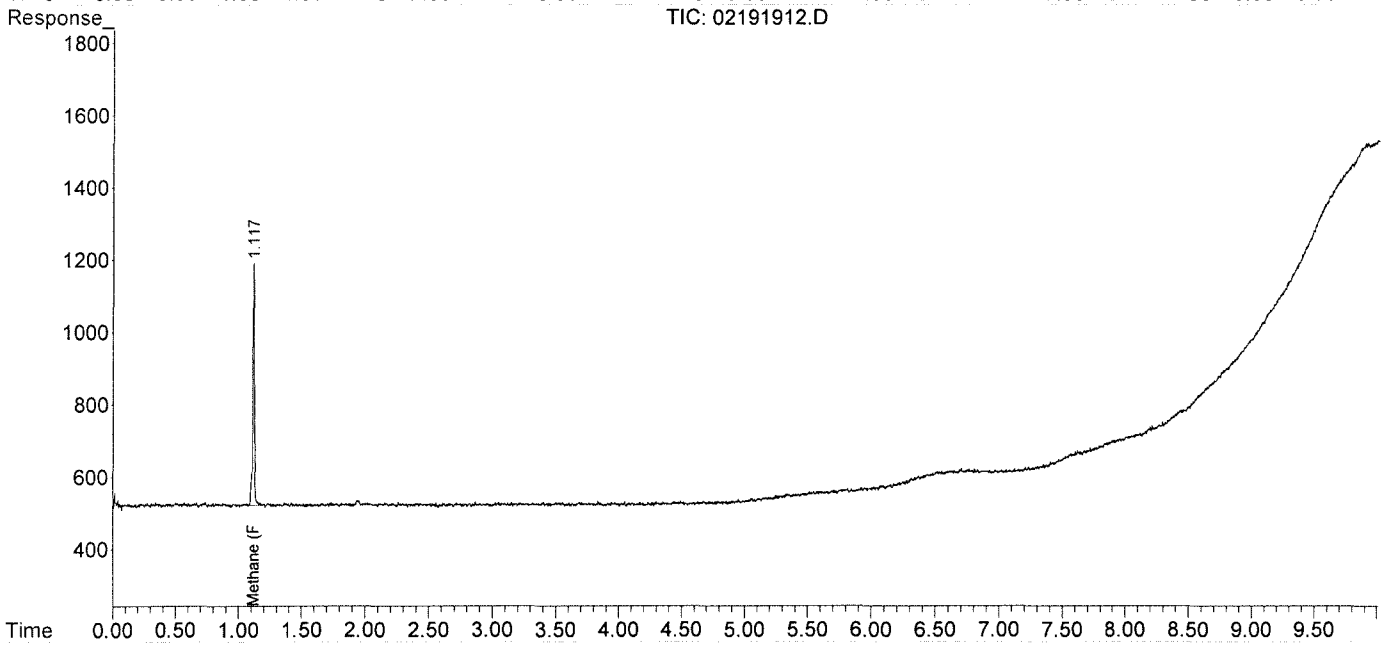
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 14:55:04
Operator : MR
Sample : P1900794-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 11:51:25 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 15:12:45
Operator : MR
Sample : P1900794-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 13:25:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

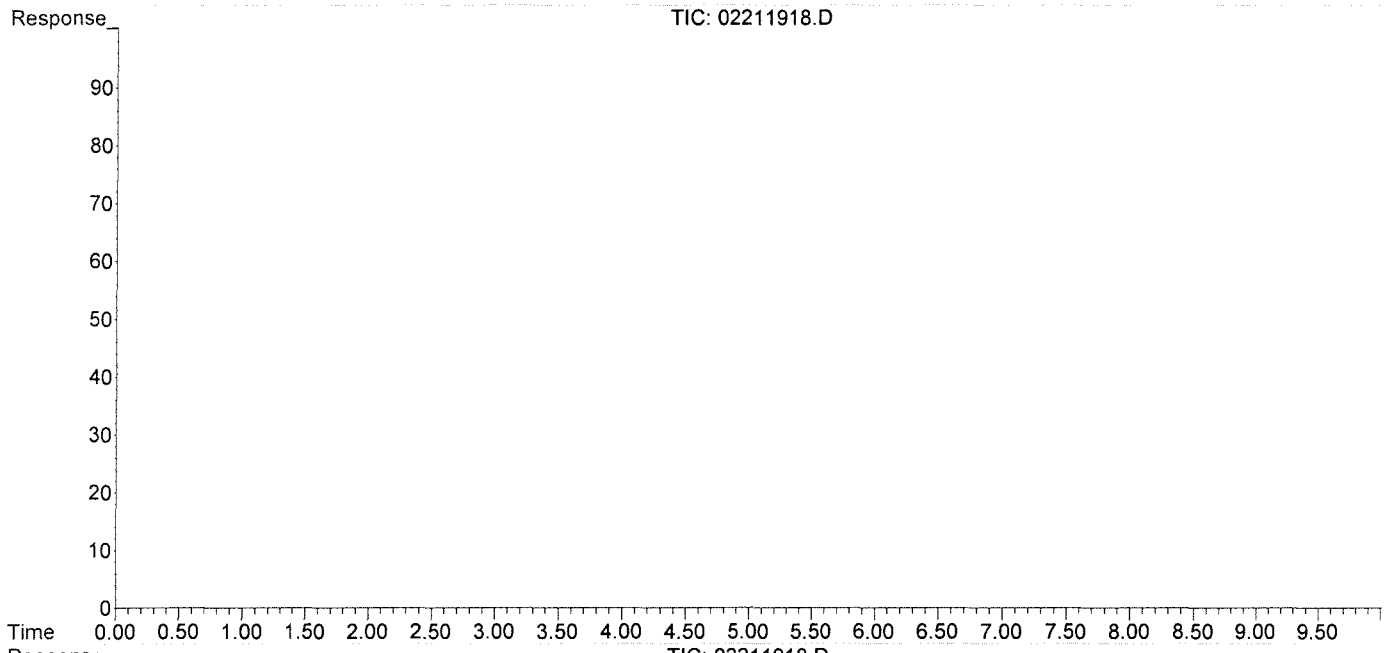
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	1770	0.195	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

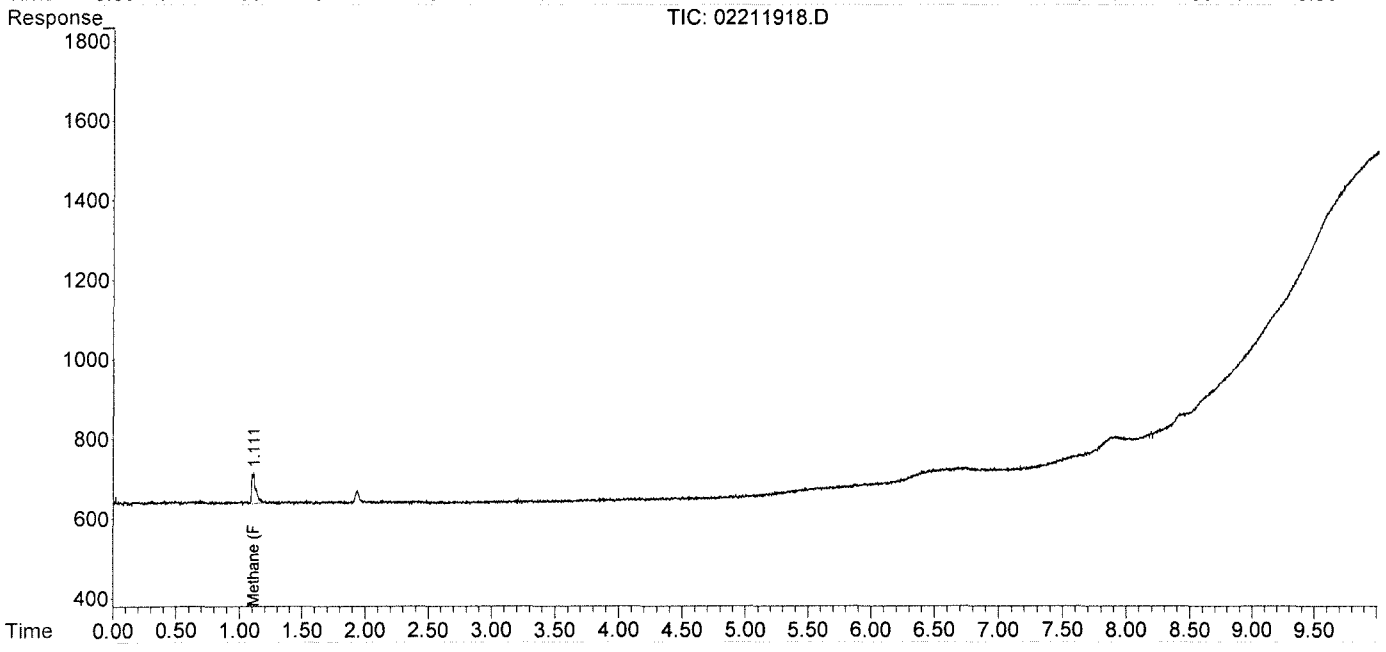
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 15:12:45
Operator : MR
Sample : P1900794-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 13:25:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 12:07:17
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 12:50:26 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

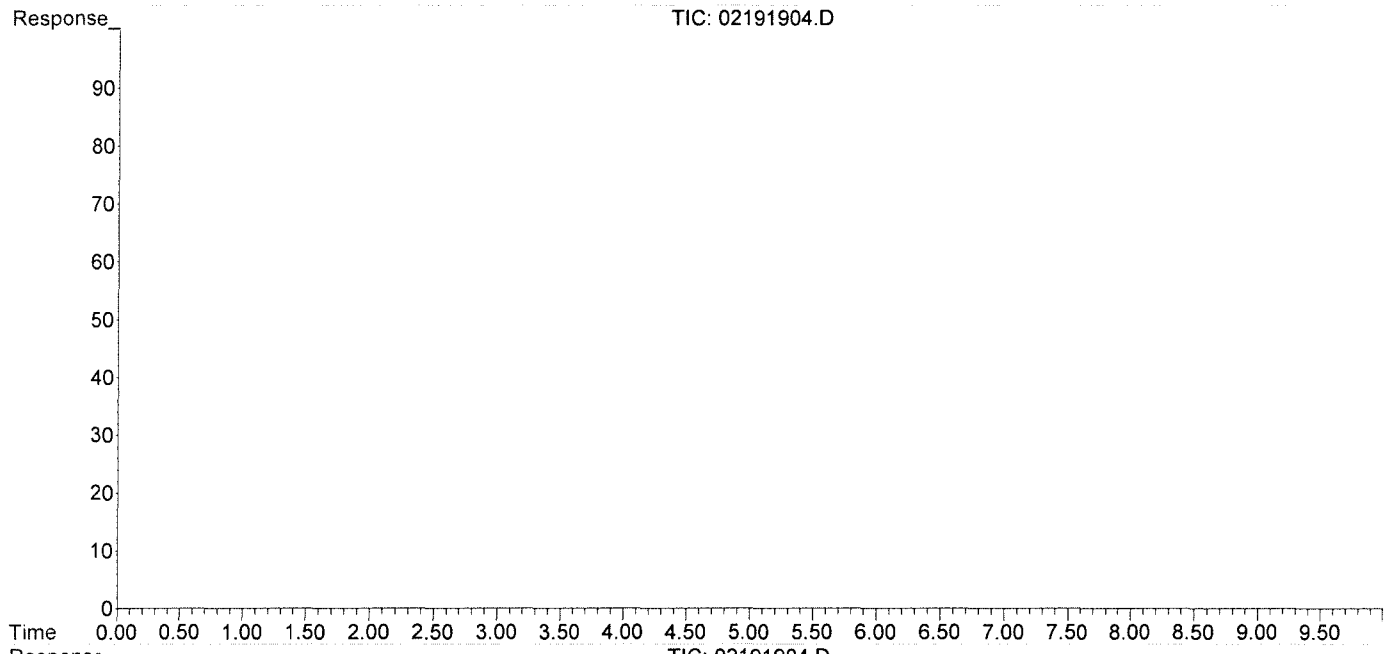
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.121	2652	0.292	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

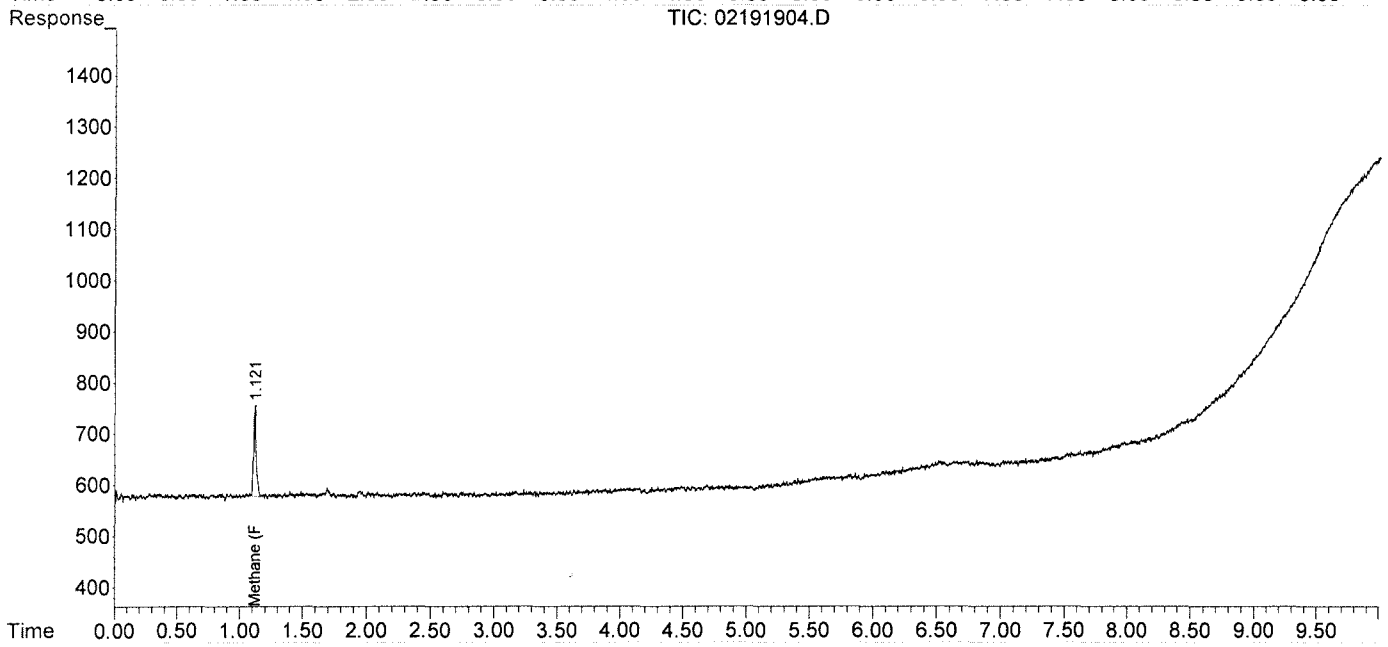
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 12:07:17
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 12:50:26 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 11:03:15
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 13:23:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

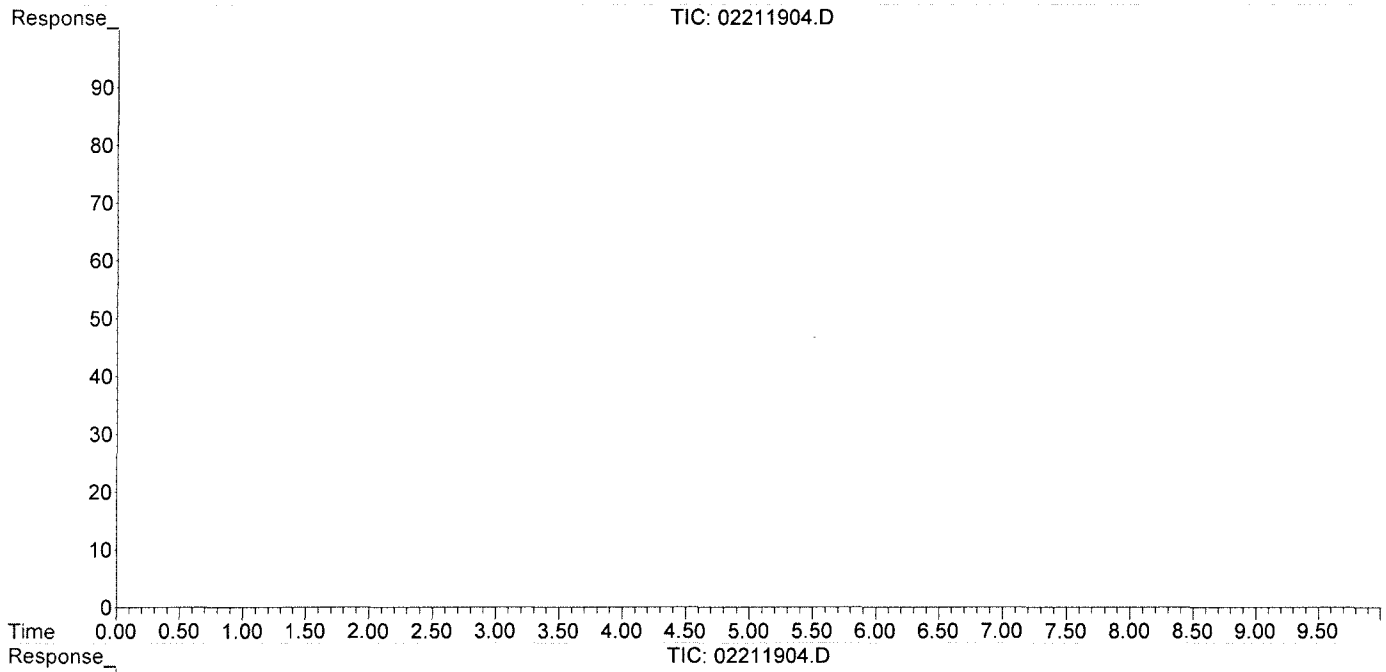
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.112	2455	0.271	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

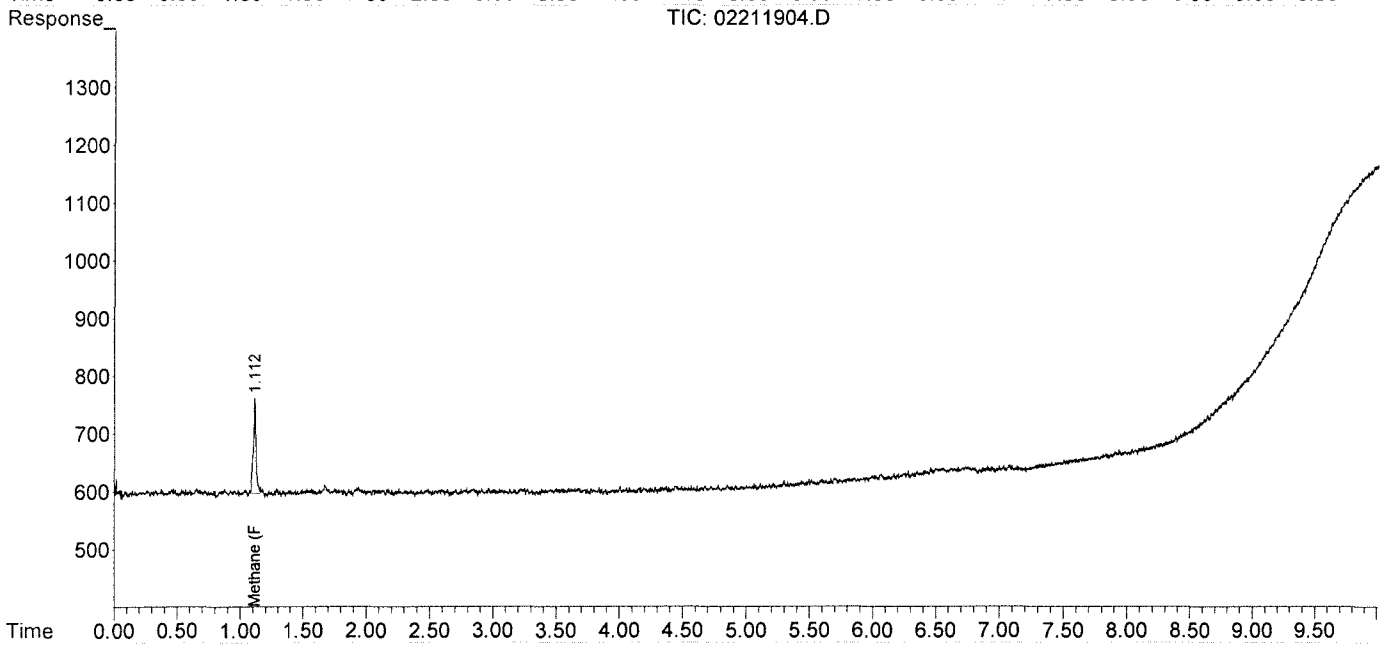
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 11:03:15
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 13:23:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

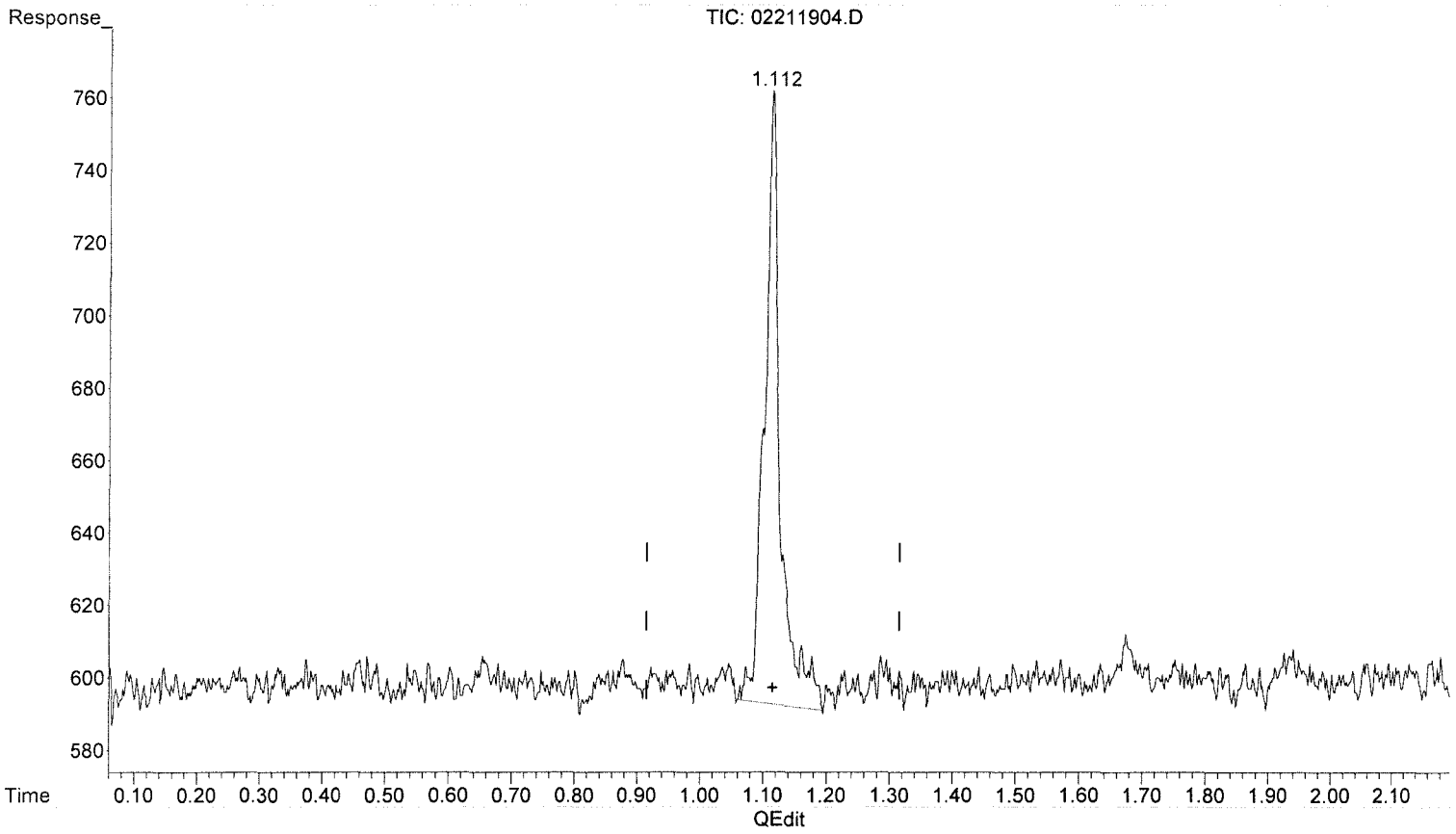




Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 11:03:15
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 13:23:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.113min 0.329 ppm

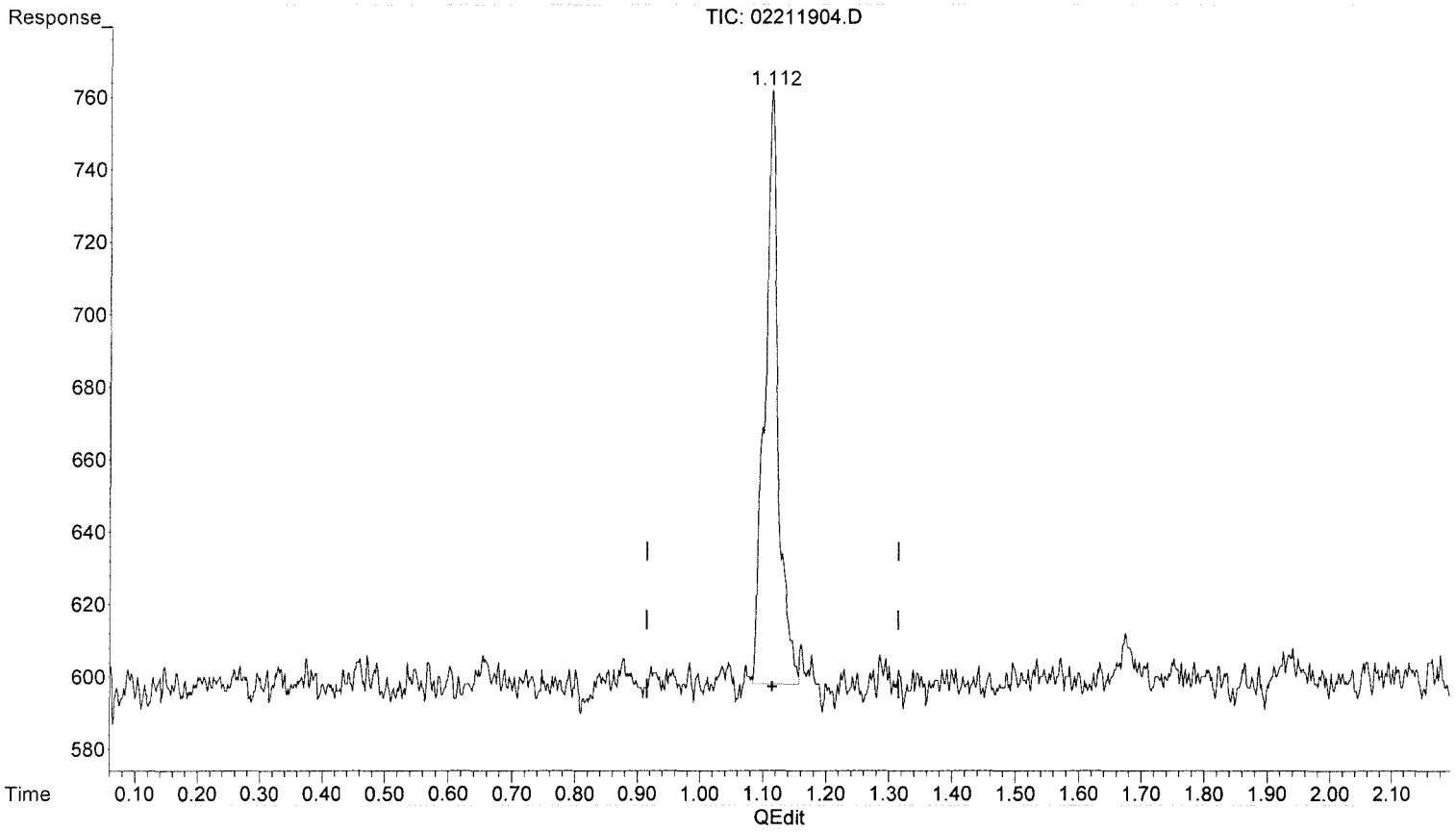
response 2988

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 11:03:15
Operator : MR
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 22 13:23:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.112min 0.271 ppm m

response 2455

MR 02/22/19
BLC

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 15:25:37
Operator : MR
Sample : P1900794-003ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 15:50:50 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

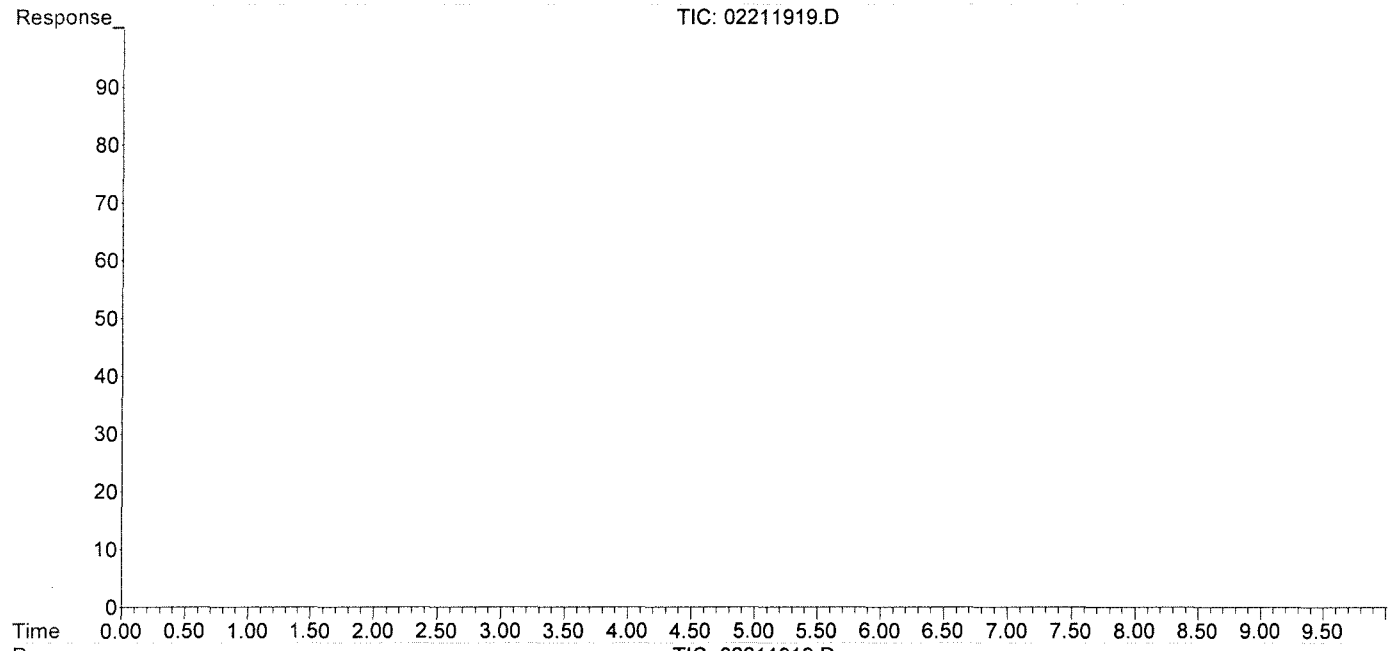
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	8304	0.915	ppm
7)	Ethylene	1.664	9906	0.592	ppm
8)	Ethane	1.925	12591	0.743	ppm
9)	Propylene	4.308	13616	0.581	ppm
10)	Propane	4.431	19188	0.771	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.654	26564	0.998	ppm
13)	n-Butane	6.654	26564	0.998	ppm

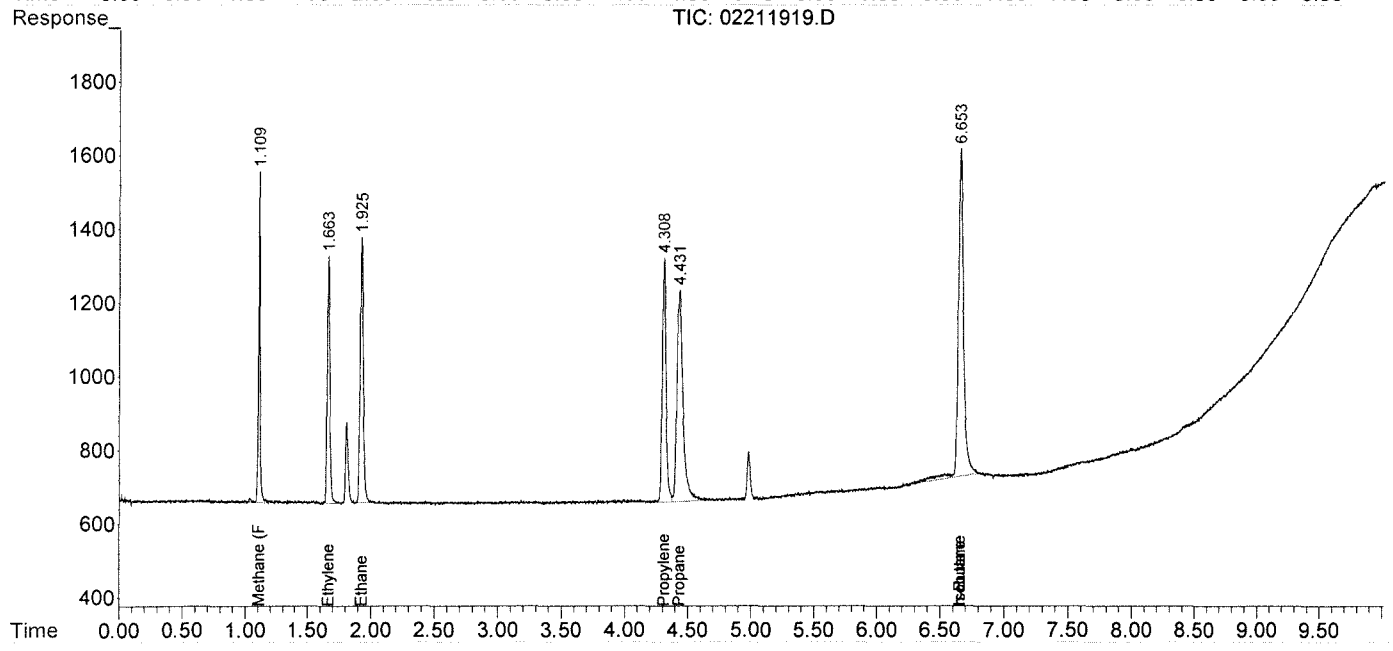
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 15:25:37
Operator : MR
Sample : P1900794-003ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 15:50:50 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211920.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 15:38:47
Operator : MR
Sample : P1900794-003msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 15:51:12 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

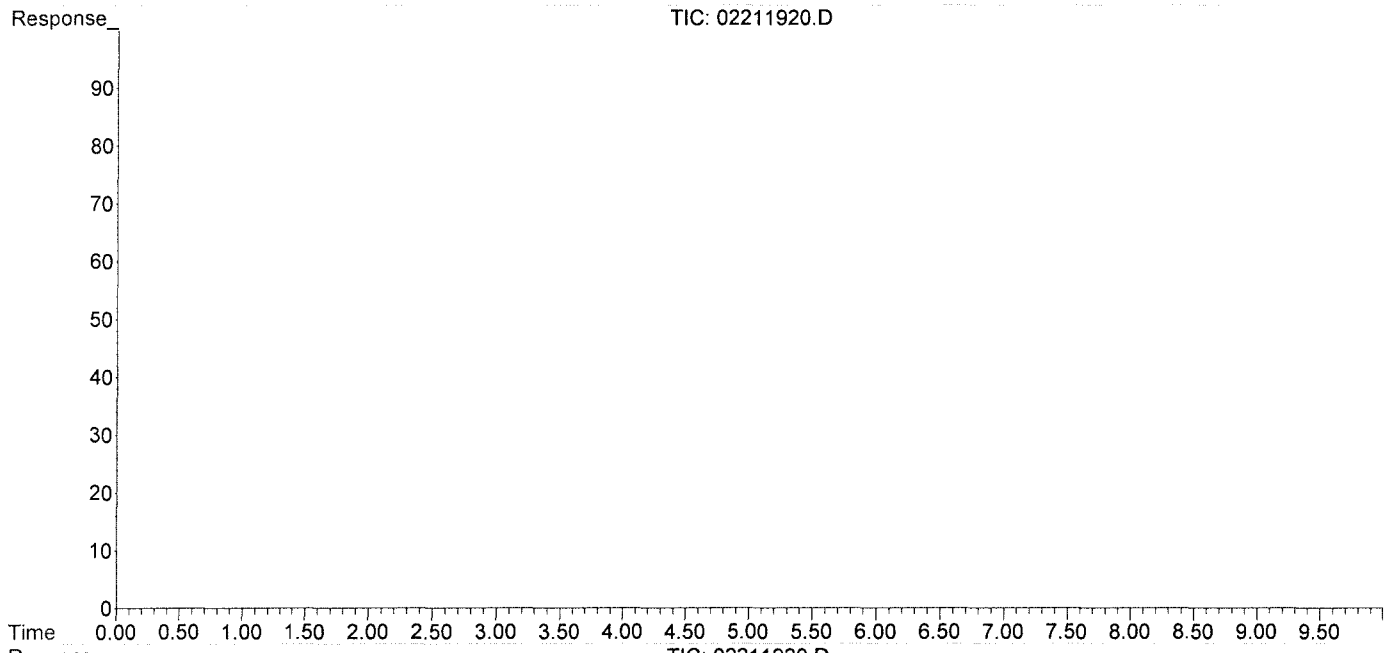
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	7927	0.874	ppm
7)	Ethylene	1.666	10417	0.622	ppm
8)	Ethane	1.928	12939	0.763	ppm
9)	Propylene	4.311	14681	0.627	ppm
10)	Propane	4.434	19709	0.792	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.654	28842	1.084	ppm
13)	n-Butane	6.654	28842	1.084	ppm

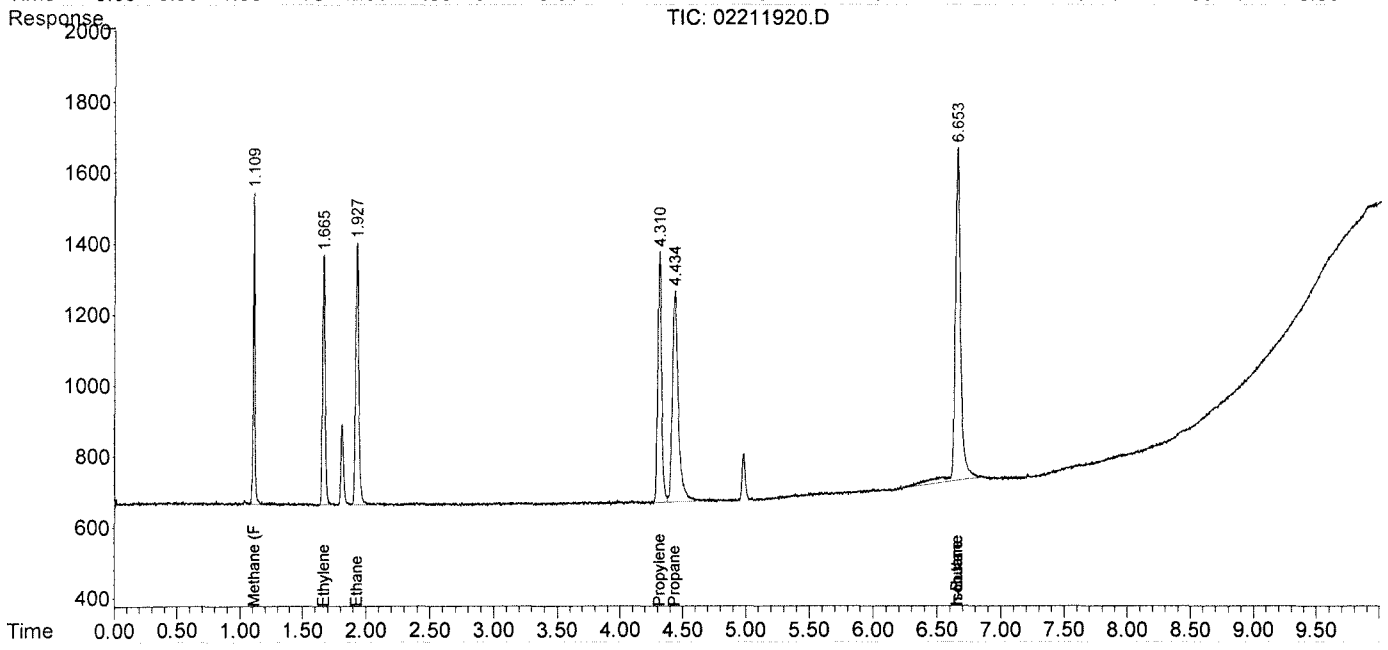
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211920.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 15:38:47
Operator : MR
Sample : P1900794-003msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 15:51:12 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 12:51:40
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 13:02:48 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

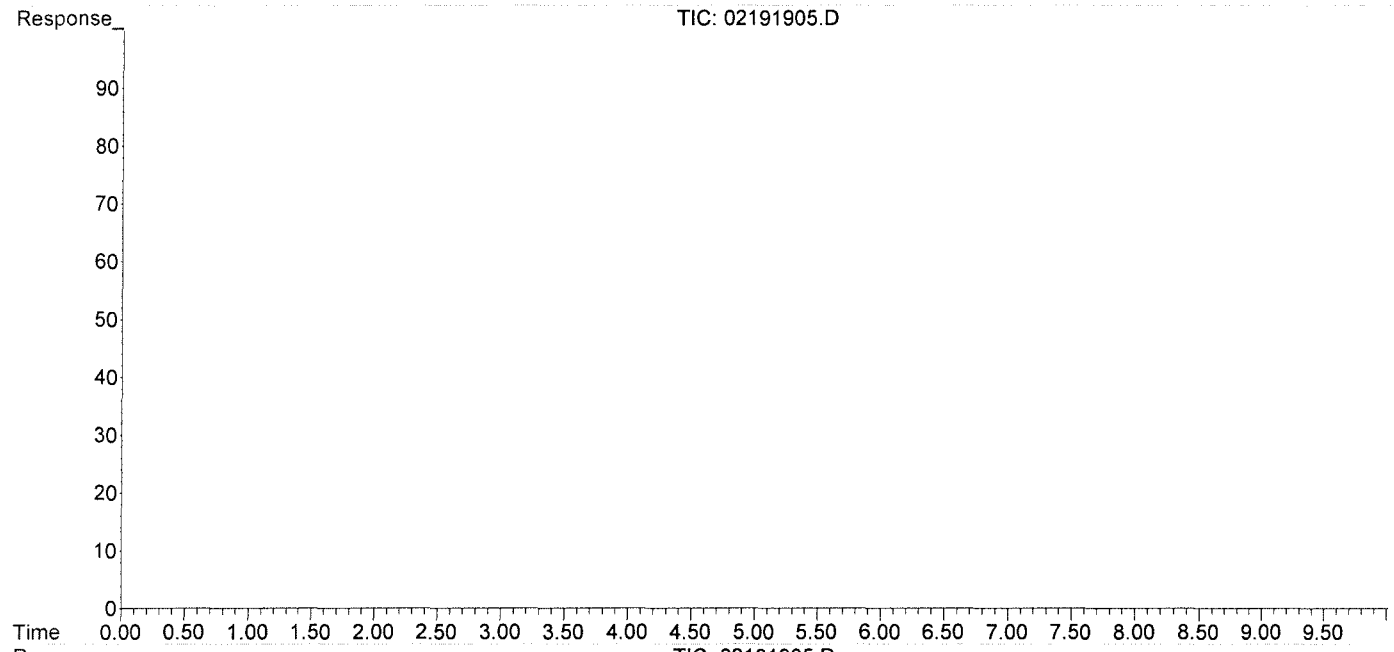
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.124	14261	1.572	ppm
7)	Ethylene	1.693	16992	1.015	ppm
8)	Ethane	1.959	21430	1.264	ppm
9)	Propylene	4.338	22875	0.976	ppm
10)	Propane	4.460	34021	1.367	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.673	44374	1.667	ppm
13)	n-Butane	6.673	44374	1.667	ppm

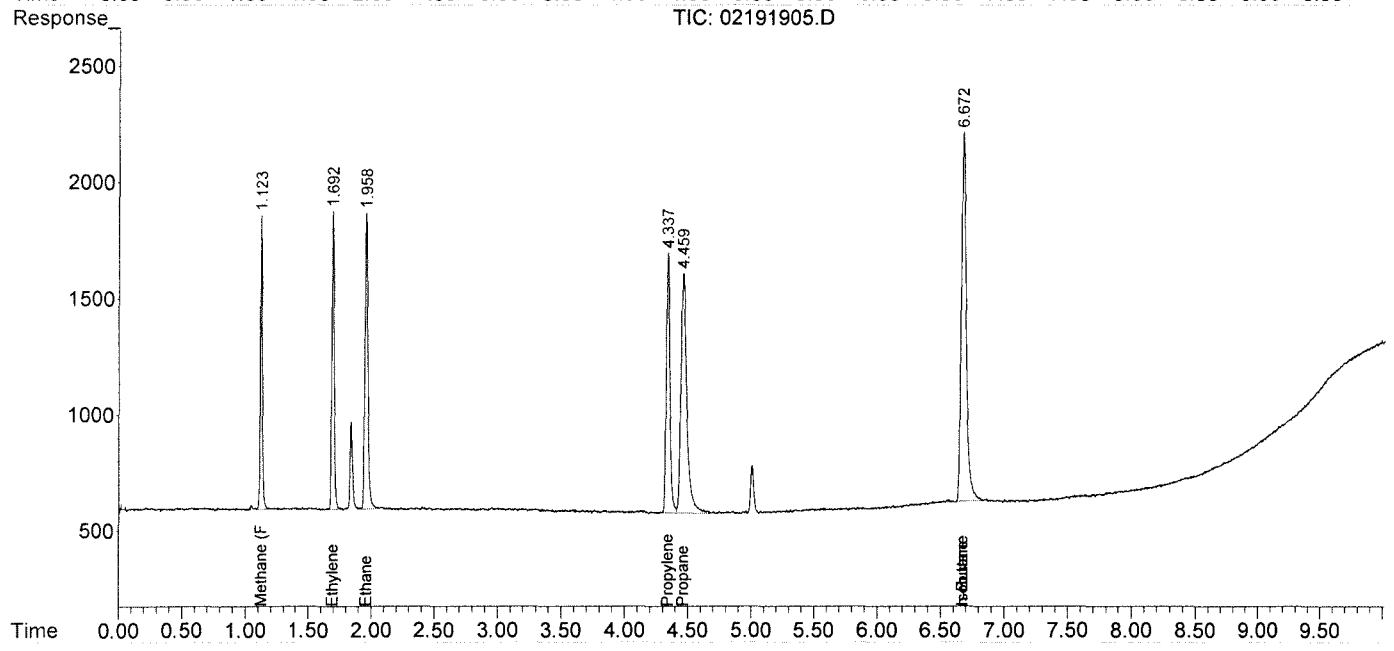
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 12:51:40
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 13:02:48 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:05:52
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 13:17:55 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

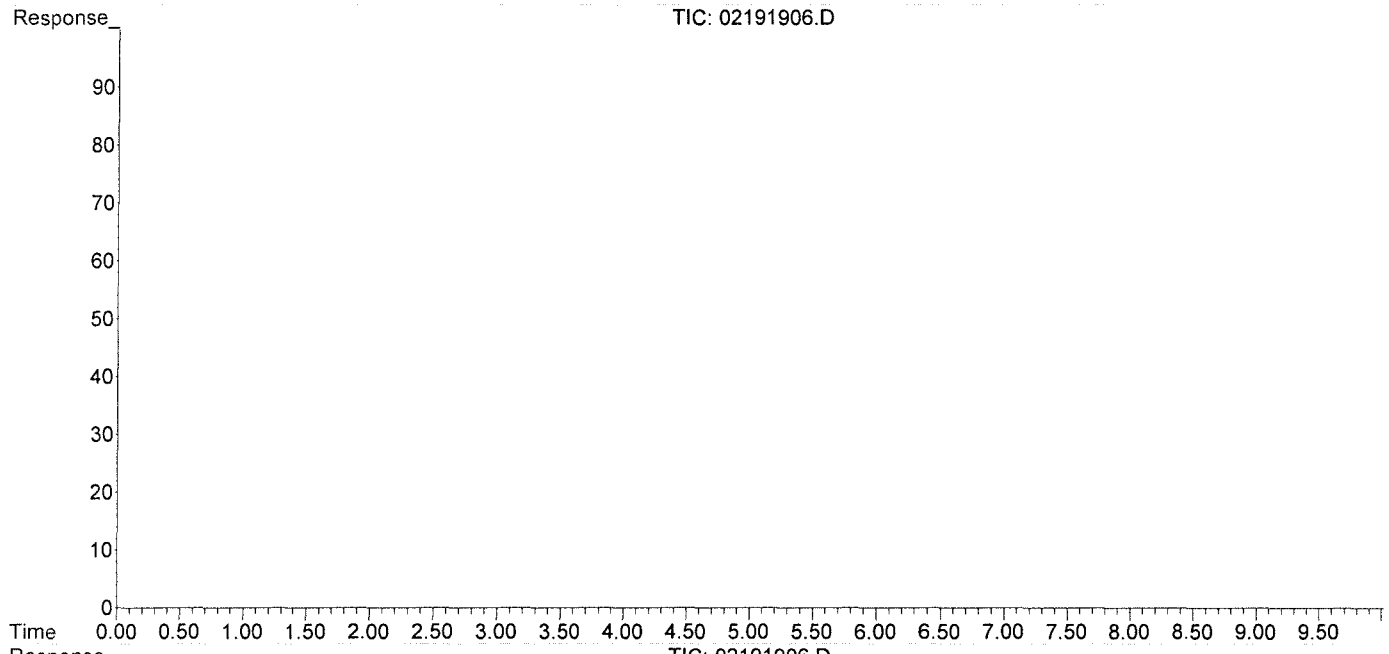
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.122	14559	1.605	ppm
7)	Ethylene	1.690	17036	1.018	ppm
8)	Ethane	1.956	21471	1.267	ppm
9)	Propylene	4.337	23150	0.988	ppm
10)	Propane	4.459	33797	1.358	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.672	45372	1.705	ppm
13)	n-Butane	6.672	45372	1.705	ppm

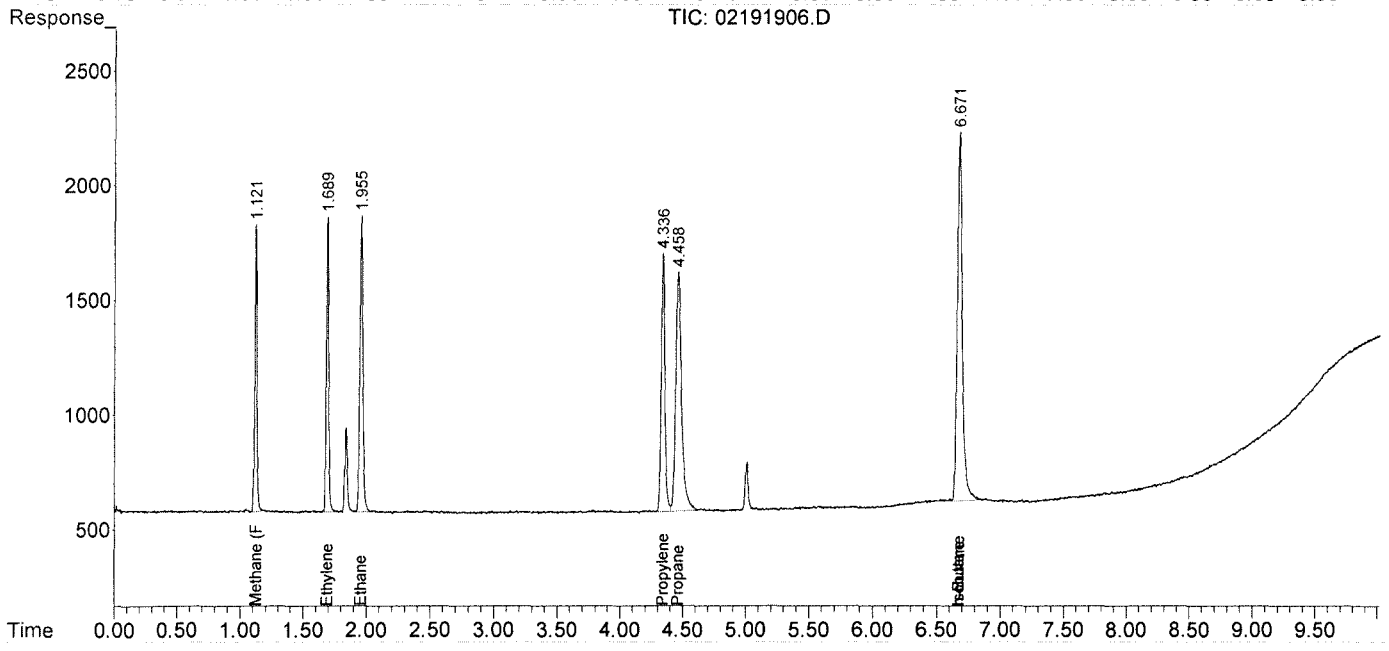
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 13:05:52
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 13:17:55 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 11:19:54
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 11:35:37 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

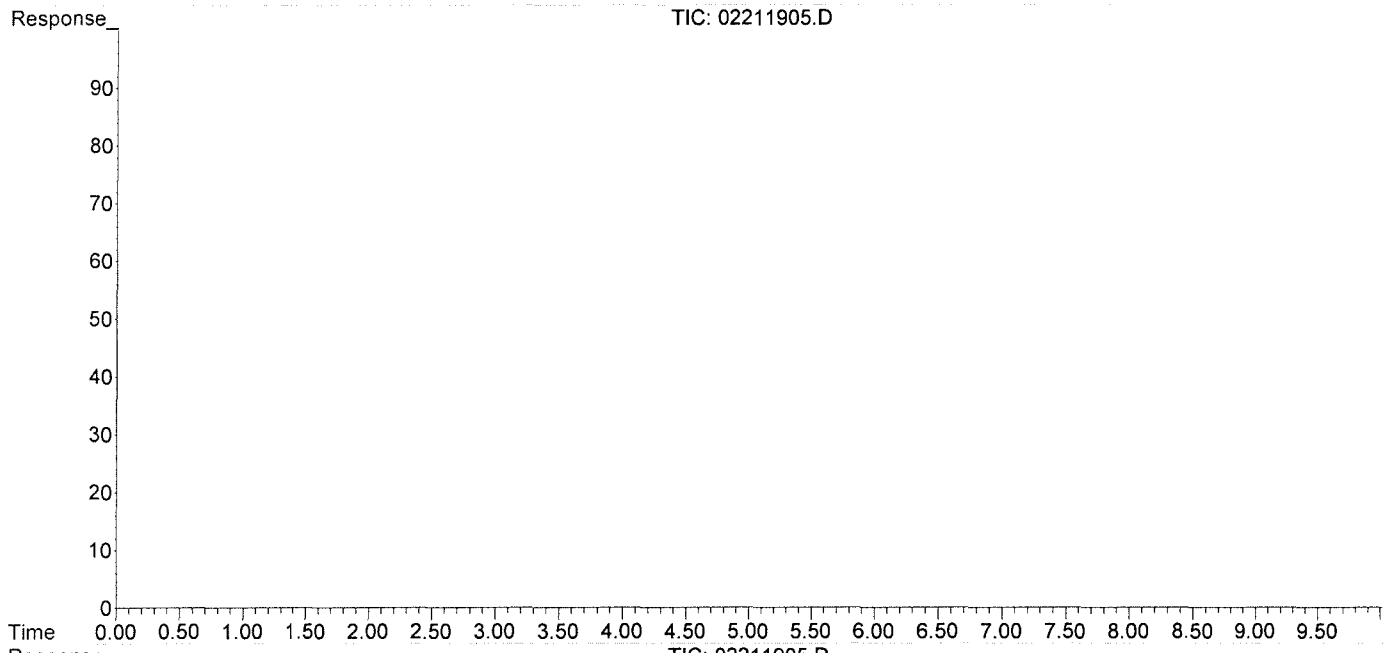
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.112	14379	1.585	ppm
7)	Ethylene	1.675	16754	1.001	ppm
8)	Ethane	1.939	21199	1.251	ppm
9)	Propylene	4.318	22726	0.970	ppm
10)	Propane	4.439	33467	1.345	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.656	44267	1.663	ppm
13)	n-Butane	6.656	44267	1.663	ppm

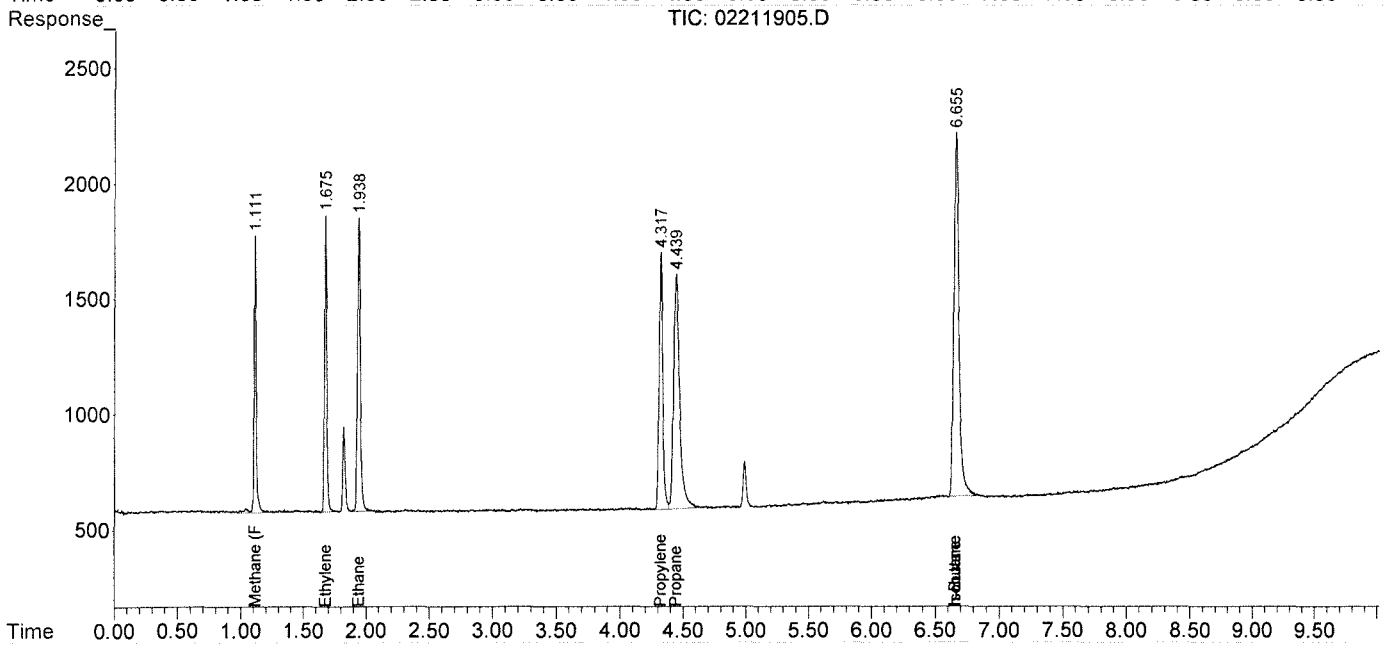
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 11:19:54
Operator : MR
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 11:35:37 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 11:38:08
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 11:51:07 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

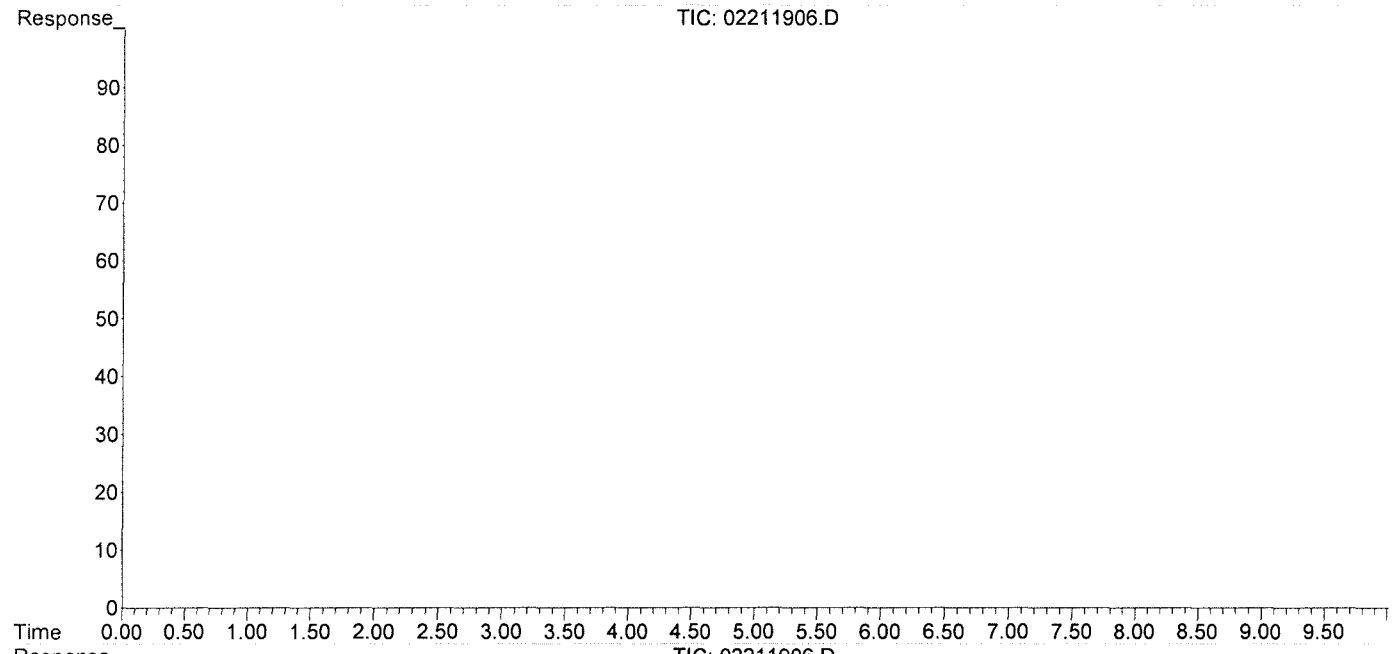
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.112	14445	1.592	ppm
7)	Ethylene	1.675	16945	1.013	ppm
8)	Ethane	1.938	21359	1.260	ppm
9)	Propylene	4.316	22859	0.976	ppm
10)	Propane	4.437	33361	1.341	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.656	46153	1.734	ppm
13)	n-Butane	6.656	46153	1.734	ppm

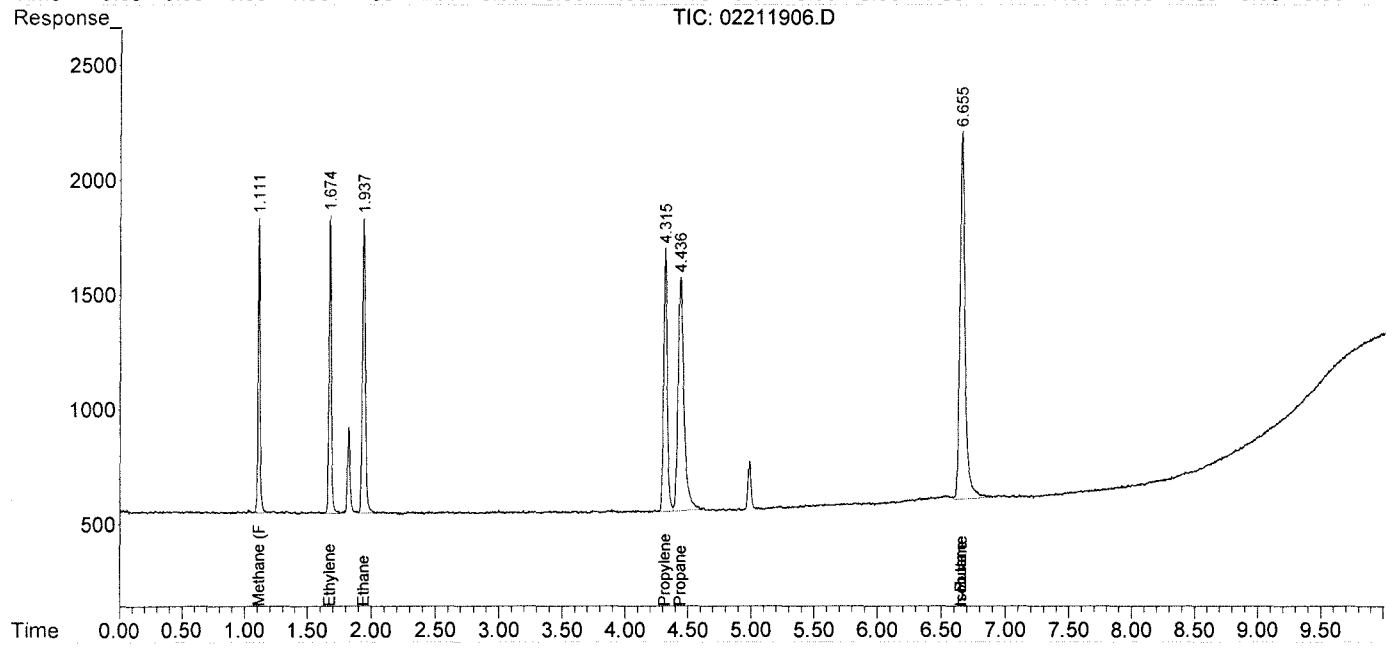
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 11:38:08
Operator : MR
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 11:51:07 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

Edit Compounds -- Compound #6 -- Methane (FID)

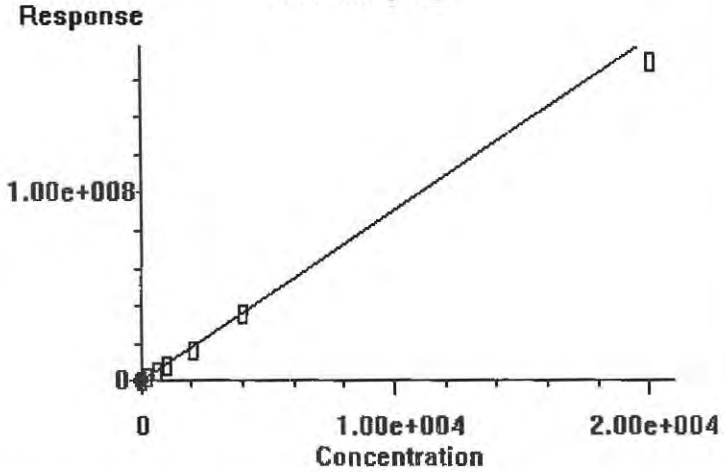
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	
2	0.302000	3564.400000
3	1.510000	14725.268625
4	4.530000	41128.575000
5	10.570000	91966.784531
6	200.000000	1735997.497500
7	600.000000	5189848.900000
8	1000.000000	8598533.570000
9	2000.000000	16098209.390000
10	4000.000000	35776839.311362
11	20000.000000	169009160.49199

Methane (FID)



0.000e+000	Quadratic term
9.071e+003	Linear term
0.000e+000	Constant term
11.657%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

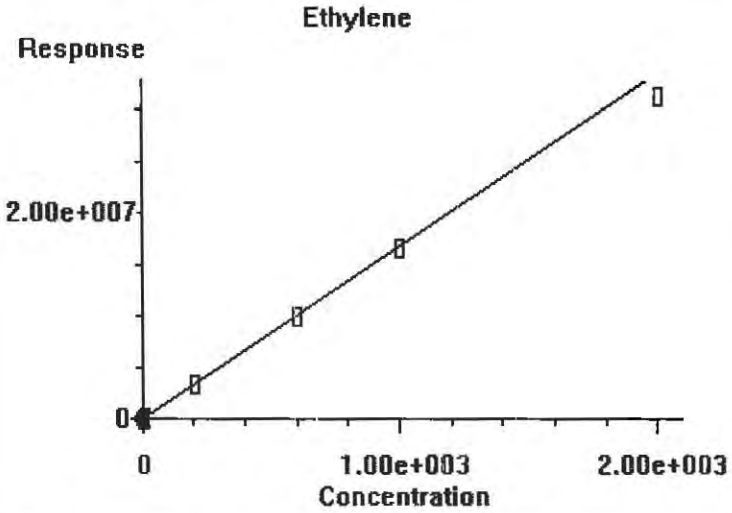
Search by: Ret Time | Name | Index | Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

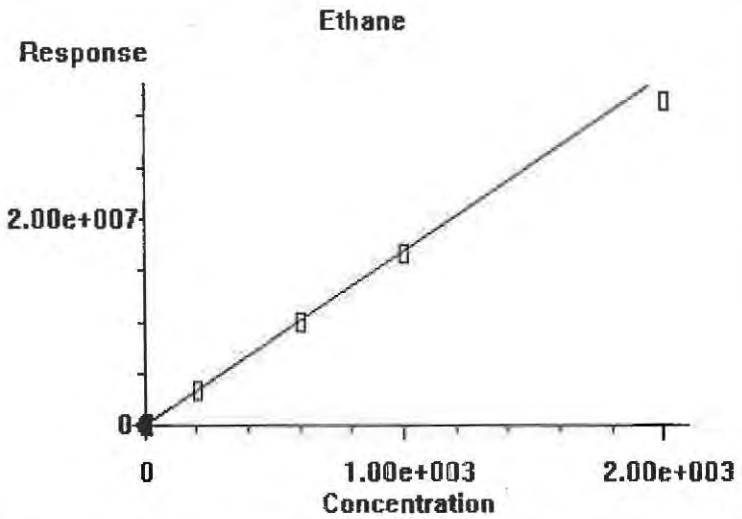
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

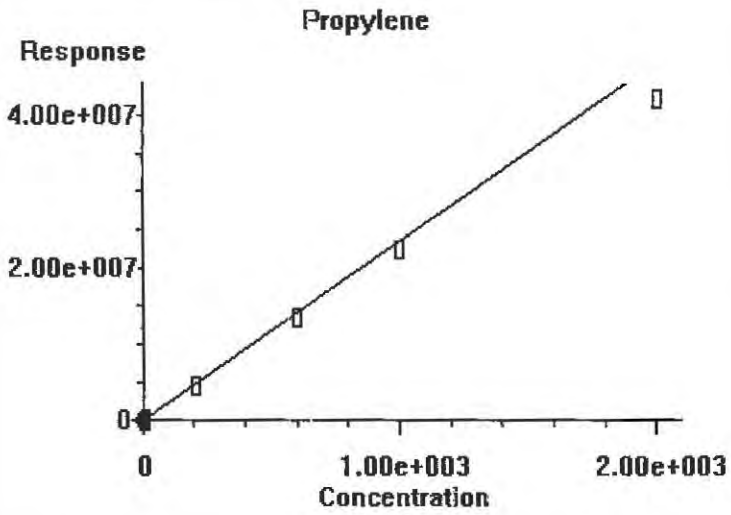
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

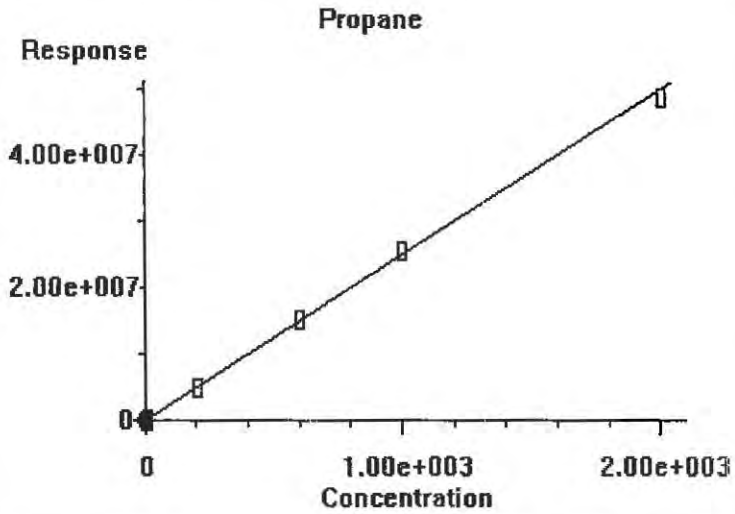
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663316
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

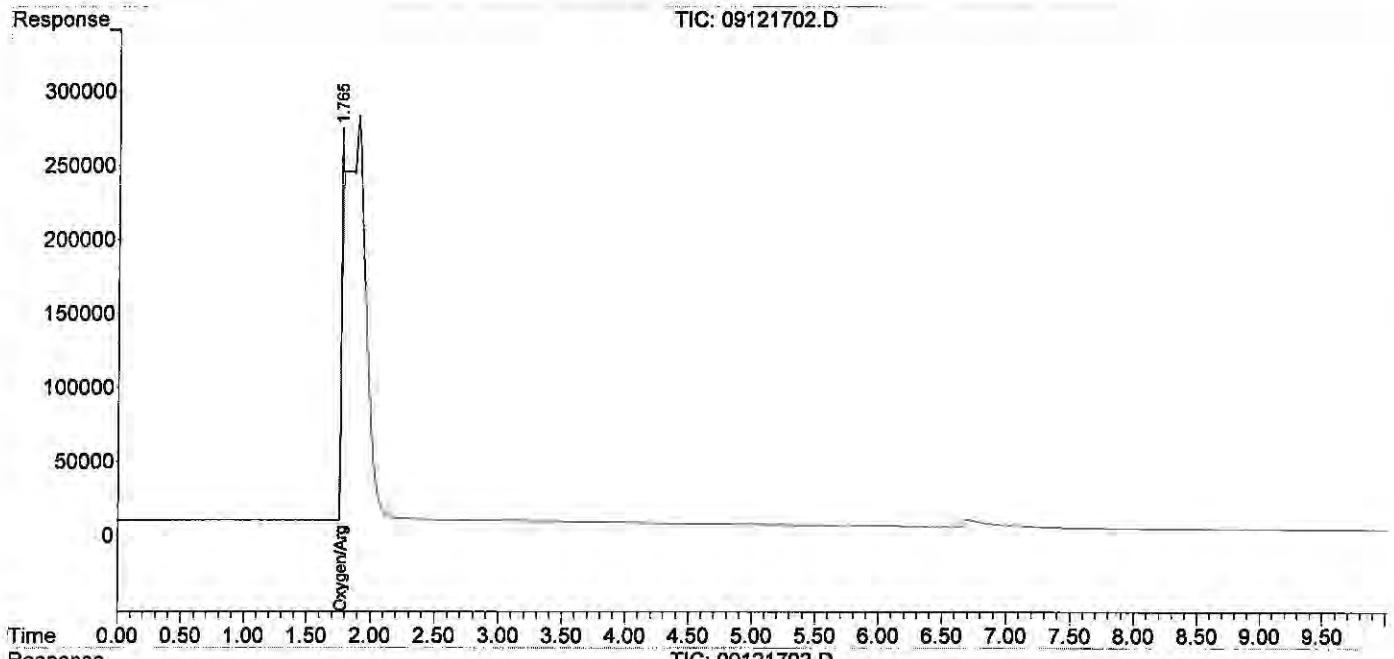
(f)=RT Delta > 1/2 Window (m)=manual int.

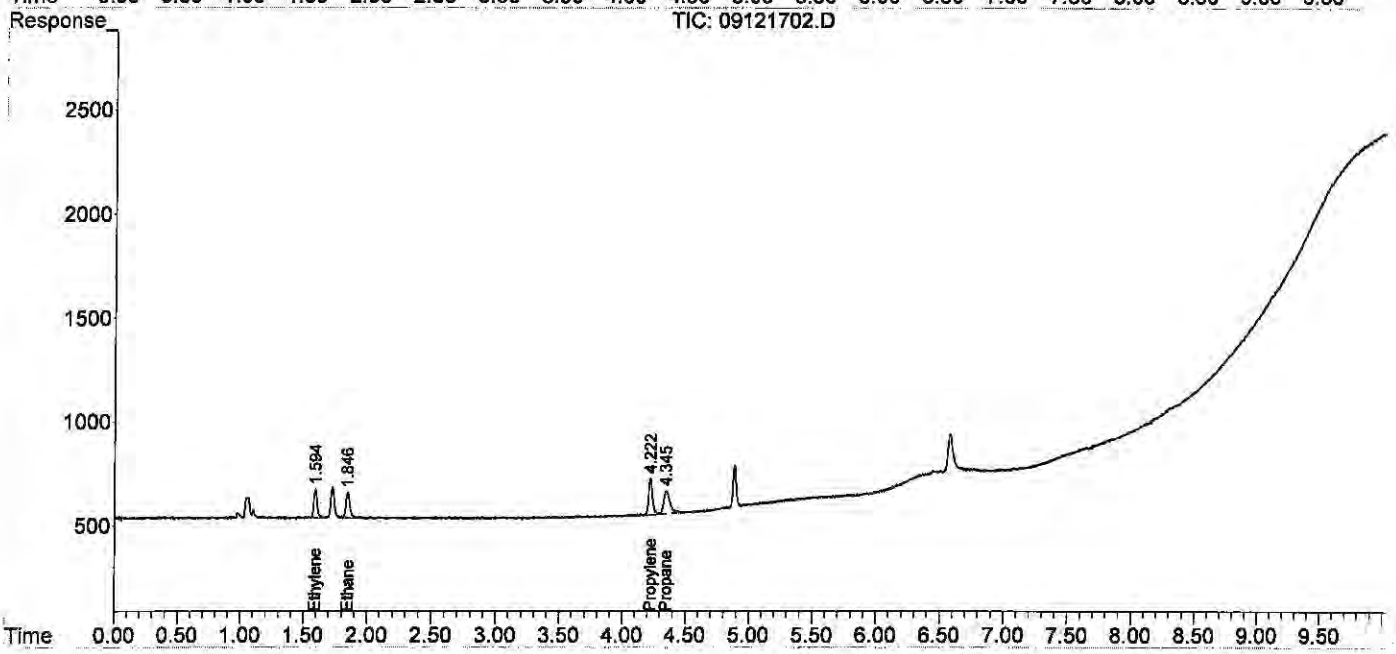
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

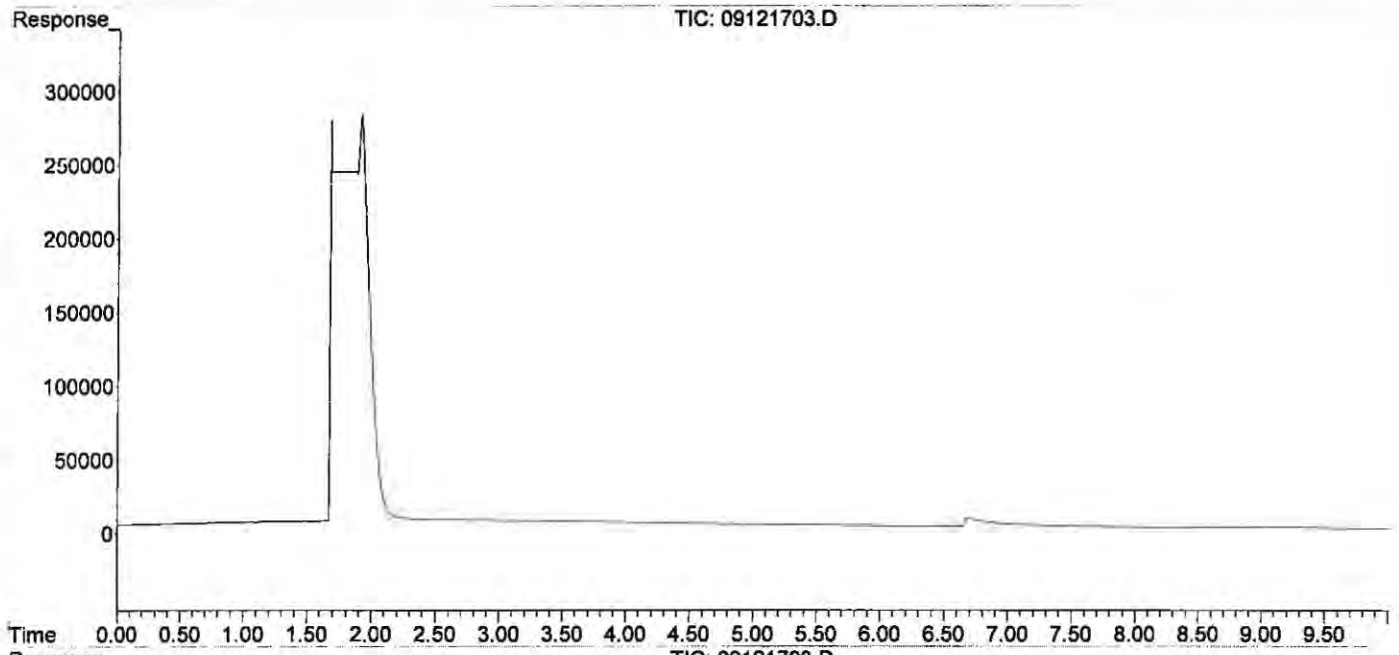
(f)=RT Delta > 1/2 Window (m)=manual int.

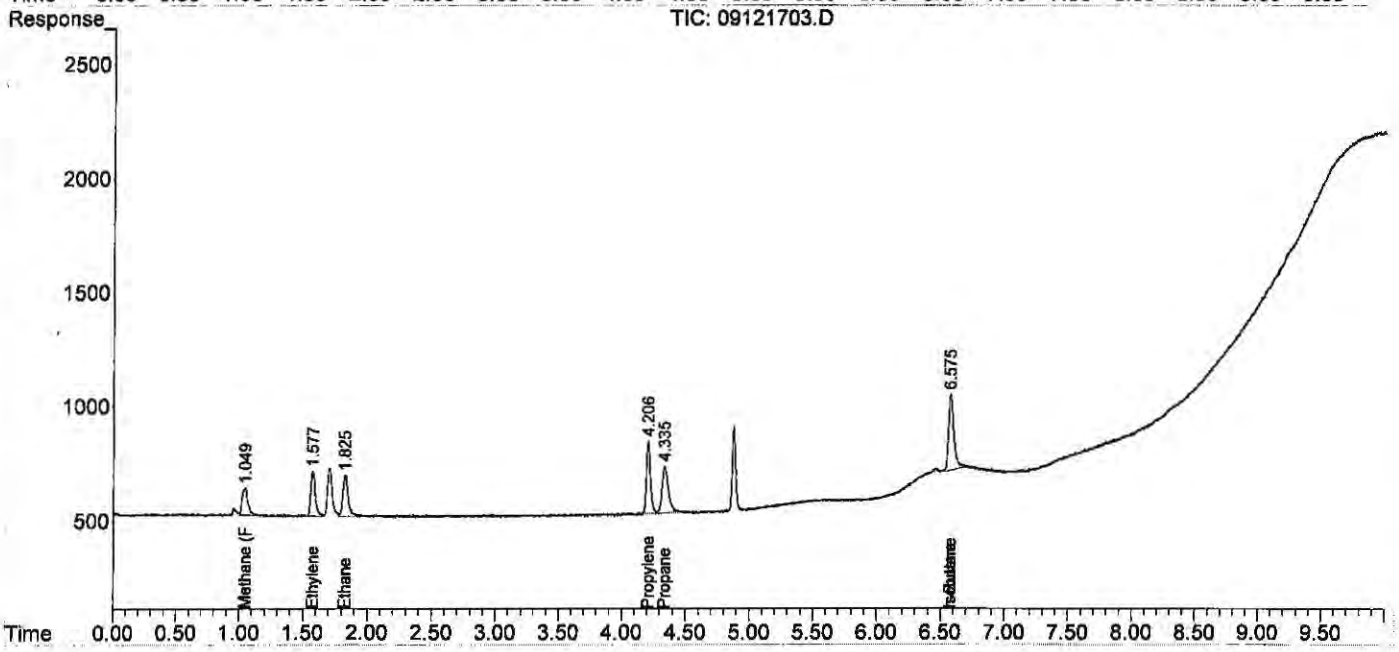
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



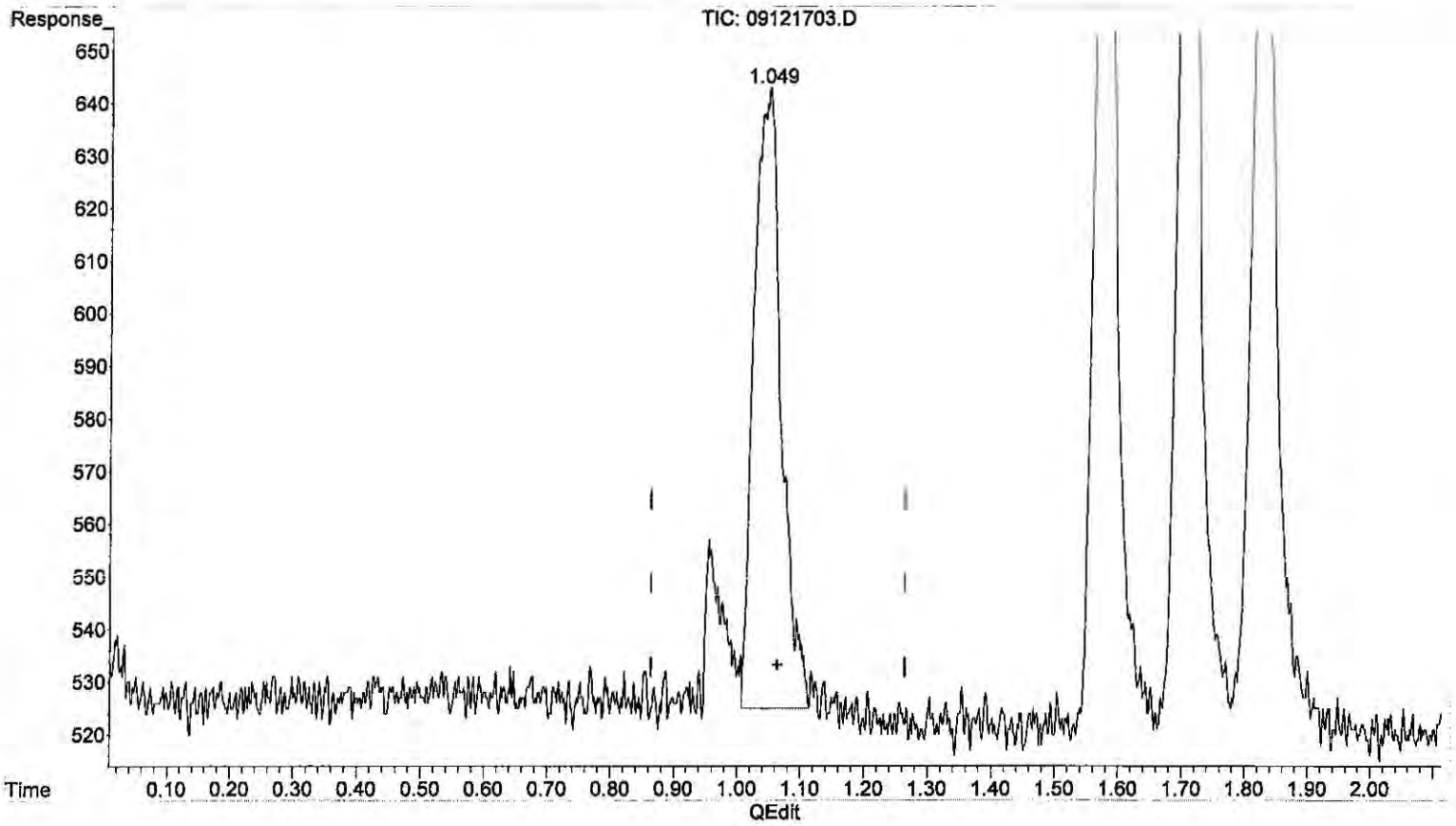


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)
1.049min 0.391 ppm m
response 3564

(+) = Expected Retention Time
RS091217_R.M Wed Sep 13 15:00:03 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

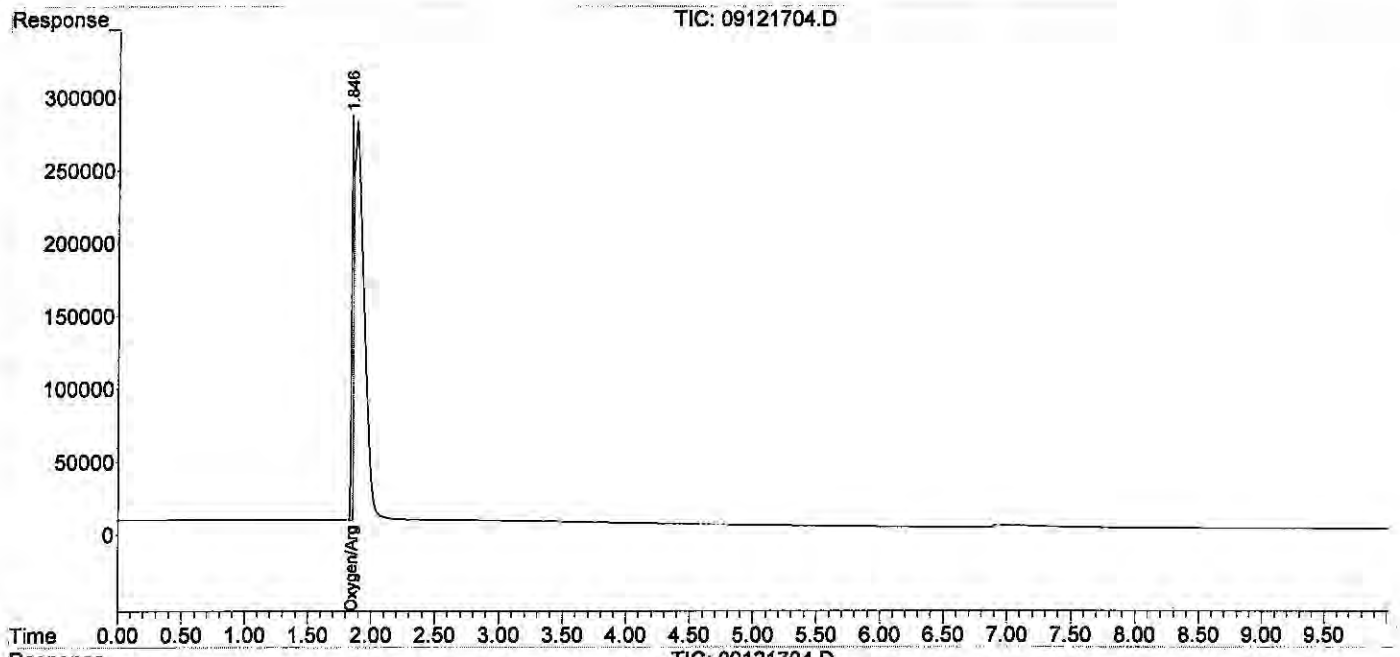
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

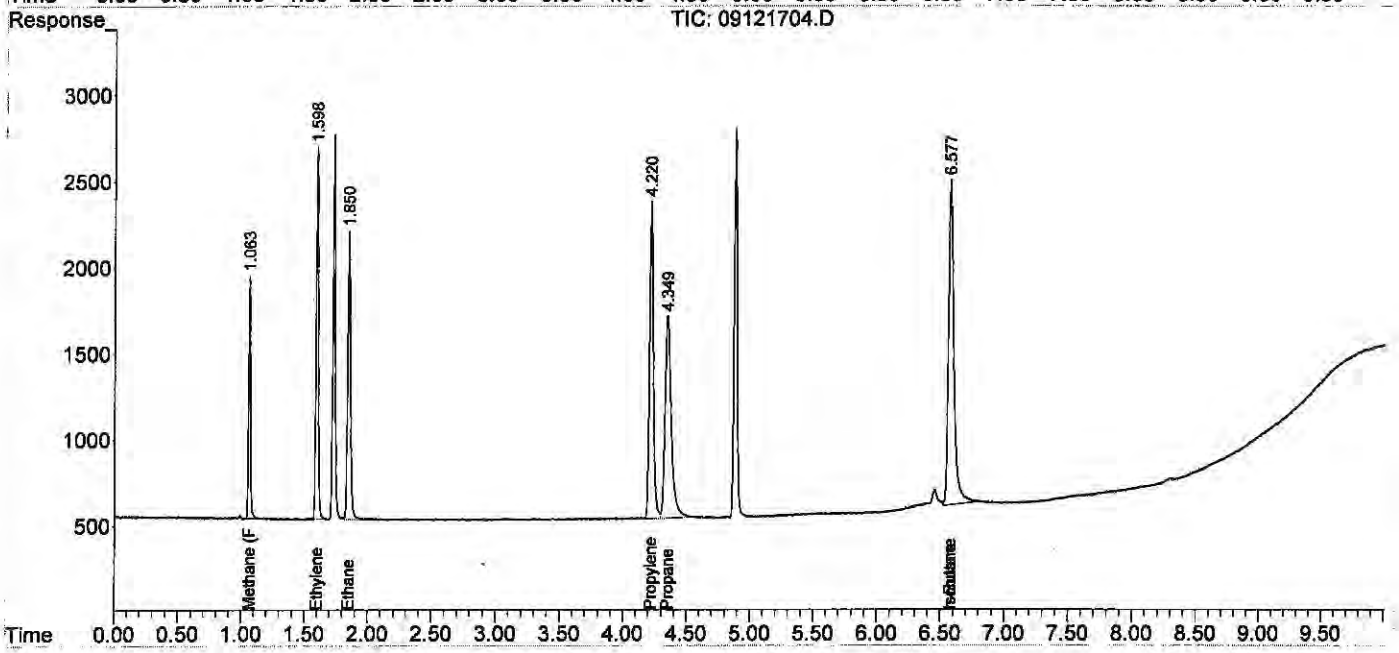
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

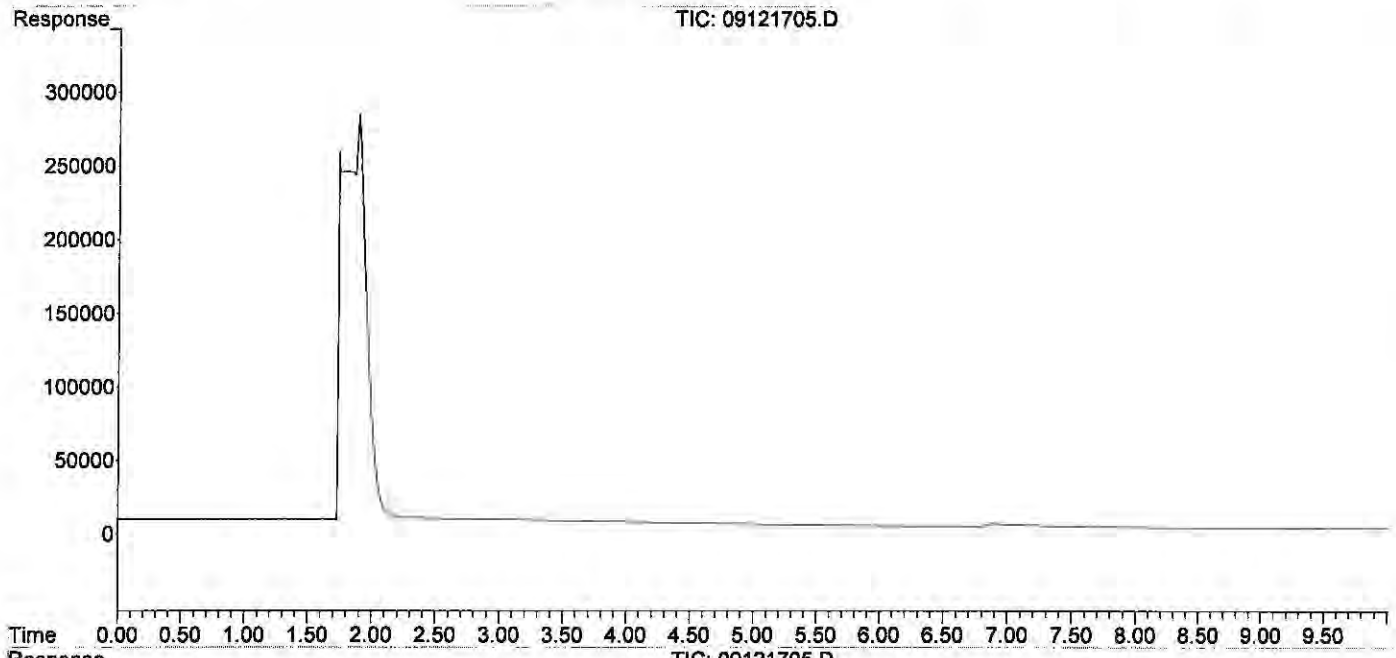
(f)=RT Delta > 1/2 Window (m)=manual int.

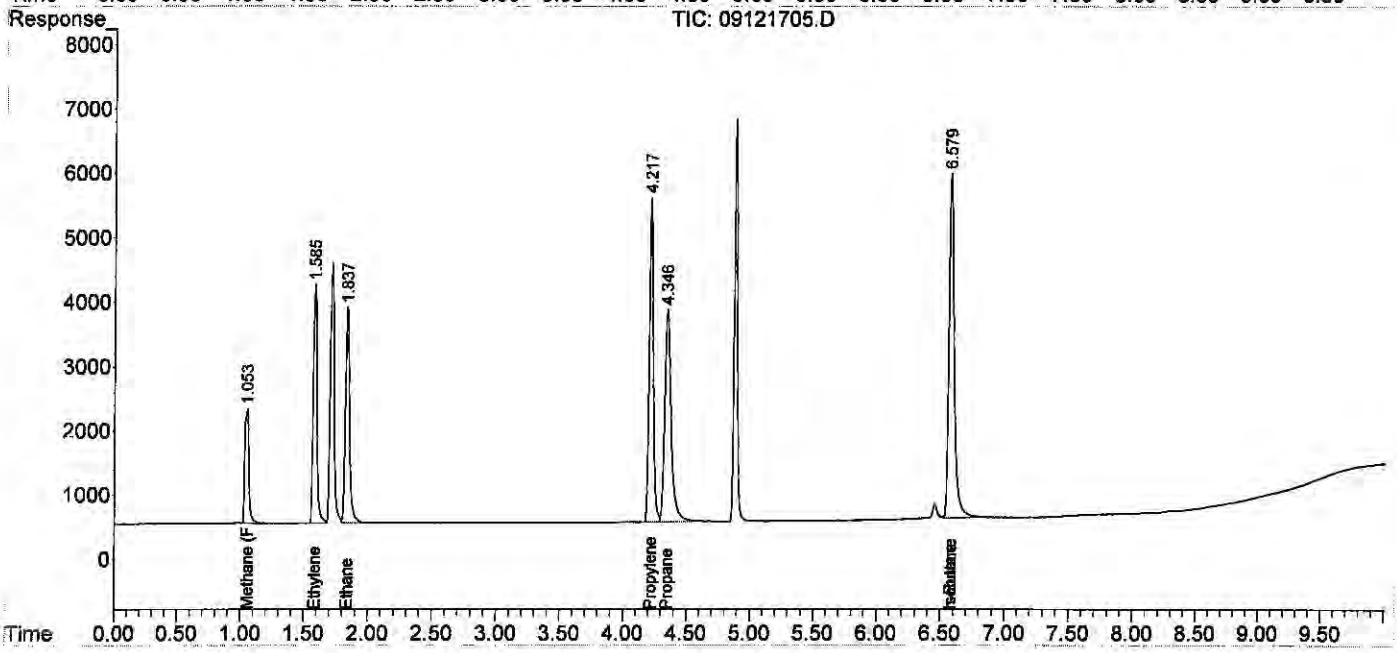
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

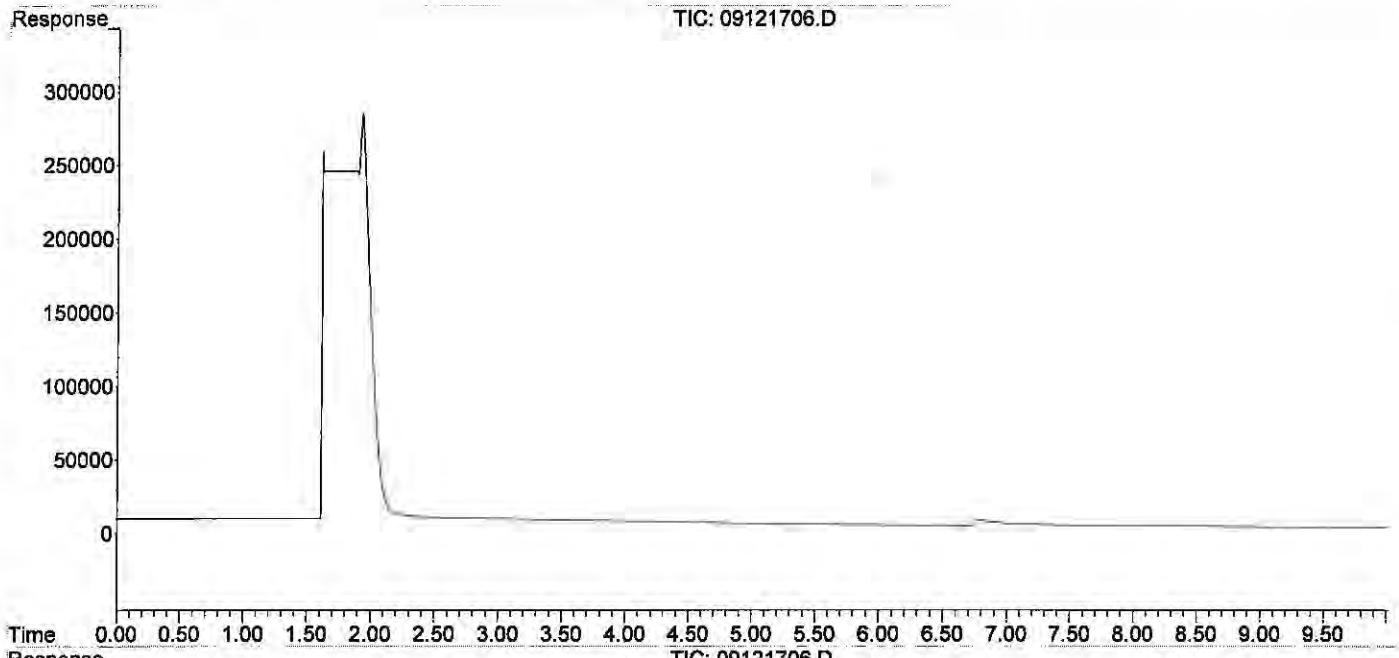
(f)=RT Delta > 1/2 Window (m)=manual int.

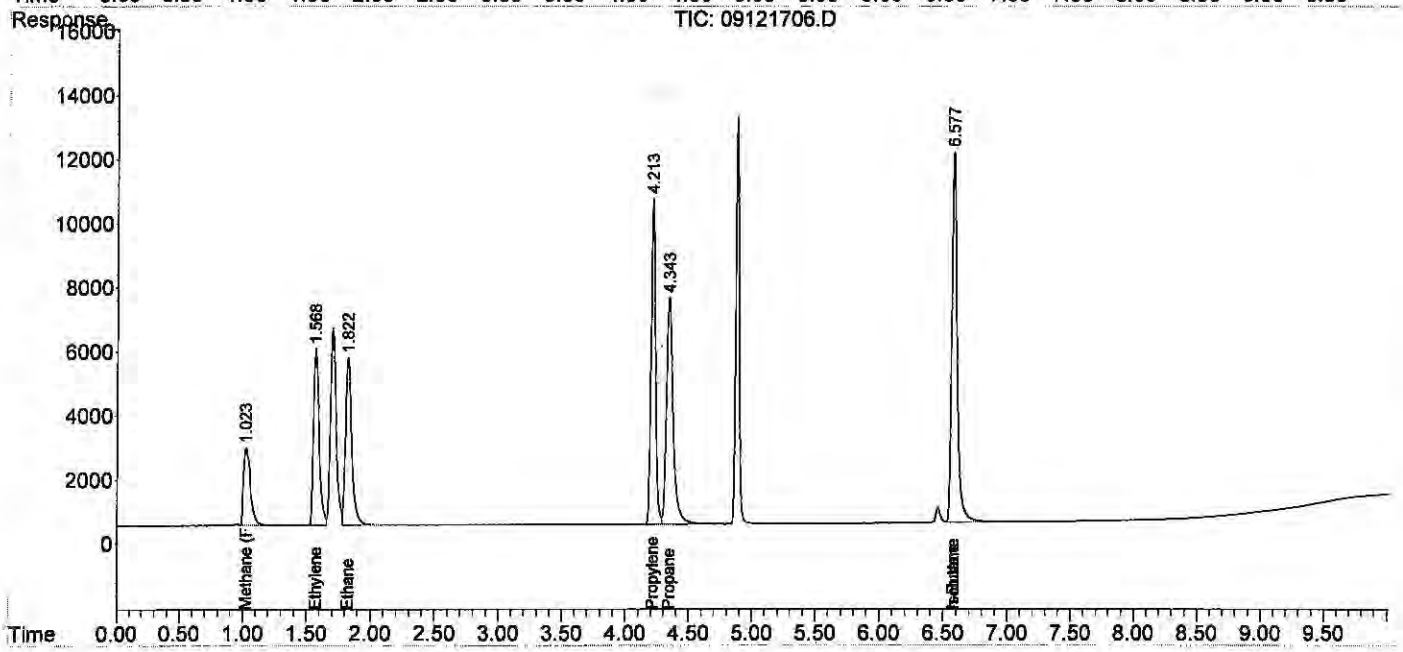
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

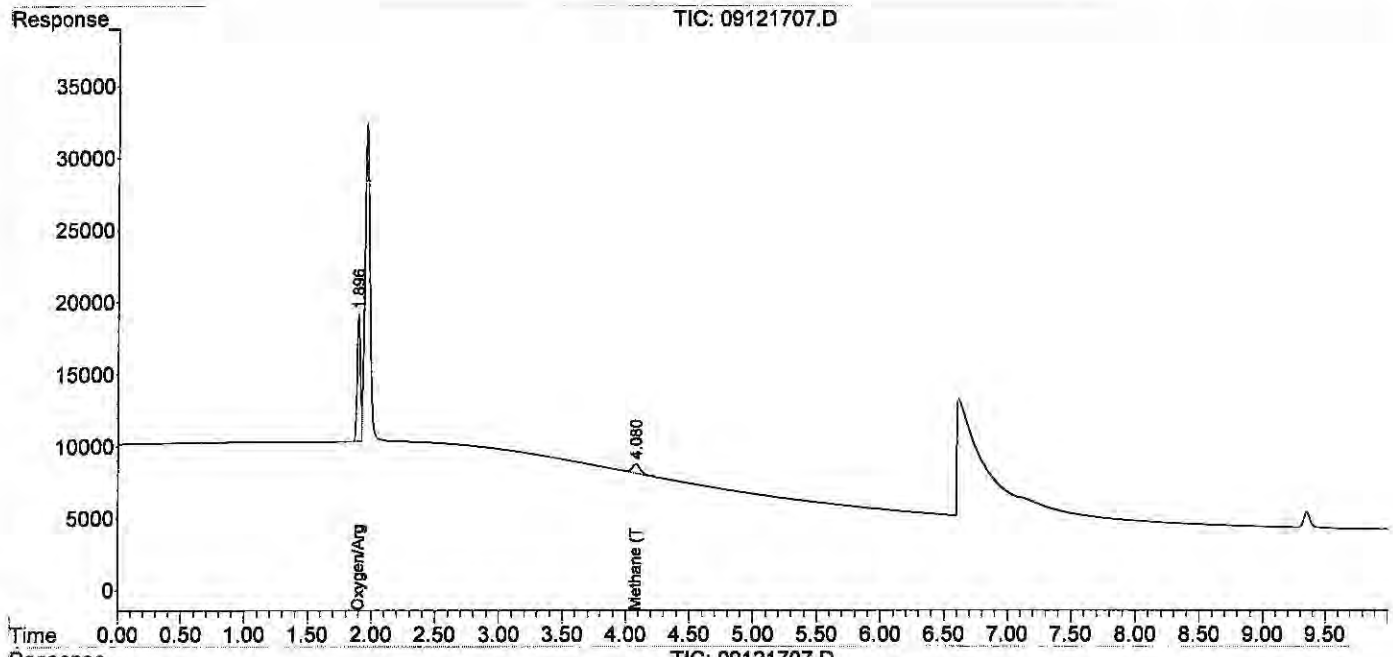
(f)=RT Delta > 1/2 Window (m)=manual int.

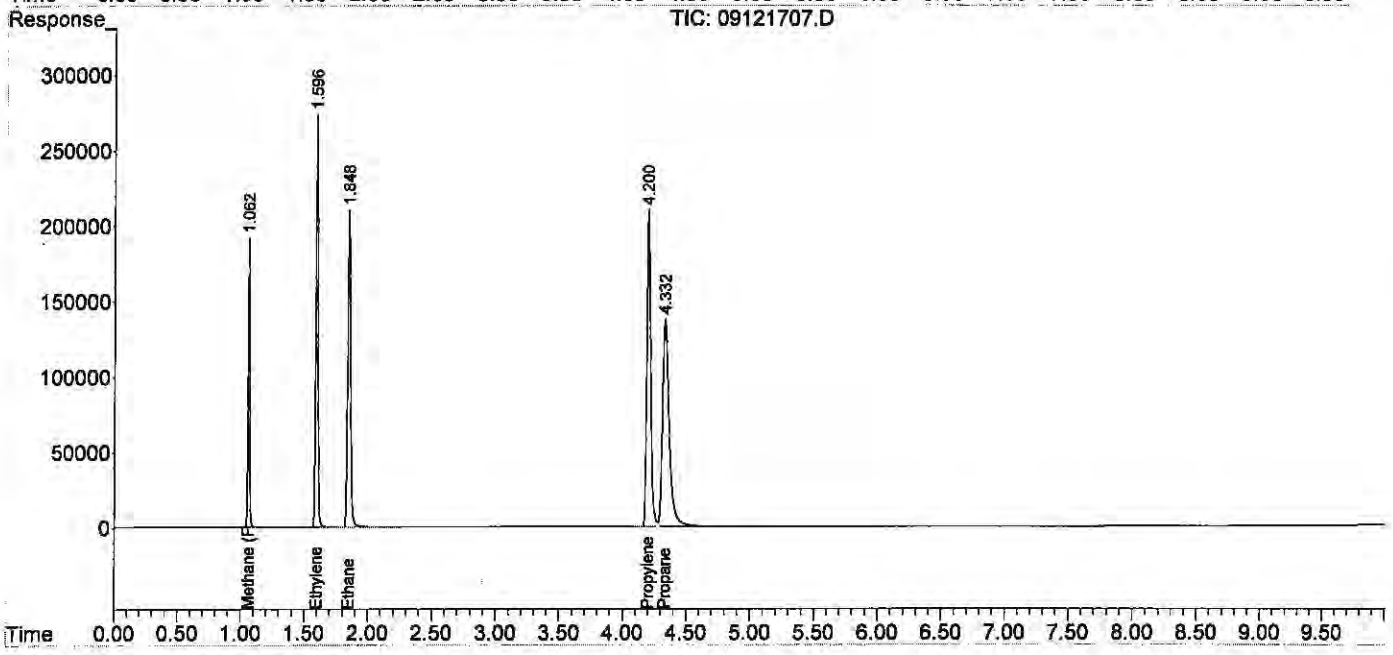
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

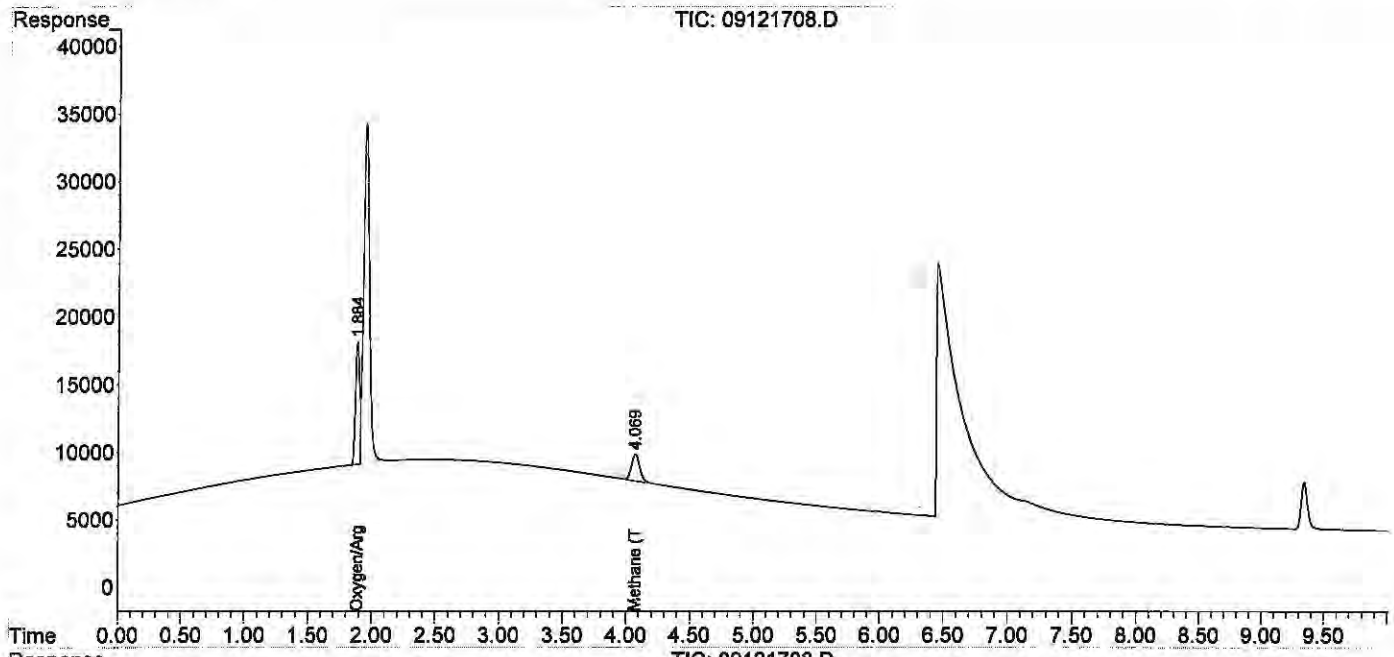
(f)=RT Delta > 1/2 Window (m)=manual int.

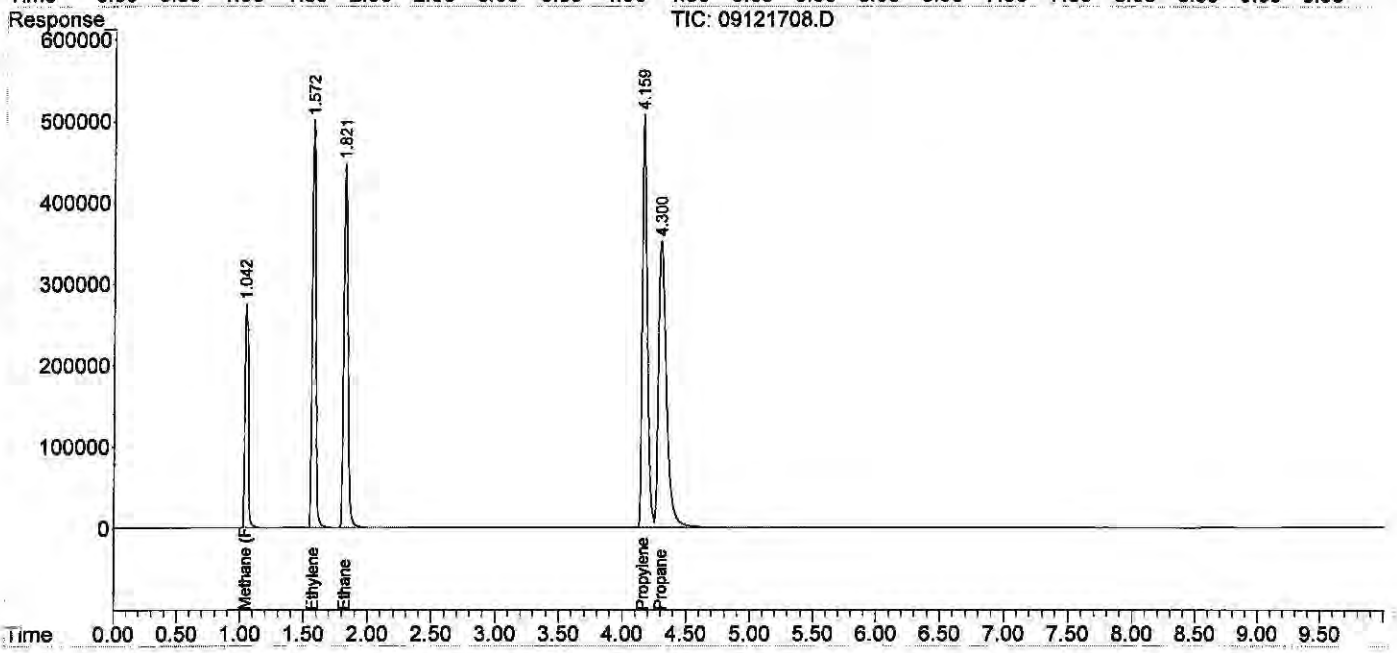
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

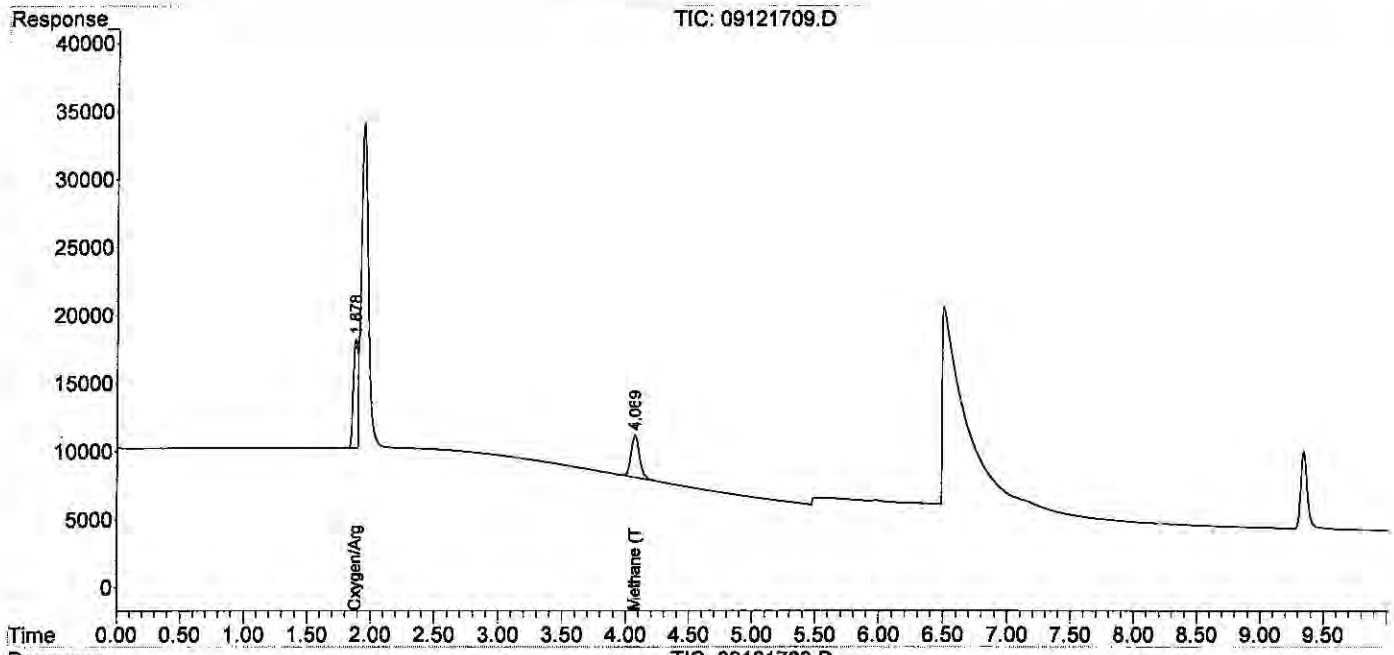
(f)=RT Delta > 1/2 Window (m)=manual int.

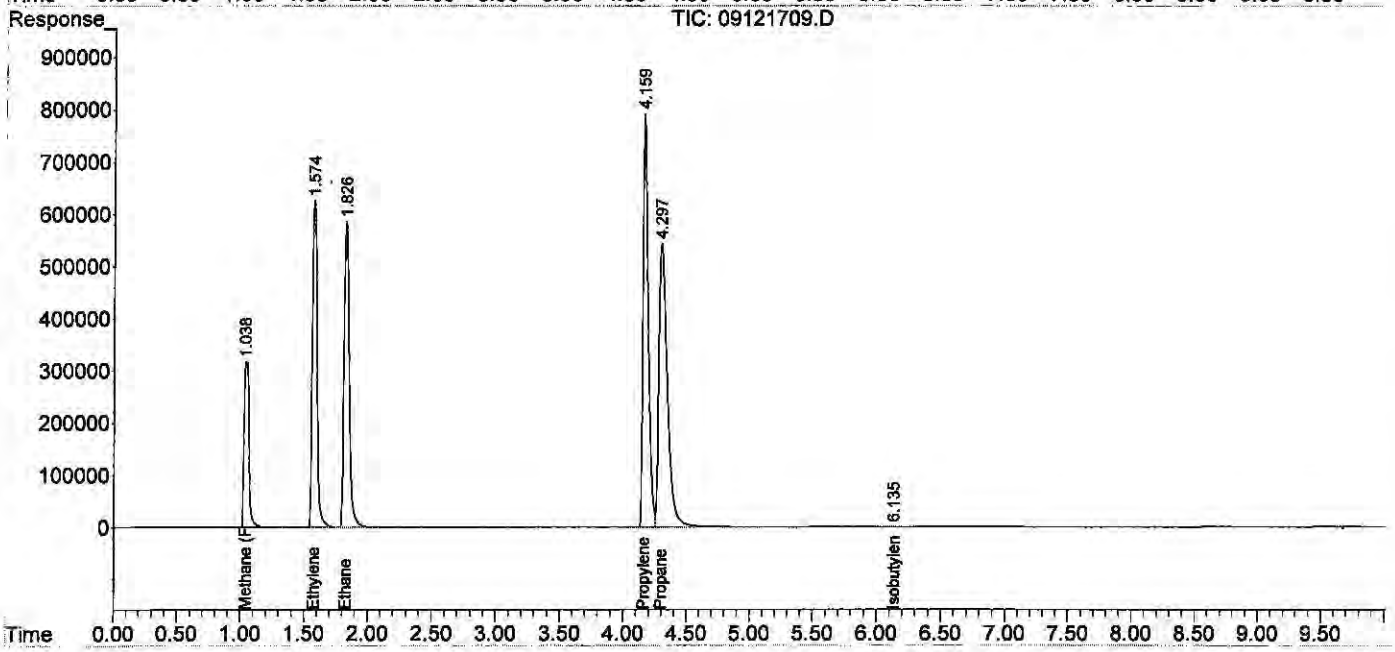
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

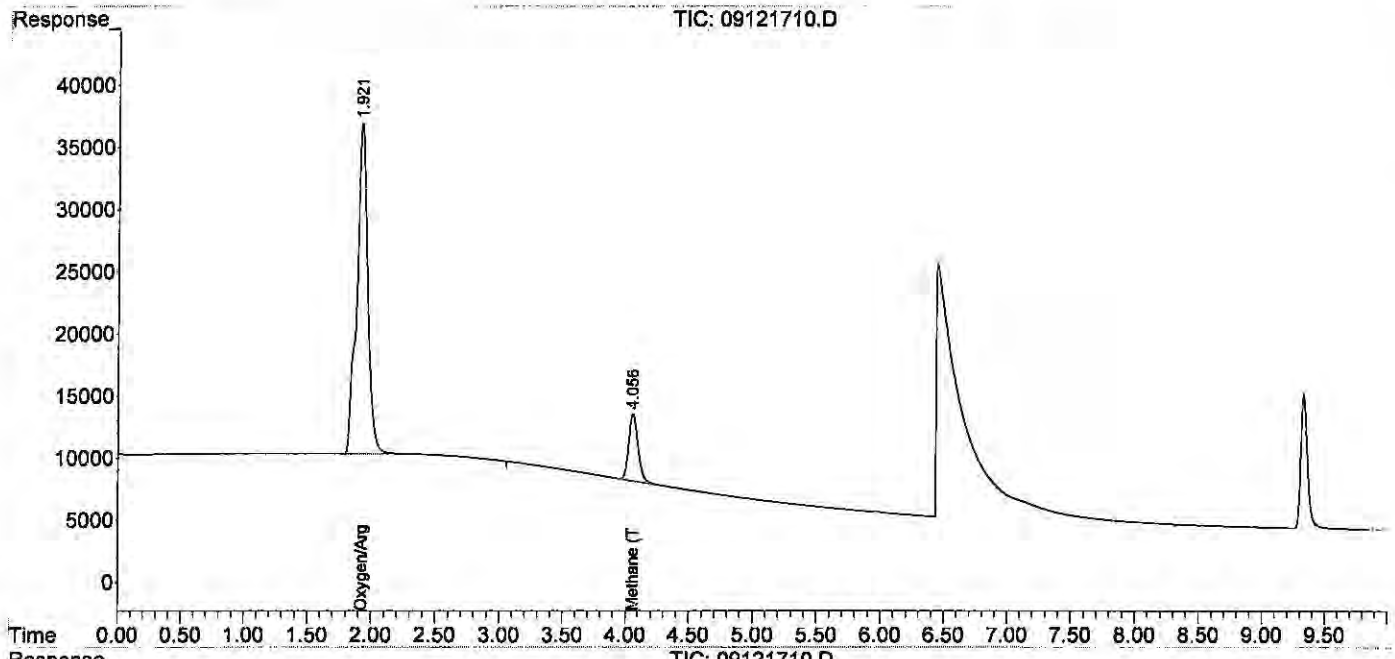
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

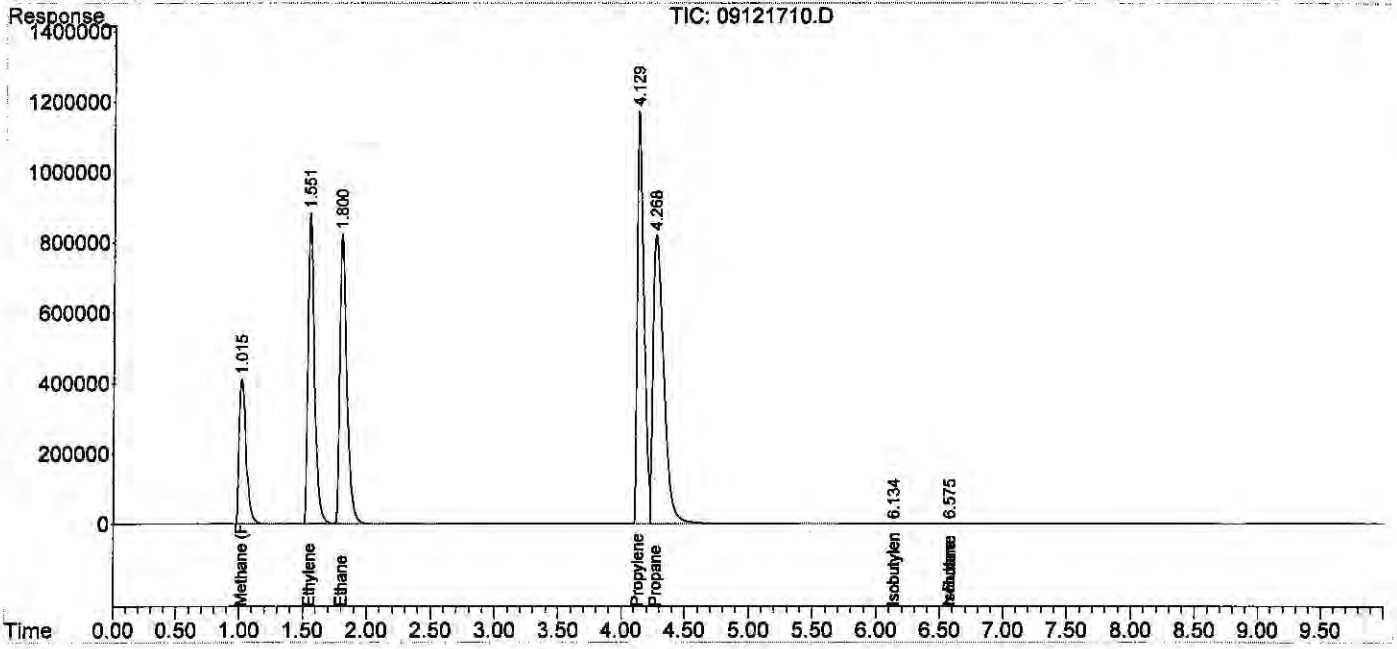
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



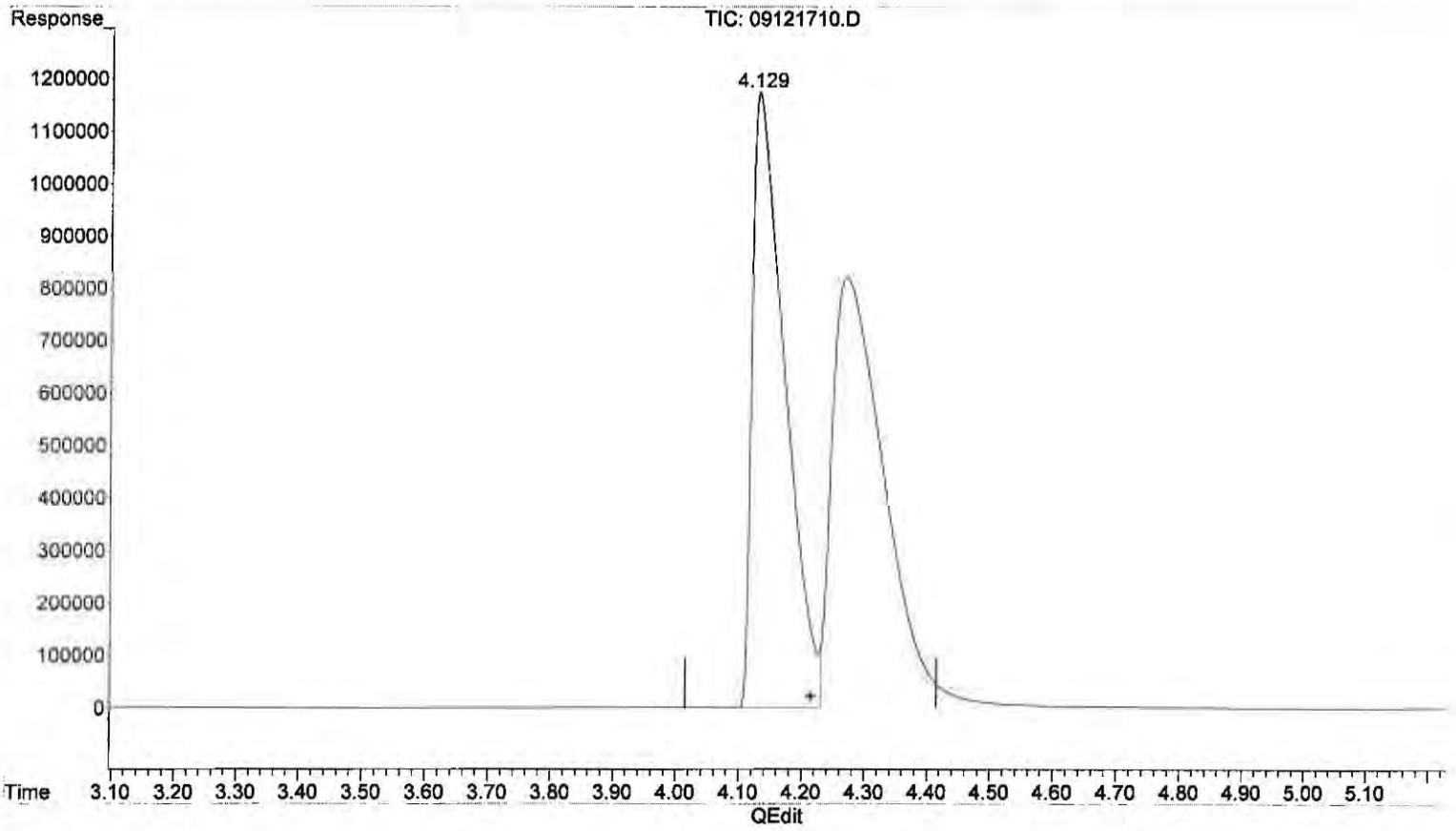


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

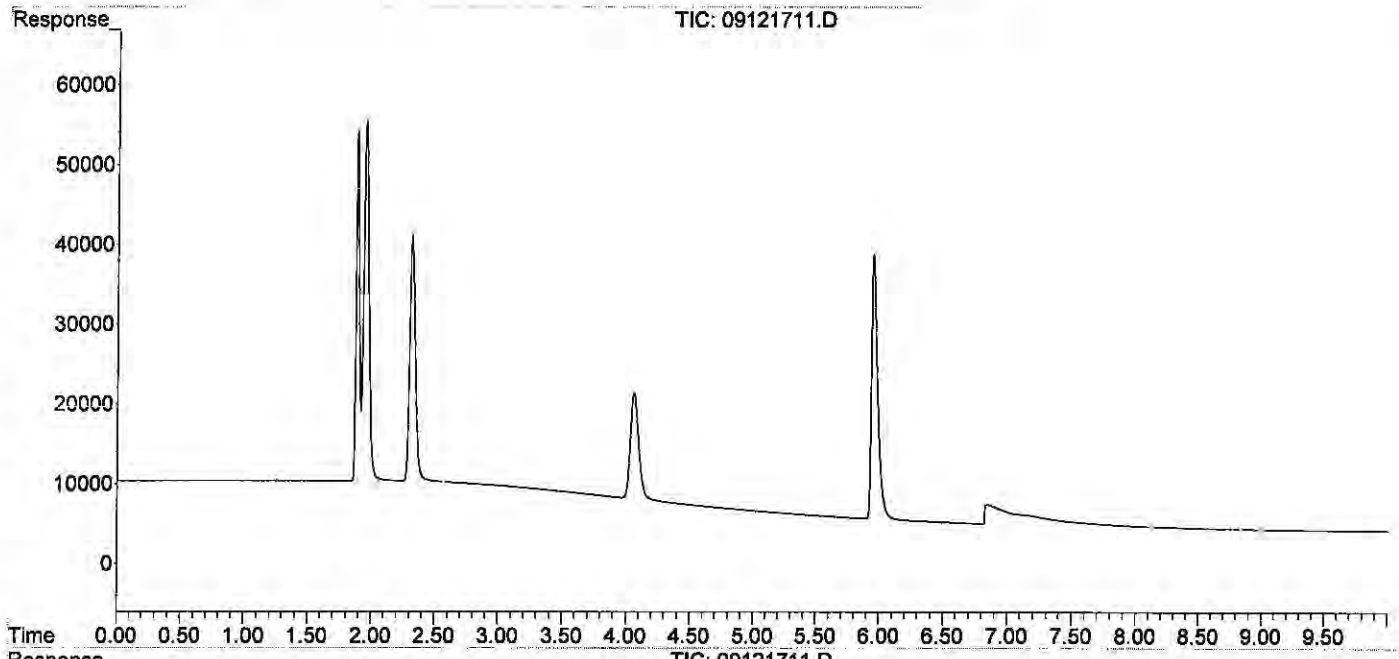
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

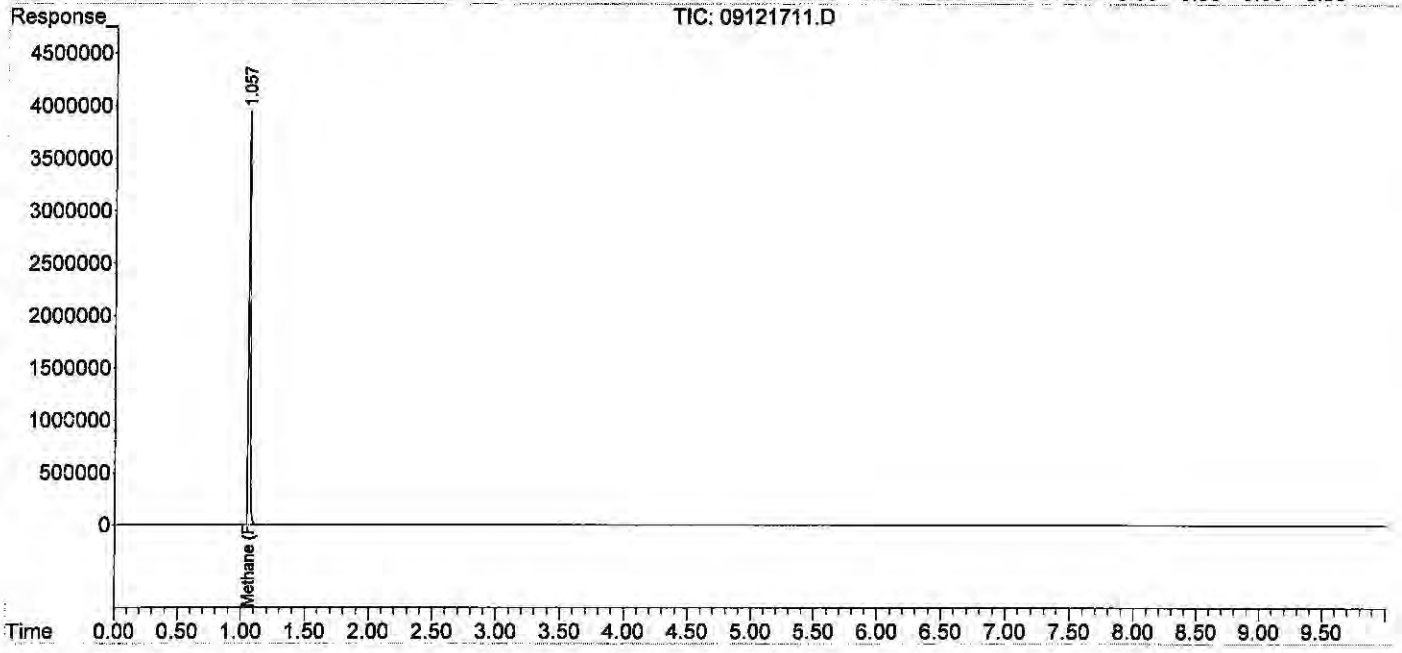
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

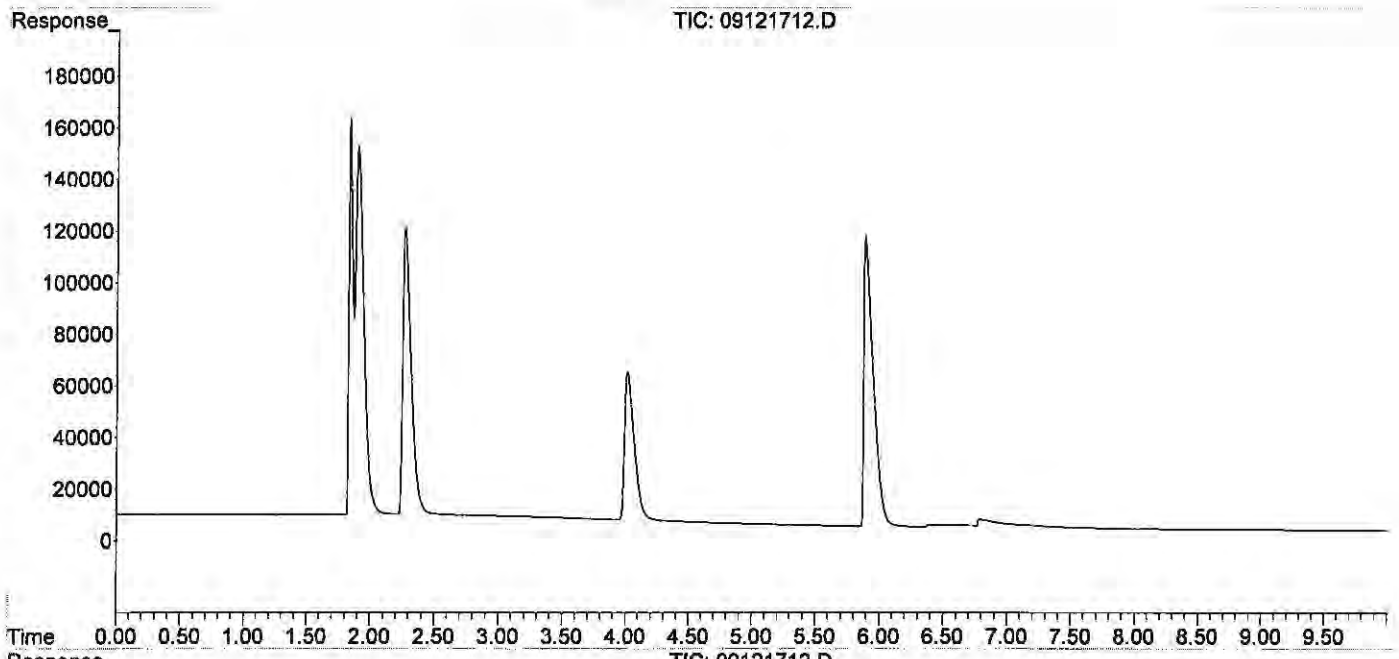
(f)=RT Delta > 1/2 Window (m)=manual int.

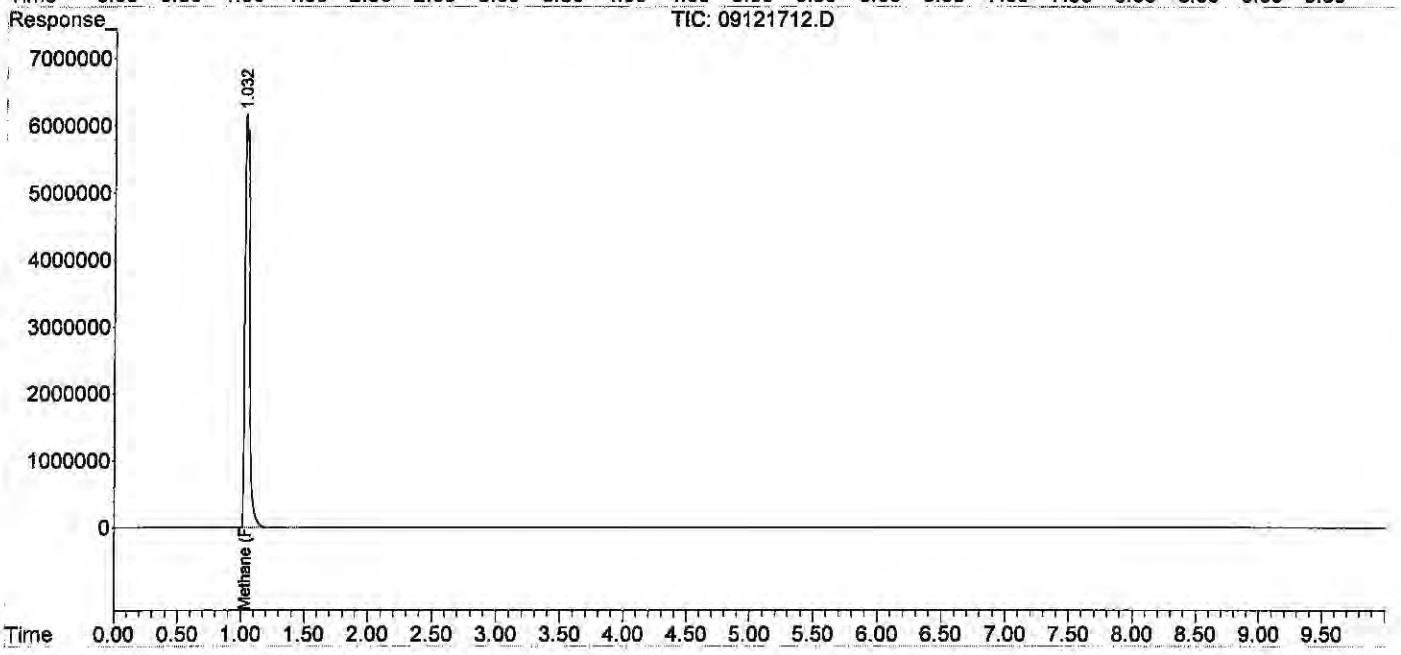
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.843	2922459	3.687	ppm	
2)	Carbon monoxide	1.843	2922459	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual %D
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.063	13748	1.516	ppm	1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2
13)	n-Butane	6.579f	48019	1.804	ppm	

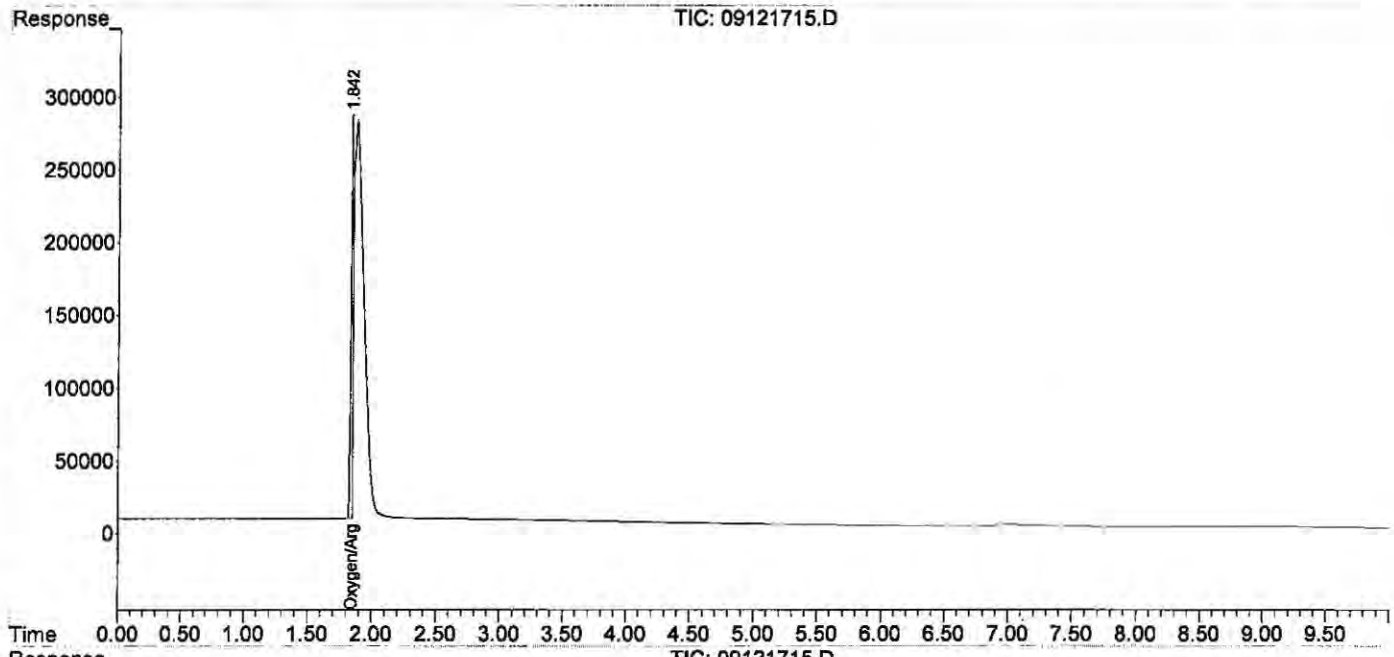
(f)=RT Delta > 1/2 Window (m)=manual int.

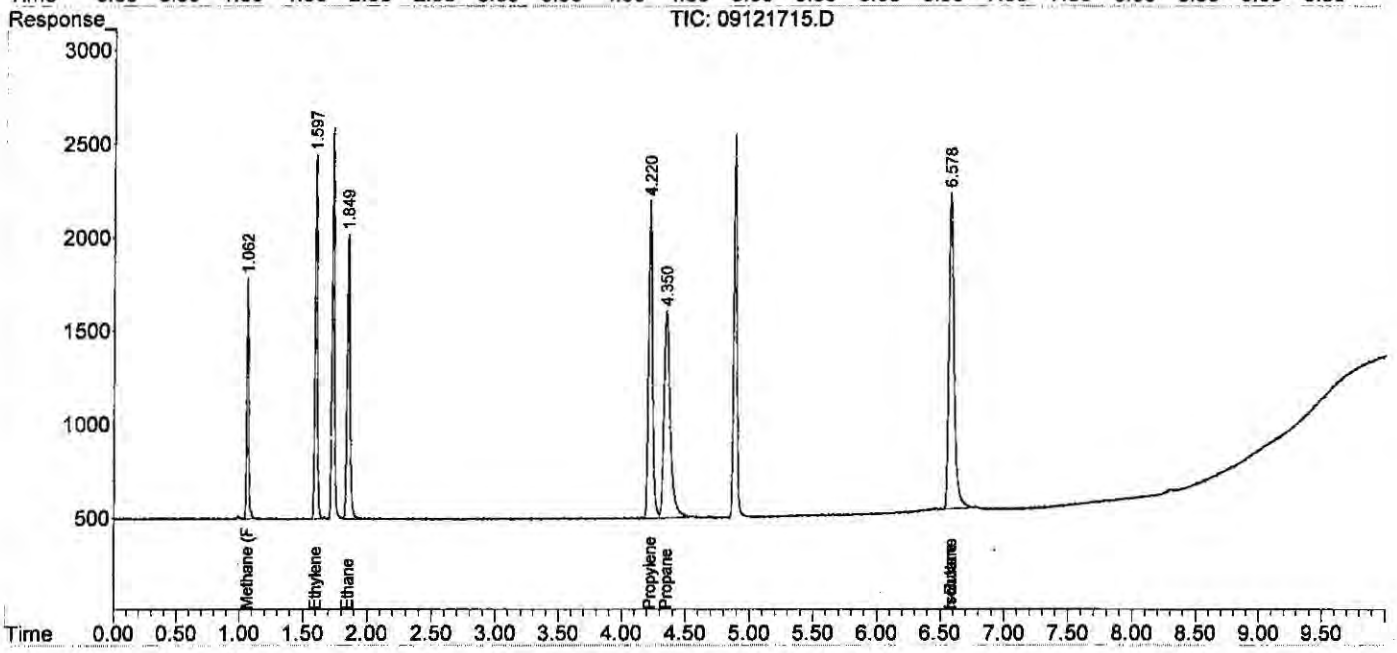
9/14/2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1900794
Sample Vol. (ml) : 32.00 ml
Analyst : MR
Date Analysis : 02/19/19
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-07231801	0.100	1.510	1.446	1.417
ACTUAL		1.51	1.51	1.51
%Difference		0.0%	4.2%	6.2%
mcs 0.1ml	0.100	0.292	0.000	0.000
rb 0.1ml	0.100	0.000	0.000	0.000
fid lcs s30-05241604	0.100	1.572	1.015	1.264
fid lcsd s30-05241604	0.100	1.605	1.018	1.267
P1900794-001 0.1ml	0.100	0.641	0.000	0.000
P1900794-002 0.1ml	0.100	0.686	0.000	0.000

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	2.920	0.000	0.000
fid lcs s30-05241604	15.720	10.150	12.640
fid lcsd s30-05241604	16.050	10.180	12.670
P1900794-001 0.1ml	6.410	0.000	0.000
P1900794-002 0.1ml	6.860	0.000	0.000

std s32-07231801	1.654	1.523	1.474
ACTUAL	1.51	1.51	1.51
%Difference	9.5%	0.9%	2.4%

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191902.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 11:21:08
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 11:31:03 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.120	13699	1.510	ppm
7)	Ethylene	1.689	24199	1.446	ppm
8)	Ethane	1.955	24012	1.417	ppm
9)	Propylene	4.339	33165	1.415	ppm
10)	Propane	4.462	34542	1.388	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.675	42880	1.611	ppm
13)	n-Butane	6.675	42880	1.611	ppm

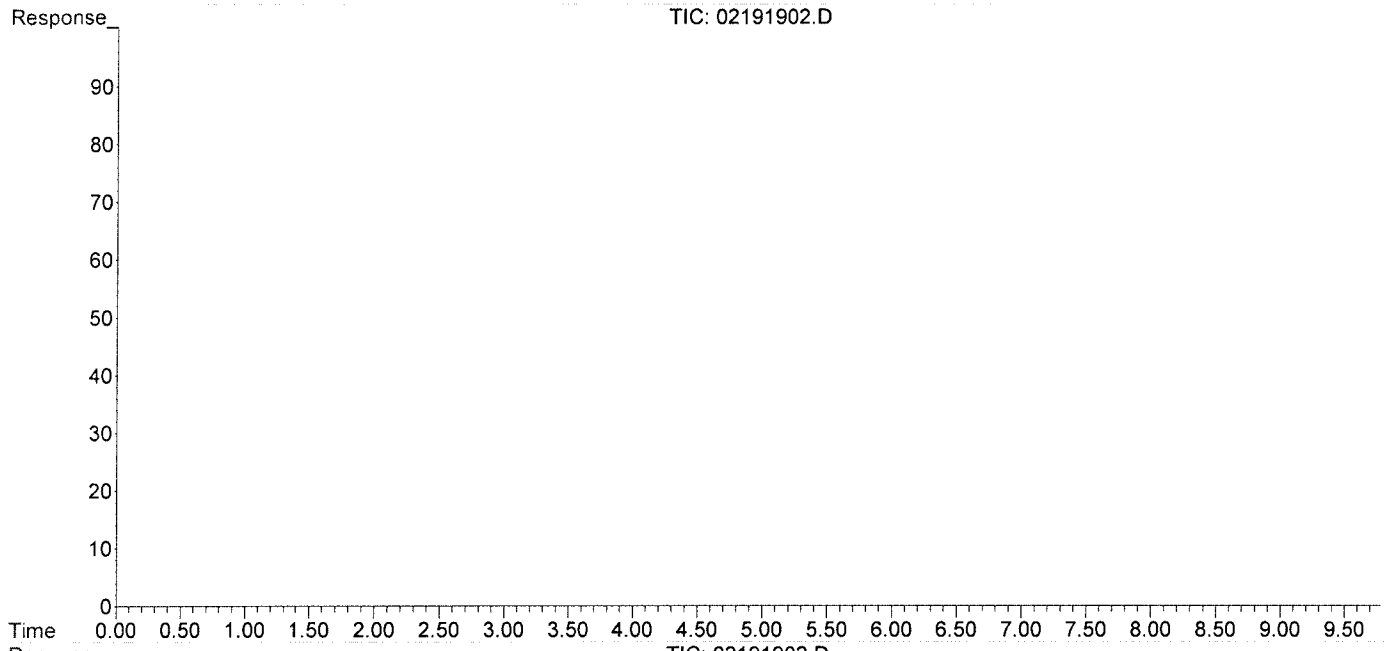
(f)=RT Delta > 1/2 Window (m)=manual int.

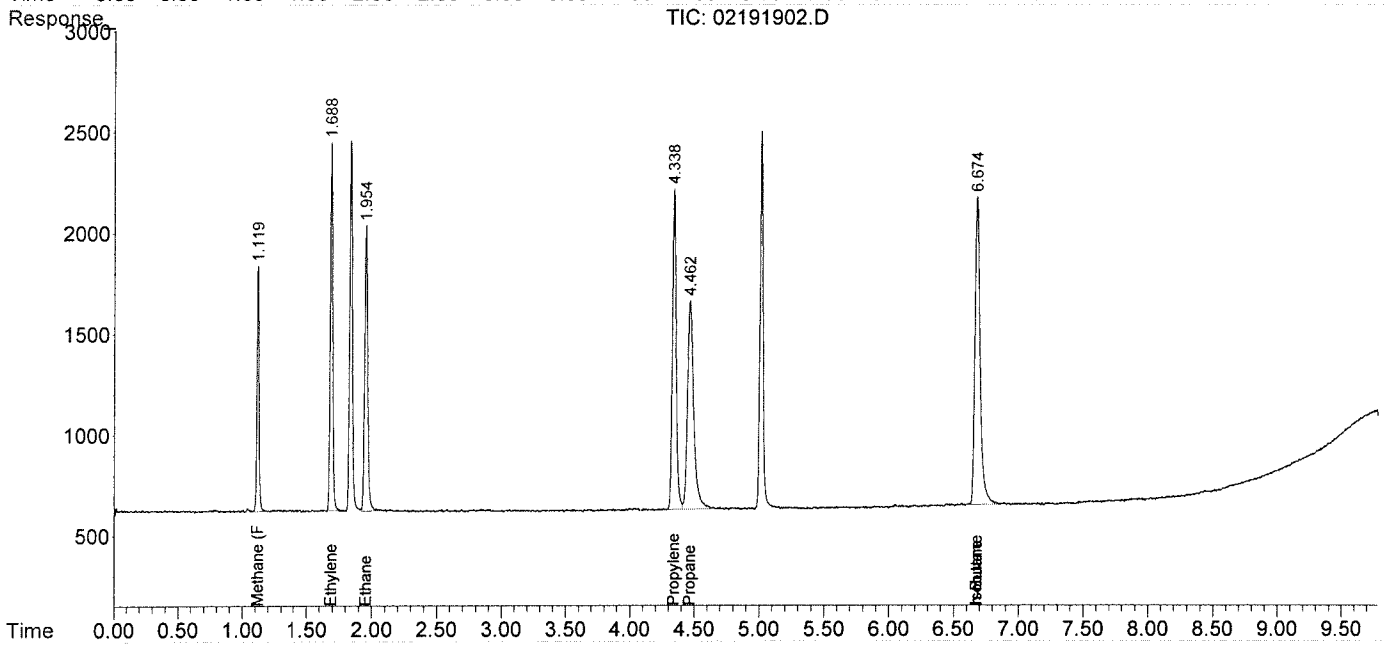
MR 02/22/19

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191902.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 11:21:08
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 11:31:03 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 15:27:26
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 15:43:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

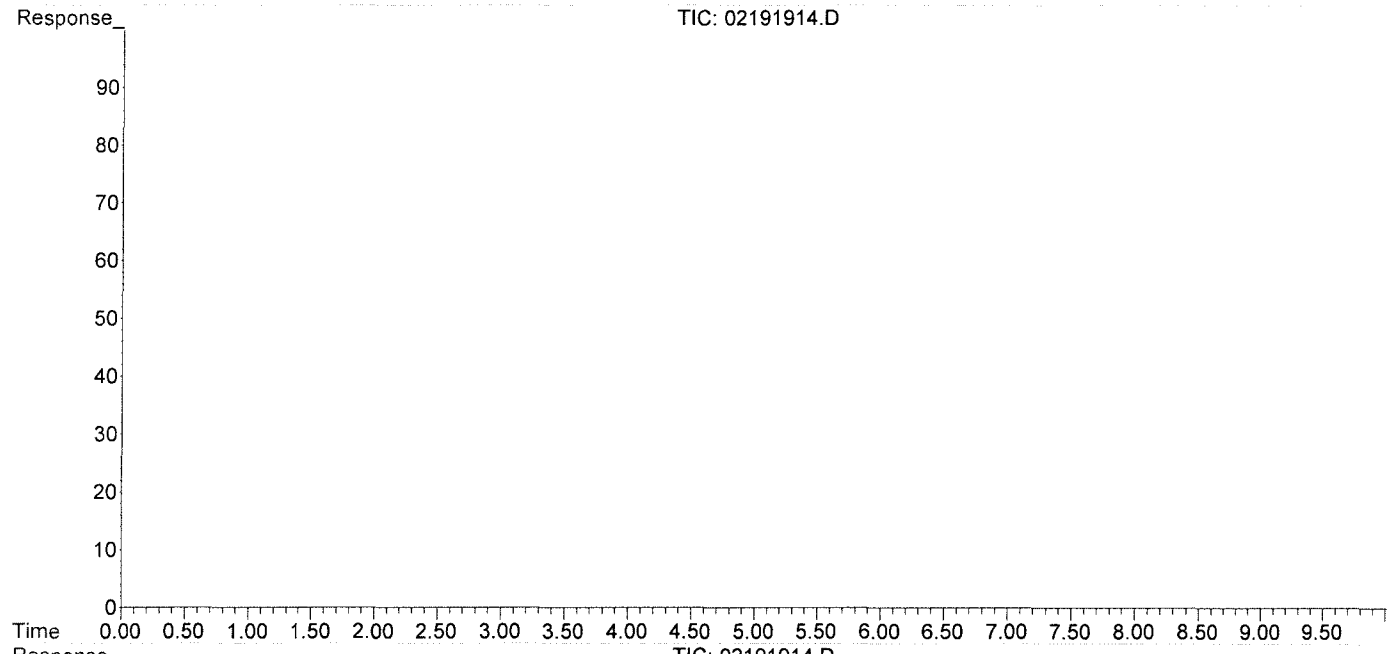
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.119	15001	1.654	ppm
7)	Ethylene	1.685	25483	1.523	ppm
8)	Ethane	1.950	24985	1.474	ppm
9)	Propylene	4.327	33010	1.409	ppm
10)	Propane	4.450	34837	1.400	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.662	39745	1.493	ppm
13)	n-Butane	6.662	39745	1.493	ppm

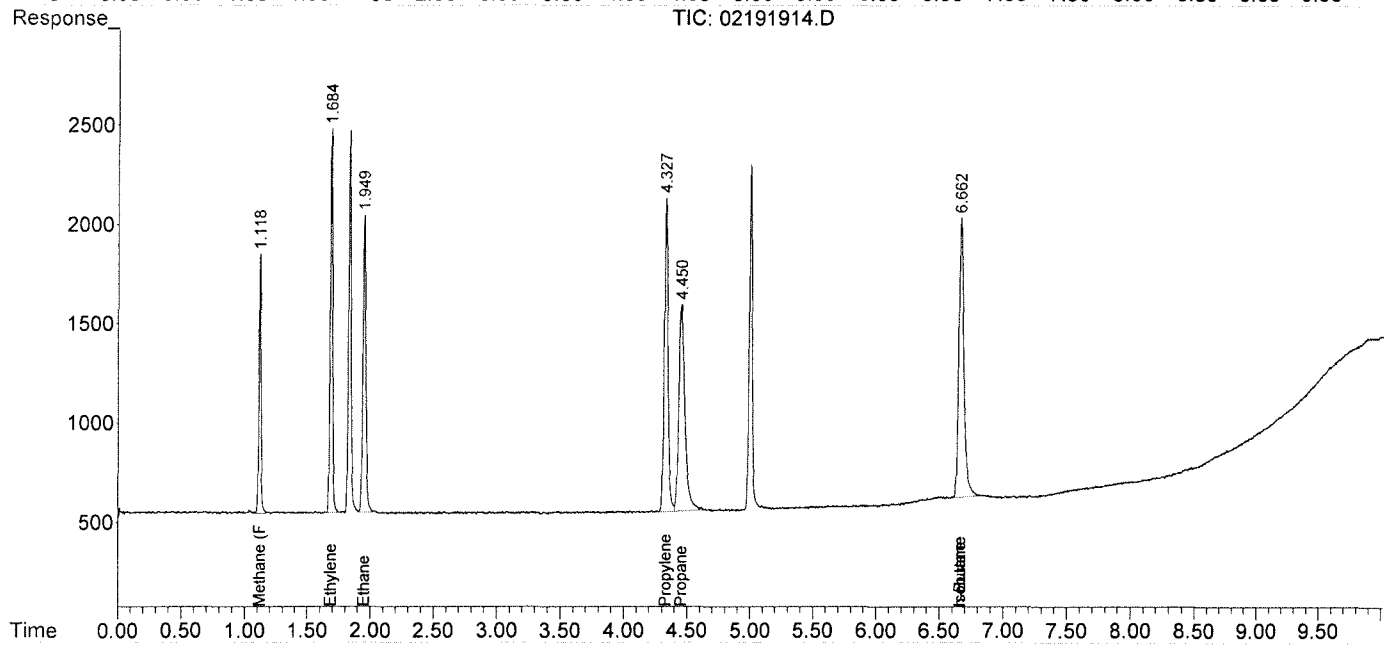
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\19\
Data File : 02191914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 19-Feb-2019, 15:27:26
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 19 15:43:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Dissolved Gases by RSK175

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1900794
Sample Vol. (ml) : 32.00 ml
Analyst : MR
Date Analysis : 02/21/19
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-07231801	0.100	1.604	1.594	1.543
ACTUAL		1.51	1.51	1.51
%Difference		6.2%	5.6%	2.2%
mcs 0.1ml	0.100	0.271	0.000	0.000
rb 0.1ml	0.100	0.000	0.000	0.000
fid lcs s30-05241604	0.100	1.585	1.001	1.251
fid lcsd s30-05241604	0.100	1.592	1.013	1.260
P1900794-003 0.1ml	0.100	0.195	0.000	0.000
P1900794-003ms 0.1ml	0.100	0.915	0.592	0.743
P1900794-003msd 0.1ml	0.100	0.874	0.622	0.763
std s32-07231801		1.591	1.544	1.530
ACTUAL		1.51	1.51	1.51
%Difference		5.4%	2.3%	1.3%

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	2.710	0.000	0.000
fid lcs s30-05241604	15.850	10.010	12.510
fid lcsd s30-05241604	15.920	10.130	12.600
P1900794-003 0.1ml	1.950	0.000	0.000
P1900794-003ms 0.1ml	9.150	5.920	7.430
P1900794-003msd 0.1ml	8.740	6.220	7.630

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211902.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 10:30:07
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 10:47:00 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	14553	1.604	ppm
7)	Ethylene	1.667	26667	1.594	ppm
8)	Ethane	1.928	26147	1.543	ppm
9)	Propylene	4.312	37279	1.591	ppm
10)	Propane	4.436	38291	1.539	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.656	48990	1.841	ppm
13)	n-Butane	6.656	48990	1.841	ppm

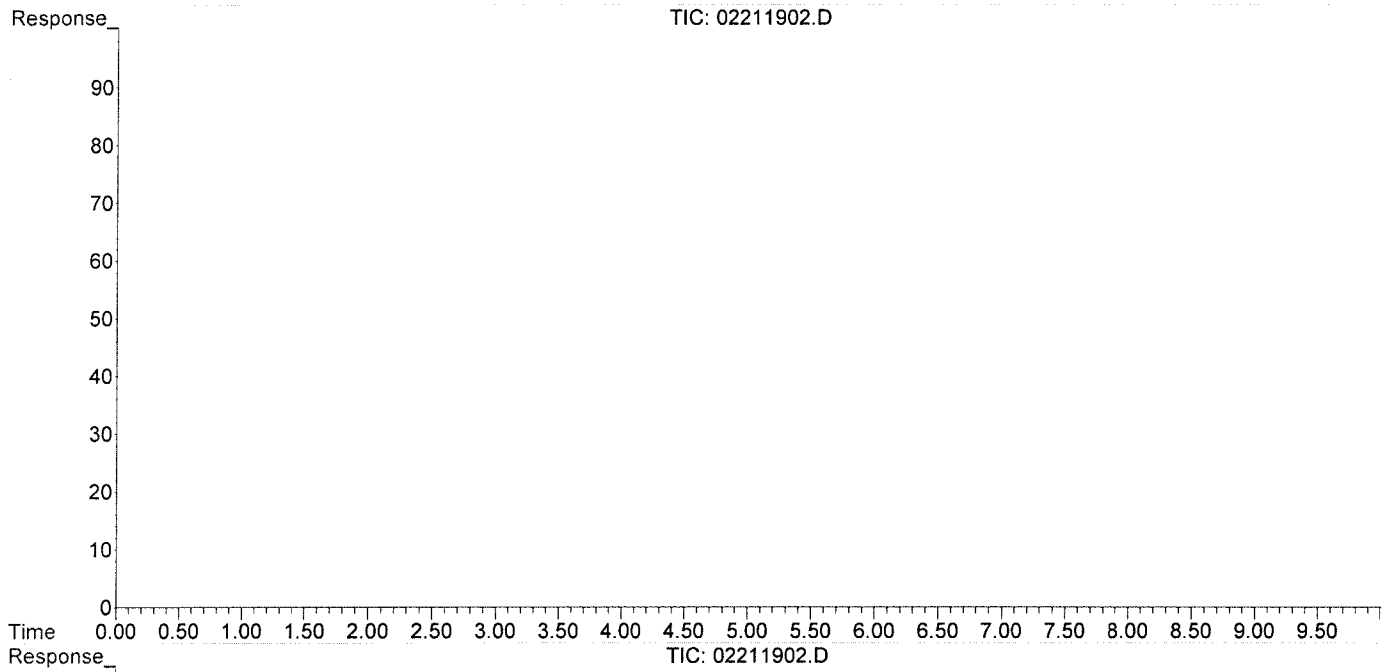
(f)=RT Delta > 1/2 Window (m)=manual int.

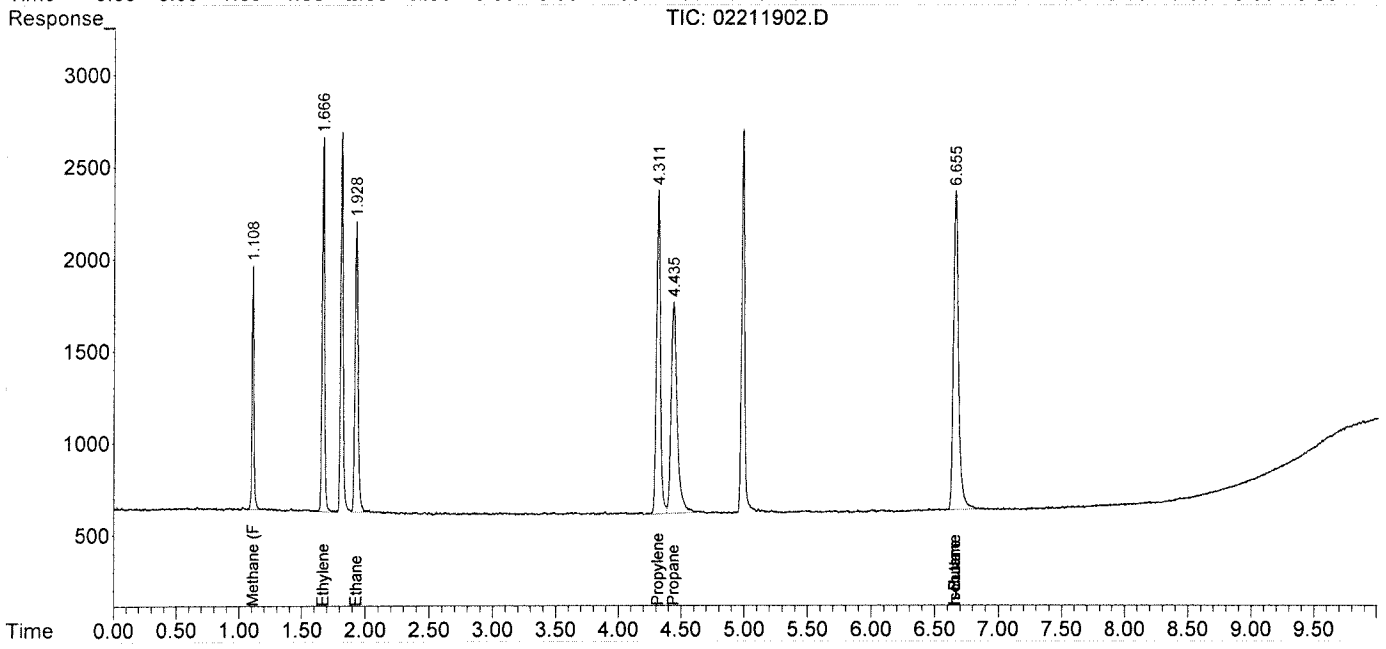
MR 02/22/19

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211902.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 10:30:07
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 10:47:00 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211921.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 15:52:38
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 16:04:08 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

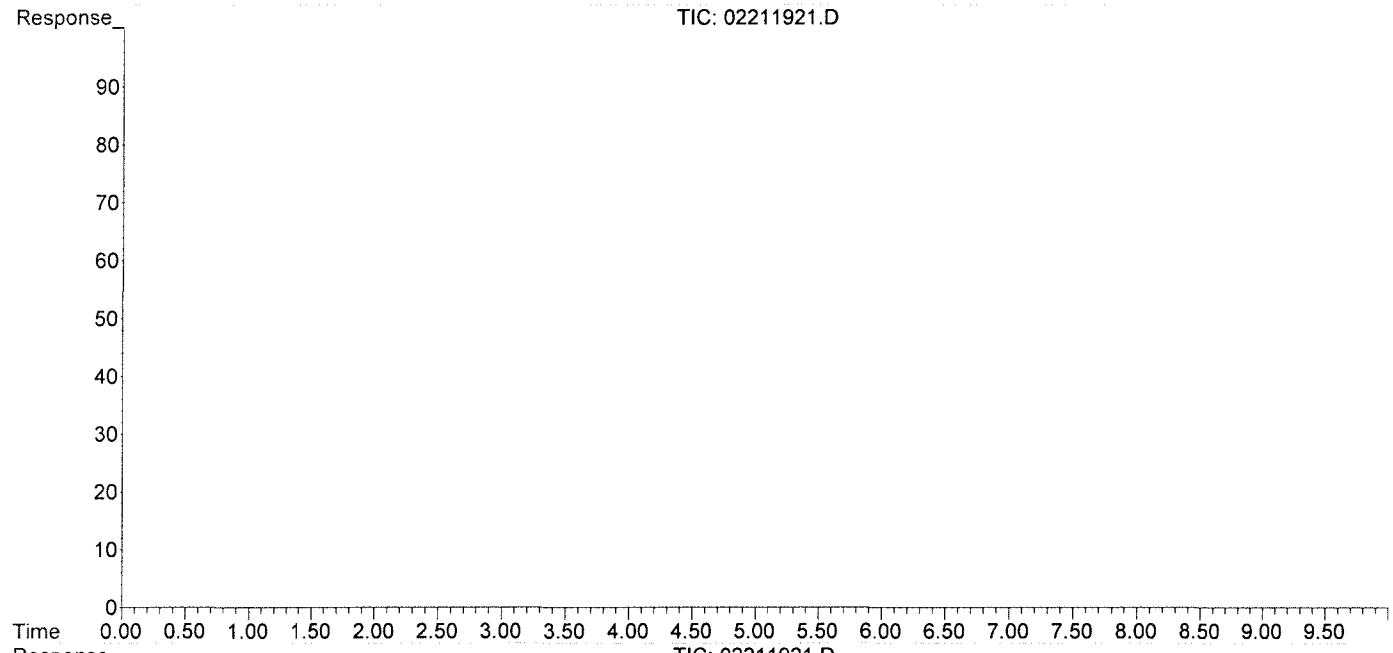
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	14431	1.591	ppm
7)	Ethylene	1.671	25845	1.544	ppm
8)	Ethane	1.934	25927	1.530	ppm
9)	Propylene	4.313	35876	1.531	ppm
10)	Propane	4.437	37184	1.495	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.652	46937	1.763	ppm
13)	n-Butane	6.652	46937	1.763	ppm

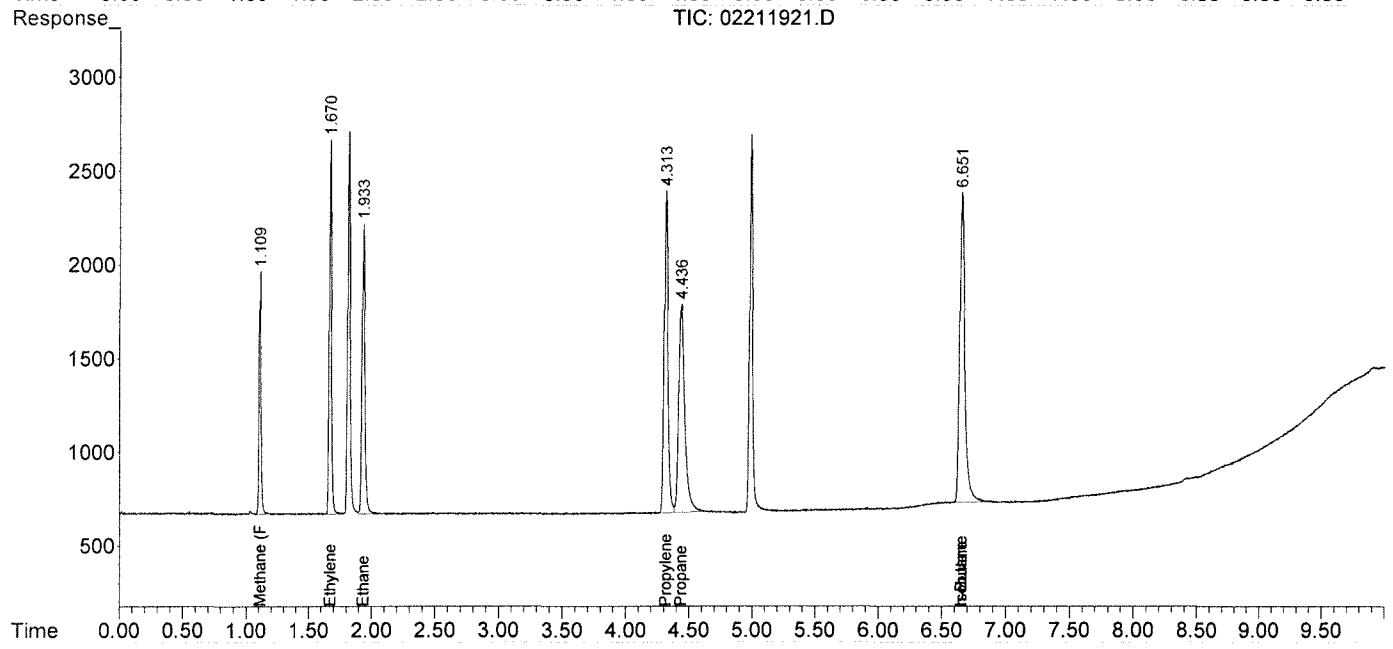
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_02\21\
Data File : 02211921.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Feb-2019, 15:52:38
Operator : MR
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Feb 21 16:04:08 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2019_02\19\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	19-Feb-19, 10:47:24	02191901.D	Prime		MR	RSKBOTH.M	
2	19-Feb-19, 11:21:08	02191902.D	std s32-07231801		MR	RSKBOTH.M	pass
3	19-Feb-19, 11:33:51	02191903.D	rb 0.1ml		MR	RSKBOTH.M	pass
4	19-Feb-19, 12:07:17	02191904.D	mcs 0.1ml		MR	RSKBOTH.M	pass
5	19-Feb-19, 12:51:40	02191905.D	fid lcs s30-05241604		MR	RSKBOTH.M	pass
6	19-Feb-19, 13:05:52	02191906.D	fid lcsd s30-05241604		MR	RSKBOTH.M	pass
7	19-Feb-19, 13:19:27	02191907.D	P1900793-001 0.1ml		MR	RSKBOTH.M	
8	19-Feb-19, 13:35:00	02191908.D	P1900793-002 0.1ml		MR	RSKBOTH.M	
9	19-Feb-19, 13:50:58	02191909.D	P1900793-003 0.1ml		MR	RSKBOTH.M	
10	19-Feb-19, 14:04:08	02191910.D	P1900793-004 0.1ml		MR	RSKBOTH.M	
11	19-Feb-19, 14:17:38	02191911.D	P1900794-001 0.1		MR	RSKBOTH.M	
12	19-Feb-19, 14:55:04	02191912.D	P1900794-002 0.1		MR	RSKBOTH.M	
13	19-Feb-19, 15:08:18	02191913.D	P1900794-003 0.1		MR	RSKBOTH.M	
14	19-Feb-19, 15:27:26	02191914.D	std s32-07231801		MR	RSKBOTH.M	pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2019_02\21\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	21-Feb-19, 10:16:48	02211901.D	Prime		MR	RSKBOTH.M	
2	21-Feb-19, 10:30:07	02211902.D	std s32-07231801		MR	RSKBOTH.M	pass
3	21-Feb-19, 10:48:36	02211903.D	rb 0.1ml		MR	RSKBOTH.M	pass
4	21-Feb-19, 11:03:15	02211904.D	mcs 0.1ml		MR	RSKBOTH.M	pass
5	21-Feb-19, 11:19:54	02211905.D	fid lcs s30-05241604		MR	RSKBOTH.M	pass
6	21-Feb-19, 11:38:08	02211906.D	fid lcsd s30-05241604		MR	RSKBOTH.M	pass
7	21-Feb-19, 11:52:18	02211907.D	K1901311-001 0.1ml		MR	RSKBOTH.M	
8	21-Feb-19, 12:05:59	02211908.D	K1901311-002 0.1ml		MR	RSKBOTH.M	
9	21-Feb-19, 12:19:11	02211909.D	K1901311-003 0.1ml		MR	RSKBOTH.M	
10	21-Feb-19, 12:32:27	02211910.D	K1901311-004 0.1ml		MR	RSKBOTH.M	
11	21-Feb-19, 13:10:21	02211911.D	K1901311-005 0.1ml		MR	RSKBOTH.M	
12	21-Feb-19, 13:25:02	02211912.D	K1901311-006 0.1ml		MR	RSKBOTH.M	
13	21-Feb-19, 13:40:30	02211913.D	K1901311-008 0.1ml		MR	RSKBOTH.M	
14	21-Feb-19, 13:55:29	02211914.D	std s32-07231801		MR	RSKBOTH.M	pass
15	21-Feb-19, 14:17:09	02211915.D	K1901311-009 0.1ml		MR	RSKBOTH.M	
16	21-Feb-19, 14:34:24	02211916.D	K1901311-010 0.1ml		MR	RSKBOTH.M	
17	21-Feb-19, 14:52:39	02211917.D	K1901311-011 0.1ml		MR	RSKBOTH.M	
18	21-Feb-19, 15:12:45	02211918.D	P1900794-003 0.1ml		MR	RSKBOTH.M	
19	21-Feb-19, 15:25:37	02211919.D	P1900794-003ms 0.1ml		MR	RSKBOTH.M	
20	21-Feb-19, 15:38:47	02211920.D	P1900794-003msd 0.1ml		MR	RSKBOTH.M	
21	21-Feb-19, 15:52:38	02211921.D	std s32-07231801		MR	RSKBOTH.M	pass

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 27, 2019

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

Work Order: **HS19020832**

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

Dear Susan,

ALS Environmental received 7 sample(s) on Feb 15, 2019 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: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Work Order: HS19020832

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19020832-01	35BWW19-190214	Groundwater		14-Feb-2019 08:10	15-Feb-2019 08:37	☐
HS19020832-02	35BWW18-190214	Groundwater		14-Feb-2019 09:05	15-Feb-2019 08:37	☐
HS19020832-03	35BWW07-190214	Groundwater		14-Feb-2019 10:00	15-Feb-2019 08:37	☐
HS19020832-04	35BWW13-190214	Groundwater		14-Feb-2019 12:25	15-Feb-2019 08:37	☐
HS19020832-05	35BWW15-190214	Groundwater		14-Feb-2019 13:10	15-Feb-2019 08:37	☐
HS19020832-06	35BWW17-190214	Groundwater		14-Feb-2019 13:55	15-Feb-2019 08:37	☐
HS19020832-07	Trip Blank	Water	ALS 012519-55	14-Feb-2019 00:00	15-Feb-2019 08:37	☐

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Work Order: HS19020832

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R333582

Sample ID: HS19021151-02MS

- MS and MSD are for an unrelated sample

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW19-190214
Collection Date: 14-Feb-2019 08:10

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 18:55
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 18:55
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:55
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 18:55
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 18:55
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 18:55
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW19-190214
Collection Date: 14-Feb-2019 08:10

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 18:55
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 18:55
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 18:55
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:55
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:55
Surr: 1,2-Dichloroethane-d4	*95.1*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 18:55*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 18:55*
Surr: Dibromofluoromethane	*93.6*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 18:55*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 18:55*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW18-190214
Collection Date: 14-Feb-2019 09:05

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:19
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 19:19
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 19:19
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:19
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 19:19
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 19:19
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 19:19
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW18-190214
Collection Date: 14-Feb-2019 09:05

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 19:19
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 19:19
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 19:19
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:19
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:19
Surr: 1,2-Dichloroethane-d4	*94.4*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 19:19*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 19:19*
Surr: Dibromofluoromethane	*94.4*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 19:19*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 19:19*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW07-190214
Collection Date: 14-Feb-2019 10:00

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:43
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 19:43
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 19:43
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:43
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 19:43
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 19:43
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 19:43
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW07-190214
Collection Date: 14-Feb-2019 10:00

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 19:43
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 19:43
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 19:43
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 19:43
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 19:43
Surr: 1,2-Dichloroethane-d4	*93.9*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 19:43*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 19:43*
Surr: Dibromofluoromethane	*91.8*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 19:43*
Surr: Toluene-d8	*99.4*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 19:43*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW13-190214
Collection Date: 14-Feb-2019 12:25

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:07
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 20:07
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 20:07
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:07
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 20:07
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 20:07
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 20:07
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW13-190214
Collection Date: 14-Feb-2019 12:25

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 20:07
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 20:07
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 20:07
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:07
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:07
Surr: 1,2-Dichloroethane-d4	*94.4*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 20:07*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 20:07*
Surr: Dibromofluoromethane	*93.5*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 20:07*
Surr: Toluene-d8	*99.2*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 20:07*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW15-190214
Collection Date: 14-Feb-2019 13:10

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.6**		**0.50**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 20:31
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,1-Dichloroethene	**1.9**		**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 20:31
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 20:31
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 20:31
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:31
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 20:31
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 20:31
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 20:31
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW15-190214
Collection Date: 14-Feb-2019 13:10

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
cis-1,2-Dichloroethene	**0.65**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 20:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 20:31
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 20:31
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 20:31
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:31
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Tetrachloroethene	**12**		**0.30**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 20:31
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Trichloroethene	**11**		**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 20:31
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:31
Surr: 1,2-Dichloroethane-d4	*94.8*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 20:31*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 20:31*
Surr: Dibromofluoromethane	*93.7*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 20:31*
Surr: Toluene-d8	*97.1*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 20:31*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW17-190214
Collection Date: 14-Feb-2019 13:55

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 20:55
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 20:55
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:55
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 20:55
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 20:55
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 20:55
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW17-190214
Collection Date: 14-Feb-2019 13:55

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 20:55
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 20:55
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 20:55
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 20:55
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 20:55
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 20:55*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 20:55*
Surr: Dibromofluoromethane	*92.9*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 20:55*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 20:55*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: Trip Blank
Collection Date: 14-Feb-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 17:43
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 17:43
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 17:43
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 17:43
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 17:43
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 17:43
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 17:43
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: Trip Blank
Collection Date: 14-Feb-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19020832
Lab ID:HS19020832-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 17:43
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 17:43
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 17:43
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 17:43
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 17:43
Surr: 1,2-Dichloroethane-d4	*93.9*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 17:43*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 17:43*
Surr: Dibromofluoromethane	*94.8*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 17:43*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 17:43*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R333582	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS19020832-07	Trip Blank	14 Feb 2019 00:00			26 Feb 2019 17:43	1
Batch ID R333582	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS19020832-01	35BWW19-190214	14 Feb 2019 08:10			26 Feb 2019 18:55	1
HS19020832-02	35BWW18-190214	14 Feb 2019 09:05			26 Feb 2019 19:19	1
HS19020832-03	35BWW07-190214	14 Feb 2019 10:00			26 Feb 2019 19:43	1
HS19020832-04	35BWW13-190214	14 Feb 2019 12:25			26 Feb 2019 20:07	1
HS19020832-05	35BWW15-190214	14 Feb 2019 13:10			26 Feb 2019 20:31	1
HS19020832-06	35BWW17-190214	14 Feb 2019 13:55			26 Feb 2019 20:55	1

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 15:18**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966671** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 15:18**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966671** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.21*	*1.0*	*50*	*0*	*94.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.9*	*1.0*	*50*	*0*	*99.8*	*85 - 114*				
Surr: Dibromofluoromethane	*46.61*	*1.0*	*50*	*0*	*93.2*	*80 - 119*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 15:18**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966671** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.67*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 14:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966670** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.83	1.0	20	0	99.2	78 - 124				
1,1,1-Trichloroethane	17.06	1.0	20	0	85.3	74 - 131				
1,1,2,2-Tetrachloroethane	21.82	1.0	20	0	109	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	18.91	1.0	20	0	94.6	70 - 136				
1,1,2-Trichloroethane	21.33	1.0	20	0	107	80 - 119				
1,1-Dichloroethane	18.85	1.0	20	0	94.2	77 - 125				
1,1-Dichloroethene	17.25	1.0	20	0	86.3	71 - 131				
1,1-Dichloropropene	18.38	1.0	20	0	91.9	78 - 125				
1,2,3-Trichlorobenzene	18.43	1.0	20	0	92.1	69 - 129				
1,2,3-Trichloropropane	20.73	1.0	20	0	104	73 - 122				
1,2,4-Trichlorobenzene	19.31	1.0	20	0	96.6	69 - 130				
1,2,4-Trimethylbenzene	20.68	1.0	20	0	103	76 - 124				
1,2-Dibromo-3-chloropropane	20.11	1.0	20	0	101	62 - 128				
1,2-Dibromoethane	21.16	1.0	20	0	106	77 - 121				
1,2-Dichlorobenzene	20.94	1.0	20	0	105	80 - 119				
1,2-Dichloroethane	20.19	1.0	20	0	101	73 - 128				
1,2-Dichloropropane	21.16	1.0	20	0	106	78 - 122				
1,3,5-Trimethylbenzene	19.99	1.0	20	0	100.0	75 - 124				
1,3-Dichlorobenzene	20.85	1.0	20	0	104	80 - 119				
1,3-Dichloropropane	21.16	1.0	20	0	106	80 - 119				
1,4-Dichlorobenzene	20.26	1.0	20	0	101	79 - 118				
2,2-Dichloropropane	16.15	1.0	20	0	80.7	60 - 139				
2-Butanone	38.37	2.0	40	0	95.9	56 - 143				
2-Chlorotoluene	20.46	1.0	20	0	102	79 - 122				
2-Hexanone	42.7	2.0	40	0	107	57 - 139				
4-Chlorotoluene	20.74	1.0	20	0	104	78 - 122				
4-Isopropyltoluene	19.49	1.0	20	0	97.5	77 - 127				
4-Methyl-2-pentanone	44.65	2.0	40	0	112	67 - 130				
Acetone	40.67	2.0	40	0	102	39 - 160				
Benzene	20.64	1.0	20	0	103	79 - 120				
Bromobenzene	20.91	1.0	20	0	105	80 - 120				
Bromochloromethane	18.68	1.0	20	0	93.4	78 - 123				
Bromodichloromethane	20.44	1.0	20	0	102	79 - 125				
Bromoform	20.71	1.0	20	0	104	66 - 130				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 14:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966670** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	23.69	1.0	20	0	118	53 - 141				
Carbon disulfide	35.76	2.0	40	0	89.4	64 - 133				
Carbon tetrachloride	15.76	1.0	20	0	78.8	72 - 136				
Chlorobenzene	20.82	1.0	20	0	104	82 - 118				
Chloroethane	18.63	1.0	20	0	93.2	60 - 138				
Chloroform	18.97	1.0	20	0	94.8	79 - 124				
Chloromethane	19.91	1.0	20	0	99.6	50 - 139				
cis-1,2-Dichloroethene	19.2	1.0	20	0	96.0	78 - 123				
cis-1,3-Dichloropropene	20.08	1.0	20	0	100	75 - 124				
Dibromochloromethane	20.27	1.0	20	0	101	74 - 126				
Dibromomethane	20.59	1.0	20	0	103	79 - 123				
Dichlorodifluoromethane	15.45	1.0	20	0	77.2	32 - 152				
Ethylbenzene	20.11	1.0	20	0	101	79 - 121				
Hexachlorobutadiene	20.16	1.0	20	0	101	66 - 134				
Isopropylbenzene	19.78	1.0	20	0	98.9	72 - 131				
m,p-Xylene	40.89	2.0	40	0	102	80 - 121				
Methylene chloride	19.64	2.0	20	0	98.2	74 - 124				
Naphthalene	19.01	1.0	20	0	95.0	61 - 128				
n-Butylbenzene	20.1	1.0	20	0	101	75 - 128				
n-Propylbenzene	19.98	1.0	20	0	99.9	76 - 126				
o-Xylene	20.98	1.0	20	0	105	78 - 122				
sec-Butylbenzene	19.33	1.0	20	0	96.7	77 - 126				
Styrene	21.38	1.0	20	0	107	78 - 123				
tert-Butylbenzene	19.3	1.0	20	0	96.5	78 - 124				
Tetrachloroethene	18.36	1.0	20	0	91.8	74 - 129				
Toluene	20.44	1.0	20	0	102	80 - 121				
trans-1,2-Dichloroethene	18.1	1.0	20	0	90.5	75 - 124				
trans-1,3-Dichloropropene	19.06	1.0	20	0	95.3	73 - 127				
Trichloroethene	19.21	1.0	20	0	96.0	79 - 123				
Trichlorofluoromethane	16.34	1.0	20	0	81.7	65 - 141				
Vinyl chloride	18.3	1.0	20	0	91.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*47.13*	*1.0*	*50*	*0*	*94.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.13*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*47.52*	*1.0*	*50*	*0*	*95.0*	*80 - 119*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 14:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966670** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.49*	*1.0*	*50*	*0*	*99.0*	*89 - 112*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19021151-02MS** Units: **UG/L** Analysis Date: **26-Feb-2019 16:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966674** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.62	1.0	20	0	108	78 - 124				
1,1,1-Trichloroethane	21.46	1.0	20	0	107	74 - 131				
1,1,2,2-Tetrachloroethane	22.13	1.0	20	0	111	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	28.04	1.0	20	0	140	70 - 136				S
1,1,2-Trichloroethane	23.34	1.0	20	0	117	80 - 119				
1,1-Dichloroethane	21.21	1.0	20	0	106	77 - 125				
1,1-Dichloroethene	21.87	1.0	20	0	109	71 - 131				
1,1-Dichloropropene	23.25	1.0	20	0	116	78 - 125				
1,2,3-Trichlorobenzene	20.21	1.0	20	0	101	69 - 129				
1,2,3-Trichloropropane	21.79	1.0	20	0	109	73 - 122				
1,2,4-Trichlorobenzene	22.44	1.0	20	0	112	69 - 130				
1,2,4-Trimethylbenzene	25.55	1.0	20	0	128	76 - 124				S
1,2-Dibromo-3-chloropropane	19.9	1.0	20	0	99.5	62 - 128				
1,2-Dibromoethane	22.76	1.0	20	0	114	77 - 121				
1,2-Dichlorobenzene	22.87	1.0	20	0	114	80 - 119				
1,2-Dichloroethane	21.64	1.0	20	0	108	73 - 128				
1,2-Dichloropropane	23.62	1.0	20	0	118	78 - 122				
1,3,5-Trimethylbenzene	25.23	1.0	20	0	126	75 - 124				S
1,3-Dichlorobenzene	23.48	1.0	20	0	117	80 - 119				
1,3-Dichloropropane	23.13	1.0	20	0	116	80 - 119				
1,4-Dichlorobenzene	22.94	1.0	20	0	115	79 - 118				
2,2-Dichloropropane	19.38	1.0	20	0	96.9	60 - 139				
2-Butanone	39.53	2.0	40	0	98.8	56 - 143				
2-Chlorotoluene	23.77	1.0	20	0	119	79 - 122				
2-Hexanone	45.67	2.0	40	0	114	57 - 139				
4-Chlorotoluene	24.22	1.0	20	0	121	78 - 122				
4-Isopropyltoluene	25.32	1.0	20	0	127	77 - 127				
4-Methyl-2-pentanone	47.16	2.0	40	0	118	67 - 130				
Acetone	41.46	2.0	40	0	104	39 - 160				
Benzene	24.27	1.0	20	0	121	79 - 120				S
Bromobenzene	23.6	1.0	20	0	118	80 - 120				
Bromochloromethane	20.66	1.0	20	0	103	78 - 123				
Bromodichloromethane	22.95	1.0	20	0	115	79 - 125				
Bromoform	21.87	1.0	20	0	109	66 - 130				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19021151-02MS** Units: **UG/L** Analysis Date: **26-Feb-2019 16:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966674** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	33.75	1.0	20	0	169	53 - 141				S
Carbon disulfide	42.57	2.0	40	0	106	64 - 133				
Carbon tetrachloride	21.2	1.0	20	0	106	72 - 136				
Chlorobenzene	23.18	1.0	20	0	116	82 - 118				
Chloroethane	22.79	1.0	20	0	114	60 - 138				
Chloroform	22.04	1.0	20	0	110	79 - 124				
Chloromethane	27.47	1.0	20	0	137	50 - 139				
cis-1,2-Dichloroethene	21.78	1.0	20	0	109	78 - 123				
cis-1,3-Dichloropropene	20.96	1.0	20	0	105	75 - 124				
Dibromochloromethane	21.56	1.0	20	0	108	74 - 126				
Dibromomethane	22.82	1.0	20	0	114	79 - 123				
Dichlorodifluoromethane	24.35	1.0	20	0	122	32 - 152				
Ethylbenzene	25.08	1.0	20	0	125	79 - 121				S
Hexachlorobutadiene	23.87	1.0	20	0	119	66 - 134				
Isopropylbenzene	26.01	1.0	20	0	130	72 - 131				
m,p-Xylene	48.52	2.0	40	0	121	80 - 121				S
Methylene chloride	21.38	2.0	20	0	107	74 - 124				
Naphthalene	20.53	1.0	20	0	103	61 - 128				
n-Butylbenzene	26.5	1.0	20	0	133	75 - 128				S
n-Propylbenzene	25.11	1.0	20	0	126	76 - 126				
o-Xylene	24.13	1.0	20	0	121	78 - 122				
sec-Butylbenzene	25.1	1.0	20	0	126	77 - 126				
Styrene	25.08	1.0	20	0	125	78 - 123				S
tert-Butylbenzene	24.53	1.0	20	0	123	78 - 124				
Tetrachloroethene	25.08	1.0	20	0	125	74 - 129				
Toluene	24.45	1.0	20	0	122	80 - 121				S
trans-1,2-Dichloroethene	21.09	1.0	20	0	105	75 - 124				
trans-1,3-Dichloropropene	21.21	1.0	20	0	106	73 - 127				
Trichloroethene	22.91	1.0	20	0	115	79 - 123				
Trichlorofluoromethane	22.76	1.0	20	0	114	65 - 141				
Vinyl chloride	22.91	1.0	20	0	115	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.62*	*1.0*	*50*	*0*	*93.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.17*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*47.27*	*1.0*	*50*	*0*	*94.5*	*80 - 119*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19021151-02MS** Units: **UG/L** Analysis Date: **26-Feb-2019 16:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966674** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.98*	*1.0*	*50*	*0*	*100.0*	*89 - 112*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19021151-02MSD** Units: **UG/L** Analysis Date: **26-Feb-2019 16:54**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.96	1.0	20	0	110	78 - 124	21.62	1.56	20	
1,1,1-Trichloroethane	21.54	1.0	20	0	108	74 - 131	21.46	0.382	20	
1,1,2,2-Tetrachloroethane	23.05	1.0	20	0	115	71 - 121	22.13	4.09	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	27.35	1.0	20	0	137	70 - 136	28.04	2.47	20	S
1,1,2-Trichloroethane	24.19	1.0	20	0	121	80 - 119	23.34	3.58	20	S
1,1-Dichloroethane	21.49	1.0	20	0	107	77 - 125	21.21	1.32	20	
1,1-Dichloroethene	21.59	1.0	20	0	108	71 - 131	21.87	1.28	20	
1,1-Dichloropropene	22.62	1.0	20	0	113	78 - 125	23.25	2.71	20	
1,2,3-Trichlorobenzene	21.74	1.0	20	0	109	69 - 129	20.21	7.26	20	
1,2,3-Trichloropropane	22.42	1.0	20	0	112	73 - 122	21.79	2.83	20	
1,2,4-Trichlorobenzene	23.21	1.0	20	0	116	69 - 130	22.44	3.4	20	
1,2,4-Trimethylbenzene	25.88	1.0	20	0	129	76 - 124	25.55	1.27	20	S
1,2-Dibromo-3-chloropropane	20.63	1.0	20	0	103	62 - 128	19.9	3.57	20	
1,2-Dibromoethane	23.43	1.0	20	0	117	77 - 121	22.76	2.91	20	
1,2-Dichlorobenzene	23.23	1.0	20	0	116	80 - 119	22.87	1.55	20	
1,2-Dichloroethane	22.42	1.0	20	0	112	73 - 128	21.64	3.53	20	
1,2-Dichloropropane	23.99	1.0	20	0	120	78 - 122	23.62	1.58	20	
1,3,5-Trimethylbenzene	24.98	1.0	20	0	125	75 - 124	25.23	0.988	20	S
1,3-Dichlorobenzene	23.95	1.0	20	0	120	80 - 119	23.48	1.98	20	S
1,3-Dichloropropane	23.52	1.0	20	0	118	80 - 119	23.13	1.68	20	
1,4-Dichlorobenzene	23.33	1.0	20	0	117	79 - 118	22.94	1.69	20	
2,2-Dichloropropane	19.43	1.0	20	0	97.1	60 - 139	19.38	0.218	20	
2-Butanone	43.64	2.0	40	0	109	56 - 143	39.53	9.86	20	
2-Chlorotoluene	23.81	1.0	20	0	119	79 - 122	23.77	0.183	20	
2-Hexanone	48.5	2.0	40	0	121	57 - 139	45.67	6	20	
4-Chlorotoluene	24.45	1.0	20	0	122	78 - 122	24.22	0.935	20	S
4-Isopropyltoluene	25.35	1.0	20	0	127	77 - 127	25.32	0.126	20	
4-Methyl-2-pentanone	50	2.0	40	0	125	67 - 130	47.16	5.85	20	
Acetone	43.51	2.0	40	0	109	39 - 160	41.46	4.84	20	
Benzene	24.05	1.0	20	0	120	79 - 120	24.27	0.913	20	S
Bromobenzene	23.79	1.0	20	0	119	80 - 120	23.6	0.771	20	
Bromochloromethane	21.26	1.0	20	0	106	78 - 123	20.66	2.9	20	
Bromodichloromethane	23.71	1.0	20	0	119	79 - 125	22.95	3.27	20	
Bromoform	22.95	1.0	20	0	115	66 - 130	21.87	4.84	20	

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19021151-02MSD** Units: **UG/L** Analysis Date: **26-Feb-2019 16:54**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	33.48	1.0	20	0	167	53 - 141	33.75	0.807	20	S
Carbon disulfide	42.3	2.0	40	0	106	64 - 133	42.57	0.637	20	
Carbon tetrachloride	20.73	1.0	20	0	104	72 - 136	21.2	2.24	20	
Chlorobenzene	23.25	1.0	20	0	116	82 - 118	23.18	0.275	20	
Chloroethane	22.93	1.0	20	0	115	60 - 138	22.79	0.593	20	
Chloroform	22.19	1.0	20	0	111	79 - 124	22.04	0.689	20	
Chloromethane	26.26	1.0	20	0	131	50 - 139	27.47	4.47	20	
cis-1,2-Dichloroethene	21.86	1.0	20	0	109	78 - 123	21.78	0.368	20	
cis-1,3-Dichloropropene	21.52	1.0	20	0	108	75 - 124	20.96	2.65	20	
Dibromochloromethane	22.66	1.0	20	0	113	74 - 126	21.56	4.98	20	
Dibromomethane	23.27	1.0	20	0	116	79 - 123	22.82	1.97	20	
Dichlorodifluoromethane	23.46	1.0	20	0	117	32 - 152	24.35	3.72	20	
Ethylbenzene	24.84	1.0	20	0	124	79 - 121	25.08	0.962	20	S
Hexachlorobutadiene	24.85	1.0	20	0	124	66 - 134	23.87	4.03	20	
Isopropylbenzene	25.86	1.0	20	0	129	72 - 131	26.01	0.548	20	
m,p-Xylene	48.58	2.0	40	0	121	80 - 121	48.52	0.135	20	S
Methylene chloride	21.52	2.0	20	0	108	74 - 124	21.38	0.634	20	
Naphthalene	21.84	1.0	20	0	109	61 - 128	20.53	6.18	20	
n-Butylbenzene	26.79	1.0	20	0	134	75 - 128	26.5	1.07	20	S
n-Propylbenzene	24.81	1.0	20	0	124	76 - 126	25.11	1.21	20	
o-Xylene	24.12	1.0	20	0	121	78 - 122	24.13	0.0214	20	
sec-Butylbenzene	25.08	1.0	20	0	125	77 - 126	25.1	0.0818	20	
Styrene	25.33	1.0	20	0	127	78 - 123	25.08	1	20	S
tert-Butylbenzene	24.37	1.0	20	0	122	78 - 124	24.53	0.673	20	
Tetrachloroethene	24.68	1.0	20	0	123	74 - 129	25.08	1.61	20	
Toluene	24.8	1.0	20	0	124	80 - 121	24.45	1.43	20	S
trans-1,2-Dichloroethene	20.68	1.0	20	0	103	75 - 124	21.09	1.95	20	
trans-1,3-Dichloropropene	21.8	1.0	20	0	109	73 - 127	21.21	2.75	20	
Trichloroethene	23.01	1.0	20	0	115	79 - 123	22.91	0.461	20	
Trichlorofluoromethane	22.53	1.0	20	0	113	65 - 141	22.76	1.02	20	
Vinyl chloride	22.48	1.0	20	0	112	58 - 137	22.91	1.89	20	
Surr: 1,2-Dichloroethane-d4	*47.11*	*1.0*	*50*	*0*	*94.2*	*81 - 118*	*46.62*	*1.06*	*20*	
Surr: 4-Bromofluorobenzene	*52.05*	*1.0*	*50*	*0*	*104*	*85 - 114*	*51.17*	*1.71*	*20*	
Surr: Dibromofluoromethane	*47.49*	*1.0*	*50*	*0*	*95.0*	*80 - 119*	*47.27*	*0.462*	*20*	

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020832

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19021151-02MSD** Units: **UG/L** Analysis Date: **26-Feb-2019 16:54**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.88*	*1.0*	*50*	*0*	*102*	*89 - 112*	*49.98*	*1.78*	*20*	

The following samples were analyzed in this batch: HS19020832-01 HS19020832-02 HS19020832-03 HS19020832-04 HS19020832-05 HS19020832-06 HS19020832-07

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: **HS19020832**

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

ALS Houston, US Date: 27-Feb-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
California	2919, 2018-2019	30-Apr-2019
Maryland	343, 2018-2019	30-Jun-2019

00956208

ALS Houston, US Date: 27-Feb-19

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19020832
Date/Time Received: **15-Feb-2019 08:37**
Received by: **NDR**

Checklist completed by: *Jared R. Makan* eSignature 15-Feb-2019 Date
Reviewed by: *RJ Modashia* eSignature 18-Feb-2019 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 ☐	COC IDs:N/A
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):	2.6c/3.0c UC/C	IR11
Cooler(s)/Kit(s):	44684	
Date/Time sample(s) sent to storage:	02/15/2019 16:00	

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:

00956209

APTIM

COC ID: LHAAP37-FEB2019-ALSsaltLake-1902-14

TURNAROUND TIME:

RUSH:

Page 1 of

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-37			Email	RJ.Modashia@alsglobal.com			Email Report To	Susan.Huang@aptim.com		
Address	1203-B East Grand Avenue			Address	960 W. LeVoy Drive			Mail Reports To	Susan Huang		
	PMB 202							Address	4005 Port Chicago Highway, Suite 200		
City	Marshall	State	TX	City	Salt Lake	State	UTAH	City	Concord	State	CA
Postal Code	75670	Country	USA	Postal Code	84123	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

ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	Sample Container and Preservative / ANALYSIS # Of Cont.	3-40 ml VOA/HCL Vocs by 8260B	3-40 ml VOA/HCL MEE by RSK175	3-40 ml VOA/Cool to 6 deg C CO2 by RSK175	2-40ml Amber/H2SO4 Toc by Sm5310C	2-40ml Amber/Cool to 6 deg C TIC by SM5310C	1-250ml /Cool to 6 deg C Anions (chloride/sulfate/nitrate/nitrite) by 9056				
35BWW19-190214	LHAAP37	26.19	26.40		WG	2/14/19	0810	3	X									
35BWW18-190214	LHAAP37	26.37	26.63		WG	2/14/19	0905	3	X									
35BWW07-190214	LHAAP37	25.76	26.00		WG	2/14/19	1000	3	X									
35BWW13-190214	LHAAP37	22.75	22.99		WG	2/14/19	1225	3	X									
35BWW15-190214	LHAAP37	21.81	22.06		WG	2/14/19	1310	3	X									
35BWW17-190214	LHAAP37	20.12	20.34		WG	2/14/19	1355	3	X									
TRIP BLANK	LHAAP37				W	2/14/19		2	X									

HS19020832

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	[signature] / BHATE	2/14/19 1430	NR / ALS	2.15.19 0837

44684 TCMX u/c 2.6

IR # 11

00956210

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

44684

CUSTODY SEAL

Date: 2/14/19 Time: 1430
Name: Scott Seesinger
Company: BHATE

Seal Broken By: SRN
Date: 2/15/19

44684 FEB 15 2019

Must Deliver Next Business Day
Time and Tempature Sensitive!

44684

ORIGIN ID:SGRA (903) 930-6193
SCOTT SEESINGER
APTIM ENVIROMENTAL & INFASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 28JAN19
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5858
REF: LHAAP-37/16-BD 63589-RJ

RMA:

FedEx Express

FedEx
TRK# 0221 4809 7830 4828

FRI - 15 FEB 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

FED 162705 14FC819 GGGA 553C2/0E3D/0C8A

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 27, 2019

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

Work Order: **HS19020873**

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

Dear Susan,

ALS Environmental received 5 sample(s) on Feb 16, 2019 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: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Work Order: HS19020873

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19020873-01	35BWW16-190215	Groundwater		15-Feb-2019 08:00	16-Feb-2019 09:17	☐
HS19020873-02	35BWW24-190215	Groundwater		15-Feb-2019 08:55	16-Feb-2019 09:17	☐
HS19020873-03	35BWW25-190215	Groundwater		15-Feb-2019 09:45	16-Feb-2019 09:17	☐
HS19020873-04	35BWW25-190215-FD	Groundwater		15-Feb-2019 09:45	16-Feb-2019 09:17	☐
HS19020873-05	Trip Blank	Water	ALS-012519-56	15-Feb-2019 00:00	16-Feb-2019 09:17	☐

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Work Order: HS19020873

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R333582

Sample ID: HS19021151-02MS

- MS and MSD are for an unrelated sample

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW16-190215
Collection Date: 15-Feb-2019 08:00

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,1,2-Trichlor-1,2,2-trifluoroethane	**12**		**0.50**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 21:19
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,1-Dichloroethene	**1.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 21:19
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:19
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 21:19
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 21:19
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:19
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 21:19
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 21:19
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 21:19
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW16-190215
Collection Date: 15-Feb-2019 08:00

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 21:19
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 21:19
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 21:19
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:19
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Tetrachloroethene	**11**		**0.30**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 21:19
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Trichloroethene	**4.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 21:19
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:19
Surr: 1,2-Dichloroethane-d4	*94.2*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 21:19*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 21:19*
Surr: Dibromofluoromethane	*93.0*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 21:19*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 21:19*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW24-190215
Collection Date: 15-Feb-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,1,2-Trichlor-1,2,2-trifluoroethane	**4.1**		**0.50**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 21:43
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:43
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 21:43
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 21:43
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:43
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 21:43
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 21:43
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 21:43
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW24-190215
Collection Date: 15-Feb-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 21:43
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 21:43
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 21:43
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 21:43
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Trichloroethene	**2.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 21:43
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 21:43
Surr: 1,2-Dichloroethane-d4	*94.6*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 21:43*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 21:43*
Surr: Dibromofluoromethane	*92.0*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 21:43*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 21:43*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW25-190215
Collection Date: 15-Feb-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:07
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 22:07
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 22:07
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:07
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 22:07
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 22:07
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 22:07
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW25-190215
Collection Date: 15-Feb-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 22:07
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 22:07
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 22:07
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:07
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Trichloroethene	**14**		**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 22:07
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:07
Surr: 1,2-Dichloroethane-d4	*93.4*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 22:07*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 22:07*
Surr: Dibromofluoromethane	*92.9*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 22:07*
Surr: Toluene-d8	*98.8*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 22:07*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW25-190215-FD
Collection Date: 15-Feb-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 22:31
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 22:31
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:31
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 22:31
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 22:31
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 22:31
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW25-190215-FD
Collection Date: 15-Feb-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 22:31
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 22:31
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 22:31
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 22:31
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Trichloroethene	**14**		**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Feb-2019 22:31
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 22:31
Surr: 1,2-Dichloroethane-d4	*95.1*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 22:31*
Surr: 4-Bromofluorobenzene	*99.3*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 22:31*
Surr: Dibromofluoromethane	*93.8*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 22:31*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 22:31*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: Trip Blank
Collection Date: 15-Feb-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-05
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:07
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 18:07
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	26-Feb-2019 18:07
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:07
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	26-Feb-2019 18:07
Acetone	2.0	U	0.40	2.0	2.0	UG/L	1	26-Feb-2019 18:07
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Feb-2019 18:07
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: Trip Blank
Collection Date: 15-Feb-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19020873
Lab ID:HS19020873-05
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Feb-2019 18:07
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Feb-2019 18:07
Methylene chloride	0.50	U	0.40	0.50	2.0	UG/L	1	26-Feb-2019 18:07
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	26-Feb-2019 18:07
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Feb-2019 18:07
Surr: 1,2-Dichloroethane-d4	*94.6*			**0**	*81-118*	*%REC*	*1*	*26-Feb-2019 18:07*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*26-Feb-2019 18:07*
Surr: Dibromofluoromethane	*95.2*			**0**	*80-119*	*%REC*	*1*	*26-Feb-2019 18:07*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*26-Feb-2019 18:07*

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

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R333582	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS19020873-05	Trip Blank	15 Feb 2019 00:00			26 Feb 2019 18:07	1
Batch ID R333582	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS19020873-01	35BWW16-190215	15 Feb 2019 08:00			26 Feb 2019 21:19	1
HS19020873-02	35BWW24-190215	15 Feb 2019 08:55			26 Feb 2019 21:43	1
HS19020873-03	35BWW25-190215	15 Feb 2019 09:45			26 Feb 2019 22:07	1
HS19020873-04	35BWW25-190215-FD	15 Feb 2019 09:45			26 Feb 2019 22:31	1

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 15:18**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966671** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	2.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 15:18**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966671** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.21*	*1.0*	*50*	*0*	*94.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.9*	*1.0*	*50*	*0*	*99.8*	*85 - 114*				
Surr: Dibromofluoromethane	*46.61*	*1.0*	*50*	*0*	*93.2*	*80 - 119*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 15:18**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966671** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.67*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 14:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966670** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.83	1.0	20	0	99.2	78 - 124				
1,1,1-Trichloroethane	17.06	1.0	20	0	85.3	74 - 131				
1,1,2,2-Tetrachloroethane	21.82	1.0	20	0	109	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	18.91	1.0	20	0	94.6	70 - 136				
1,1,2-Trichloroethane	21.33	1.0	20	0	107	80 - 119				
1,1-Dichloroethane	18.85	1.0	20	0	94.2	77 - 125				
1,1-Dichloroethene	17.25	1.0	20	0	86.3	71 - 131				
1,1-Dichloropropene	18.38	1.0	20	0	91.9	78 - 125				
1,2,3-Trichlorobenzene	18.43	1.0	20	0	92.1	69 - 129				
1,2,3-Trichloropropane	20.73	1.0	20	0	104	73 - 122				
1,2,4-Trichlorobenzene	19.31	1.0	20	0	96.6	69 - 130				
1,2,4-Trimethylbenzene	20.68	1.0	20	0	103	76 - 124				
1,2-Dibromo-3-chloropropane	20.11	1.0	20	0	101	62 - 128				
1,2-Dibromoethane	21.16	1.0	20	0	106	77 - 121				
1,2-Dichlorobenzene	20.94	1.0	20	0	105	80 - 119				
1,2-Dichloroethane	20.19	1.0	20	0	101	73 - 128				
1,2-Dichloropropane	21.16	1.0	20	0	106	78 - 122				
1,3,5-Trimethylbenzene	19.99	1.0	20	0	100.0	75 - 124				
1,3-Dichlorobenzene	20.85	1.0	20	0	104	80 - 119				
1,3-Dichloropropane	21.16	1.0	20	0	106	80 - 119				
1,4-Dichlorobenzene	20.26	1.0	20	0	101	79 - 118				
2,2-Dichloropropane	16.15	1.0	20	0	80.7	60 - 139				
2-Butanone	38.37	2.0	40	0	95.9	56 - 143				
2-Chlorotoluene	20.46	1.0	20	0	102	79 - 122				
2-Hexanone	42.7	2.0	40	0	107	57 - 139				
4-Chlorotoluene	20.74	1.0	20	0	104	78 - 122				
4-Isopropyltoluene	19.49	1.0	20	0	97.5	77 - 127				
4-Methyl-2-pentanone	44.65	2.0	40	0	112	67 - 130				
Acetone	40.67	2.0	40	0	102	39 - 160				
Benzene	20.64	1.0	20	0	103	79 - 120				
Bromobenzene	20.91	1.0	20	0	105	80 - 120				
Bromochloromethane	18.68	1.0	20	0	93.4	78 - 123				
Bromodichloromethane	20.44	1.0	20	0	102	79 - 125				
Bromoform	20.71	1.0	20	0	104	66 - 130				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 14:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966670** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	23.69	1.0	20	0	118	53 - 141				
Carbon disulfide	35.76	2.0	40	0	89.4	64 - 133				
Carbon tetrachloride	15.76	1.0	20	0	78.8	72 - 136				
Chlorobenzene	20.82	1.0	20	0	104	82 - 118				
Chloroethane	18.63	1.0	20	0	93.2	60 - 138				
Chloroform	18.97	1.0	20	0	94.8	79 - 124				
Chloromethane	19.91	1.0	20	0	99.6	50 - 139				
cis-1,2-Dichloroethene	19.2	1.0	20	0	96.0	78 - 123				
cis-1,3-Dichloropropene	20.08	1.0	20	0	100	75 - 124				
Dibromochloromethane	20.27	1.0	20	0	101	74 - 126				
Dibromomethane	20.59	1.0	20	0	103	79 - 123				
Dichlorodifluoromethane	15.45	1.0	20	0	77.2	32 - 152				
Ethylbenzene	20.11	1.0	20	0	101	79 - 121				
Hexachlorobutadiene	20.16	1.0	20	0	101	66 - 134				
Isopropylbenzene	19.78	1.0	20	0	98.9	72 - 131				
m,p-Xylene	40.89	2.0	40	0	102	80 - 121				
Methylene chloride	19.64	2.0	20	0	98.2	74 - 124				
Naphthalene	19.01	1.0	20	0	95.0	61 - 128				
n-Butylbenzene	20.1	1.0	20	0	101	75 - 128				
n-Propylbenzene	19.98	1.0	20	0	99.9	76 - 126				
o-Xylene	20.98	1.0	20	0	105	78 - 122				
sec-Butylbenzene	19.33	1.0	20	0	96.7	77 - 126				
Styrene	21.38	1.0	20	0	107	78 - 123				
tert-Butylbenzene	19.3	1.0	20	0	96.5	78 - 124				
Tetrachloroethene	18.36	1.0	20	0	91.8	74 - 129				
Toluene	20.44	1.0	20	0	102	80 - 121				
trans-1,2-Dichloroethene	18.1	1.0	20	0	90.5	75 - 124				
trans-1,3-Dichloropropene	19.06	1.0	20	0	95.3	73 - 127				
Trichloroethene	19.21	1.0	20	0	96.0	79 - 123				
Trichlorofluoromethane	16.34	1.0	20	0	81.7	65 - 141				
Vinyl chloride	18.3	1.0	20	0	91.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*47.13*	*1.0*	*50*	*0*	*94.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.13*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*47.52*	*1.0*	*50*	*0*	*95.0*	*80 - 119*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 14:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966670** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.49*	*1.0*	*50*	*0*	*99.0*	*89 - 112*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19021151-02MS** Units: **UG/L** Analysis Date: **26-Feb-2019 16:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966674** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.62	1.0	20	0	108	78 - 124				
1,1,1-Trichloroethane	21.46	1.0	20	0	107	74 - 131				
1,1,2,2-Tetrachloroethane	22.13	1.0	20	0	111	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	28.04	1.0	20	0	140	70 - 136				S
1,1,2-Trichloroethane	23.34	1.0	20	0	117	80 - 119				
1,1-Dichloroethane	21.21	1.0	20	0	106	77 - 125				
1,1-Dichloroethene	21.87	1.0	20	0	109	71 - 131				
1,1-Dichloropropene	23.25	1.0	20	0	116	78 - 125				
1,2,3-Trichlorobenzene	20.21	1.0	20	0	101	69 - 129				
1,2,3-Trichloropropane	21.79	1.0	20	0	109	73 - 122				
1,2,4-Trichlorobenzene	22.44	1.0	20	0	112	69 - 130				
1,2,4-Trimethylbenzene	25.55	1.0	20	0	128	76 - 124				S
1,2-Dibromo-3-chloropropane	19.9	1.0	20	0	99.5	62 - 128				
1,2-Dibromoethane	22.76	1.0	20	0	114	77 - 121				
1,2-Dichlorobenzene	22.87	1.0	20	0	114	80 - 119				
1,2-Dichloroethane	21.64	1.0	20	0	108	73 - 128				
1,2-Dichloropropane	23.62	1.0	20	0	118	78 - 122				
1,3,5-Trimethylbenzene	25.23	1.0	20	0	126	75 - 124				S
1,3-Dichlorobenzene	23.48	1.0	20	0	117	80 - 119				
1,3-Dichloropropane	23.13	1.0	20	0	116	80 - 119				
1,4-Dichlorobenzene	22.94	1.0	20	0	115	79 - 118				
2,2-Dichloropropane	19.38	1.0	20	0	96.9	60 - 139				
2-Butanone	39.53	2.0	40	0	98.8	56 - 143				
2-Chlorotoluene	23.77	1.0	20	0	119	79 - 122				
2-Hexanone	45.67	2.0	40	0	114	57 - 139				
4-Chlorotoluene	24.22	1.0	20	0	121	78 - 122				
4-Isopropyltoluene	25.32	1.0	20	0	127	77 - 127				
4-Methyl-2-pentanone	47.16	2.0	40	0	118	67 - 130				
Acetone	41.46	2.0	40	0	104	39 - 160				
Benzene	24.27	1.0	20	0	121	79 - 120				S
Bromobenzene	23.6	1.0	20	0	118	80 - 120				
Bromochloromethane	20.66	1.0	20	0	103	78 - 123				
Bromodichloromethane	22.95	1.0	20	0	115	79 - 125				
Bromoform	21.87	1.0	20	0	109	66 - 130				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19021151-02MS** Units: **UG/L** Analysis Date: **26-Feb-2019 16:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966674** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	33.75	1.0	20	0	169	53 - 141				S
Carbon disulfide	42.57	2.0	40	0	106	64 - 133				
Carbon tetrachloride	21.2	1.0	20	0	106	72 - 136				
Chlorobenzene	23.18	1.0	20	0	116	82 - 118				
Chloroethane	22.79	1.0	20	0	114	60 - 138				
Chloroform	22.04	1.0	20	0	110	79 - 124				
Chloromethane	27.47	1.0	20	0	137	50 - 139				
cis-1,2-Dichloroethene	21.78	1.0	20	0	109	78 - 123				
cis-1,3-Dichloropropene	20.96	1.0	20	0	105	75 - 124				
Dibromochloromethane	21.56	1.0	20	0	108	74 - 126				
Dibromomethane	22.82	1.0	20	0	114	79 - 123				
Dichlorodifluoromethane	24.35	1.0	20	0	122	32 - 152				
Ethylbenzene	25.08	1.0	20	0	125	79 - 121				S
Hexachlorobutadiene	23.87	1.0	20	0	119	66 - 134				
Isopropylbenzene	26.01	1.0	20	0	130	72 - 131				
m,p-Xylene	48.52	2.0	40	0	121	80 - 121				S
Methylene chloride	21.38	2.0	20	0	107	74 - 124				
Naphthalene	20.53	1.0	20	0	103	61 - 128				
n-Butylbenzene	26.5	1.0	20	0	133	75 - 128				S
n-Propylbenzene	25.11	1.0	20	0	126	76 - 126				
o-Xylene	24.13	1.0	20	0	121	78 - 122				
sec-Butylbenzene	25.1	1.0	20	0	126	77 - 126				
Styrene	25.08	1.0	20	0	125	78 - 123				S
tert-Butylbenzene	24.53	1.0	20	0	123	78 - 124				
Tetrachloroethene	25.08	1.0	20	0	125	74 - 129				
Toluene	24.45	1.0	20	0	122	80 - 121				S
trans-1,2-Dichloroethene	21.09	1.0	20	0	105	75 - 124				
trans-1,3-Dichloropropene	21.21	1.0	20	0	106	73 - 127				
Trichloroethene	22.91	1.0	20	0	115	79 - 123				
Trichlorofluoromethane	22.76	1.0	20	0	114	65 - 141				
Vinyl chloride	22.91	1.0	20	0	115	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.62*	*1.0*	*50*	*0*	*93.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.17*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*47.27*	*1.0*	*50*	*0*	*94.5*	*80 - 119*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS19021151-02MS** Units: **UG/L** Analysis Date: **26-Feb-2019 16:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966674** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.98*	*1.0*	*50*	*0*	*100.0*	*89 - 112*				

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19021151-02MSD** Units: **UG/L** Analysis Date: **26-Feb-2019 16:54**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.96	1.0	20	0	110	78 - 124	21.62	1.56	20	
1,1,1-Trichloroethane	21.54	1.0	20	0	108	74 - 131	21.46	0.382	20	
1,1,2,2-Tetrachloroethane	23.05	1.0	20	0	115	71 - 121	22.13	4.09	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	27.35	1.0	20	0	137	70 - 136	28.04	2.47	20	S
1,1,2-Trichloroethane	24.19	1.0	20	0	121	80 - 119	23.34	3.58	20	S
1,1-Dichloroethane	21.49	1.0	20	0	107	77 - 125	21.21	1.32	20	
1,1-Dichloroethene	21.59	1.0	20	0	108	71 - 131	21.87	1.28	20	
1,1-Dichloropropene	22.62	1.0	20	0	113	78 - 125	23.25	2.71	20	
1,2,3-Trichlorobenzene	21.74	1.0	20	0	109	69 - 129	20.21	7.26	20	
1,2,3-Trichloropropane	22.42	1.0	20	0	112	73 - 122	21.79	2.83	20	
1,2,4-Trichlorobenzene	23.21	1.0	20	0	116	69 - 130	22.44	3.4	20	
1,2,4-Trimethylbenzene	25.88	1.0	20	0	129	76 - 124	25.55	1.27	20	S
1,2-Dibromo-3-chloropropane	20.63	1.0	20	0	103	62 - 128	19.9	3.57	20	
1,2-Dibromoethane	23.43	1.0	20	0	117	77 - 121	22.76	2.91	20	
1,2-Dichlorobenzene	23.23	1.0	20	0	116	80 - 119	22.87	1.55	20	
1,2-Dichloroethane	22.42	1.0	20	0	112	73 - 128	21.64	3.53	20	
1,2-Dichloropropane	23.99	1.0	20	0	120	78 - 122	23.62	1.58	20	
1,3,5-Trimethylbenzene	24.98	1.0	20	0	125	75 - 124	25.23	0.988	20	S
1,3-Dichlorobenzene	23.95	1.0	20	0	120	80 - 119	23.48	1.98	20	S
1,3-Dichloropropane	23.52	1.0	20	0	118	80 - 119	23.13	1.68	20	
1,4-Dichlorobenzene	23.33	1.0	20	0	117	79 - 118	22.94	1.69	20	
2,2-Dichloropropane	19.43	1.0	20	0	97.1	60 - 139	19.38	0.218	20	
2-Butanone	43.64	2.0	40	0	109	56 - 143	39.53	9.86	20	
2-Chlorotoluene	23.81	1.0	20	0	119	79 - 122	23.77	0.183	20	
2-Hexanone	48.5	2.0	40	0	121	57 - 139	45.67	6	20	
4-Chlorotoluene	24.45	1.0	20	0	122	78 - 122	24.22	0.935	20	S
4-Isopropyltoluene	25.35	1.0	20	0	127	77 - 127	25.32	0.126	20	
4-Methyl-2-pentanone	50	2.0	40	0	125	67 - 130	47.16	5.85	20	
Acetone	43.51	2.0	40	0	109	39 - 160	41.46	4.84	20	
Benzene	24.05	1.0	20	0	120	79 - 120	24.27	0.913	20	S
Bromobenzene	23.79	1.0	20	0	119	80 - 120	23.6	0.771	20	
Bromochloromethane	21.26	1.0	20	0	106	78 - 123	20.66	2.9	20	
Bromodichloromethane	23.71	1.0	20	0	119	79 - 125	22.95	3.27	20	
Bromoform	22.95	1.0	20	0	115	66 - 130	21.87	4.84	20	

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19021151-02MSD** Units: **UG/L** Analysis Date: **26-Feb-2019 16:54**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	33.48	1.0	20	0	167	53 - 141	33.75	0.807	20	S
Carbon disulfide	42.3	2.0	40	0	106	64 - 133	42.57	0.637	20	
Carbon tetrachloride	20.73	1.0	20	0	104	72 - 136	21.2	2.24	20	
Chlorobenzene	23.25	1.0	20	0	116	82 - 118	23.18	0.275	20	
Chloroethane	22.93	1.0	20	0	115	60 - 138	22.79	0.593	20	
Chloroform	22.19	1.0	20	0	111	79 - 124	22.04	0.689	20	
Chloromethane	26.26	1.0	20	0	131	50 - 139	27.47	4.47	20	
cis-1,2-Dichloroethene	21.86	1.0	20	0	109	78 - 123	21.78	0.368	20	
cis-1,3-Dichloropropene	21.52	1.0	20	0	108	75 - 124	20.96	2.65	20	
Dibromochloromethane	22.66	1.0	20	0	113	74 - 126	21.56	4.98	20	
Dibromomethane	23.27	1.0	20	0	116	79 - 123	22.82	1.97	20	
Dichlorodifluoromethane	23.46	1.0	20	0	117	32 - 152	24.35	3.72	20	
Ethylbenzene	24.84	1.0	20	0	124	79 - 121	25.08	0.962	20	S
Hexachlorobutadiene	24.85	1.0	20	0	124	66 - 134	23.87	4.03	20	
Isopropylbenzene	25.86	1.0	20	0	129	72 - 131	26.01	0.548	20	
m,p-Xylene	48.58	2.0	40	0	121	80 - 121	48.52	0.135	20	S
Methylene chloride	21.52	2.0	20	0	108	74 - 124	21.38	0.634	20	
Naphthalene	21.84	1.0	20	0	109	61 - 128	20.53	6.18	20	
n-Butylbenzene	26.79	1.0	20	0	134	75 - 128	26.5	1.07	20	S
n-Propylbenzene	24.81	1.0	20	0	124	76 - 126	25.11	1.21	20	
o-Xylene	24.12	1.0	20	0	121	78 - 122	24.13	0.0214	20	
sec-Butylbenzene	25.08	1.0	20	0	125	77 - 126	25.1	0.0818	20	
Styrene	25.33	1.0	20	0	127	78 - 123	25.08	1	20	S
tert-Butylbenzene	24.37	1.0	20	0	122	78 - 124	24.53	0.673	20	
Tetrachloroethene	24.68	1.0	20	0	123	74 - 129	25.08	1.61	20	
Toluene	24.8	1.0	20	0	124	80 - 121	24.45	1.43	20	S
trans-1,2-Dichloroethene	20.68	1.0	20	0	103	75 - 124	21.09	1.95	20	
trans-1,3-Dichloropropene	21.8	1.0	20	0	109	73 - 127	21.21	2.75	20	
Trichloroethene	23.01	1.0	20	0	115	79 - 123	22.91	0.461	20	
Trichlorofluoromethane	22.53	1.0	20	0	113	65 - 141	22.76	1.02	20	
Vinyl chloride	22.48	1.0	20	0	112	58 - 137	22.91	1.89	20	
Surr: 1,2-Dichloroethane-d4	*47.11*	*1.0*	*50*	*0*	*94.2*	*81 - 118*	*46.62*	*1.06*	*20*	
Surr: 4-Bromofluorobenzene	*52.05*	*1.0*	*50*	*0*	*104*	*85 - 114*	*51.17*	*1.71*	*20*	
Surr: Dibromofluoromethane	*47.49*	*1.0*	*50*	*0*	*95.0*	*80 - 119*	*47.27*	*0.462*	*20*	

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19020873

QC BATCH REPORT

Batch ID: R333582 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS19021151-02MSD** Units: **UG/L** Analysis Date: **26-Feb-2019 16:54**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966675** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.88*	*1.0*	*50*	*0*	*102*	*89 - 112*	*49.98*	*1.78*	*20*	

The following samples were analyzed in this batch: HS19020873-01 HS19020873-02 HS19020873-03 HS19020873-04 HS19020873-05

ALS Houston, US Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: **HS19020873**

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

ALS Houston, US Date: 27-Feb-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
California	2919, 2018-2019	30-Apr-2019
Maryland	343, 2018-2019	30-Jun-2019

00956239

ALS Houston, US Date: 27-Feb-19

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19020873
Date/Time Received: **16-Feb-2019 09:17**
Received by: **PMG**

Checklist completed by: *Paresh M. Giga* eSignature — 16-Feb-2019 Date
Reviewed by: *RJ Modashia* eSignature — 18-Feb-2019 Date

Matrices: **Groundwater/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:LHAAP-37-FEB2019-ALSsaltLake-1902-15
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):	1.3c/1.6c U/c	IR25
Cooler(s)/Kit(s):	24976	
Date/Time sample(s) sent to storage:	2/16/19 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:

00956240

APTIM

Page 1 of

COC ID: LHAAP37-FEB2019-ALSsaltLake-1902-15

TURNAROUND TIME:

RUSH:

PROJECT/CLIENT INFO

Facility Name	Longhorn AAP		
Project Number	501032		
	LHAAP-37		
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	960 W. LeVoy Drive		
City	Salt Lake	State	UTAH
Postal Code	84123	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 / ANALYSIS	3-40 ml VOA/HCL — Vocs by 8260B	3-40 ml VOA/HCL — MEE by RSK175	3-40 ml VOA/Cool to 6 deg C — CO2 by RSK175	2-40ml Amber/H2SO4 — Toc by Sm5310C	2-40ml Amber/Cool to 6 deg C — TIC by SM5310C	1-250ml /Cool to 6 deg C — Anions (chloride/sulfate/nitrate/nitrite) by 9056
35BWW16-190215	LHAAP 37	21.57	21.80		WG	2/15/19	0800	3		X					
35BWW24-190215	LHAAP37	28.27	28.54		WG	2/15/19	0855	3		X					
35BWW25-190215	LHAAP37	25.80	26.04		WG	2/15/19	0945	3		X					
35BWW25-190215-FD	LHAAP 37	25.80	26.04		WG	2/15/19	0945	3		X					
TRIP BLANK	LHAAP 37				W	2/15/19		2		X					

HS19020873

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	James Beeson / BHATE	2/15/19 1100	P.GIGA. HIS.	2/16/19 07:17

24976 WC 130 #25 Cl- = 3

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

2-4976

CUSTODY SEAL

Time: 1100

Must Deliver Next Business Day
Time and Temperature Sensitive!

ORIGIN ID:SGRA (903) 930-8193
SCOTT BEESINGER
APTIM ENVIROMENTAL & INFRASTRUCTURE
1203-B EAST GRAND AVE
RM8 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 29JAN19
ACTWGT: 1.00 LB MAN
CAD: 3001307CAFE3211
DIMS: 19x18x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5866
REF: LHAAP-37/16-BO 63589-AJ

RMA:

FedEx Express

FedEx TRK# 0221 4809 7830 4839

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO SGRA

77099
TX-US
IAH

FTO 5090257 15FF819 6GGA 563C2/BE3D/8C8A

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: 043QB **Date Rec:** 02/13/2019 **Report Date:** 02/21/2019

Client Project #: 501032 **Client Project Name:** Longhorn AAP - LHAAP-37

Purchase Order #: 204818

Analysis Requested: CENSUS, Miscellaneous

Reviewed By:

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: Longhorn AAP - LHAAP-37

MI Project Number: **043QB**
Date Received: 02/13/2019

Sample Information

Client Sample ID:		**35BWW23-190212**	**35BWW14-190212**	**35BWW08-190212**	**35BWW26-190212**	**35BWW12-190213**
Sample Date:		02/12/2019	02/12/2019	02/12/2019	02/12/2019	02/13/2019
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		JS	JS	JS	JS	JS
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**3.00E-01 (J)**	**5.00E-01 (J)**	<5.00E-01	**2.30E+00**	<5.00E-01

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: Longhorn AAP - LHAAP-37

MI Project Number: **043QB**
Date Received: 02/13/2019

Sample Information

Client Sample ID:	**35BWW04-190213**
Sample Date:	02/13/2019
Units:	cells/mL
Analyst/Reviewer:	JS

Dechlorinating Bacteria

Dehalococcoides	*DHC*	**4.00E-01 (J)**

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 **2/13/2019**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	02/13/2019	02/21/2019	0 °C	109%	non-detect	non-detect

Samples Received **2/14/2019**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	02/14/2019	02/21/2019	3 °C	109%	non-detect	non-detect

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 04, 2019

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

Work Order: **HS19051208**

Laboratory Results for: **LHAAP-37**

Dear Susan,

ALS Environmental received 9 sample(s) on May 21, 2019 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: RJ.MODASHIA
RJ Modashia
Project Manager

ALS Houston, US Date: 04-jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Work Order: HS19051208

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19051208-01	35-BWW19-190520	Groundwater		20-May-2019 08:15	21-May-2019 09:50	☐
HS19051208-02	35-BWW18-190520	Groundwater		20-May-2019 09:05	21-May-2019 09:50	☐
HS19051208-03	35-BWW01-190520	Groundwater		20-May-2019 09:50	21-May-2019 09:50	☐
HS19051208-04	35-BWW01-190520-FD	Groundwater		20-May-2019 09:50	21-May-2019 09:50	☐
HS19051208-05	35-BWW26-190520	Groundwater		20-May-2019 10:40	21-May-2019 09:50	☐
HS19051208-06	35-BWW08-190520	Groundwater		20-May-2019 11:50	21-May-2019 09:50	☐
HS19051208-07	35-BWW04-190520	Groundwater		20-May-2019 12:45	21-May-2019 09:50	☐
HS19051208-08	35-BWW10-190520	Groundwater		20-May-2019 13:45	21-May-2019 09:50	☐
HS19051208-09	Trip Blank	Water	C&G-101618-291	20-May-2019 00:00	21-May-2019 09:50	☐

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-37
Work Order:

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 Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.
- The analysis for TOC was subcontracted to ALS Kelso WA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R339038

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

WetChemistry by Method SW9056

Batch ID: R339156

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW19-190520 Lab ID:HS19051208-01
Collection Date: 20-May-2019 08:15 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 15:38
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 15:38
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 15:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 15:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 15:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 15:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 15:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 15:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 15:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 15:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	23-May-2019 15:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 15:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	23-May-2019 15:38
Acetone	**11**		**0.40**	**1.0**	**2.0**	**UG/L**	1	23-May-2019 15:38
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 15:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 15:38
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 15:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	23-May-2019 15:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 15:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW19-190520 Lab ID:HS19051208-01
Collection Date: 20-May-2019 08:15 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	23-May-2019 15:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	23-May-2019 15:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 15:38
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 15:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 15:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 15:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 15:38
Surr: 1,2-Dichloroethane-d4	*87.0*			**0**	*81-118*	*%REC*	*1*	*23-May-2019 15:38*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*23-May-2019 15:38*
Surr: Dibromofluoromethane	*90.2*			**0**	*80-119*	*%REC*	*1*	*23-May-2019 15:38*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*23-May-2019 15:38*

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW18-190520 Lab ID:HS19051208-02
Collection Date: 20-May-2019 09:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:02
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:02
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:02
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:02
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:02
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:02
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:02
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:02
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:02
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 16:02
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	23-May-2019 16:02
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:02
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	23-May-2019 16:02
Acetone	**3.7**		**0.40**	**1.0**	**2.0**	**UG/L**	1	23-May-2019 16:02
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:02
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:02
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:02
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	23-May-2019 16:02
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:02
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW18-190520 Lab ID:HS19051208-02
Collection Date: 20-May-2019 09:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	23-May-2019 16:02
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	23-May-2019 16:02
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 16:02
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 16:02
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:02
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:02
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:02
Surr: 1,2-Dichloroethane-d4	*87.1*			**0**	*81-118*	*%REC*	*1*	*23-May-2019 16:02*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*23-May-2019 16:02*
Surr: Dibromofluoromethane	*89.9*			**0**	*80-119*	*%REC*	*1*	*23-May-2019 16:02*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*23-May-2019 16:02*

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW01-190520 Lab ID:HS19051208-03
Collection Date: 20-May-2019 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:26
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:26
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:26
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:26
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:26
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:26
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:26
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:26
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:26
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 16:26
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	23-May-2019 16:26
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:26
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	23-May-2019 16:26
Acetone	**5.4**		**0.40**	**1.0**	**2.0**	**UG/L**	1	23-May-2019 16:26
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:26
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:26
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:26
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	23-May-2019 16:26
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 16:26
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW01-190520 Lab ID:HS19051208-03
Collection Date: 20-May-2019 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	23-May-2019 16:26
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	23-May-2019 16:26
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 16:26
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 16:26
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 16:26
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 16:26
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 16:26
Surr: 1,2-Dichloroethane-d4	*86.7*			**0**	*81-118*	*%REC*	*1*	*23-May-2019 16:26*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*1*	*23-May-2019 16:26*
Surr: Dibromofluoromethane	*90.3*			**0**	*80-119*	*%REC*	*1*	*23-May-2019 16:26*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*23-May-2019 16:26*

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW01-190520-FD Lab ID:HS19051208-04
Collection Date: 20-May-2019 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:26
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:26
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:26
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:26
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:26
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:26
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:26
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:26
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:26
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 18:26
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	23-May-2019 18:26
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:26
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	23-May-2019 18:26
Acetone	**8.4**		**0.40**	**1.0**	**2.0**	**UG/L**	1	23-May-2019 18:26
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:26
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:26
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:26
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	23-May-2019 18:26
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:26
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW01-190520-FD Lab ID:HS19051208-04
Collection Date: 20-May-2019 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	23-May-2019 18:26
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	23-May-2019 18:26
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 18:26
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 18:26
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:26
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:26
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:26
Surr: 1,2-Dichloroethane-d4	*86.8*			**0**	*81-118*	*%REC*	*1*	*23-May-2019 18:26*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*23-May-2019 18:26*
Surr: Dibromofluoromethane	*89.7*			**0**	*80-119*	*%REC*	*1*	*23-May-2019 18:26*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*23-May-2019 18:26*

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW26-190520 Lab ID:HS19051208-05
Collection Date: 20-May-2019 10:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:50
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 18:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	23-May-2019 18:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	23-May-2019 18:50
Acetone	**6.2**		**0.40**	**1.0**	**2.0**	**UG/L**	1	23-May-2019 18:50
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:50
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	23-May-2019 18:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 18:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW26-190520 Lab ID:HS19051208-05
Collection Date: 20-May-2019 10:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	23-May-2019 18:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	23-May-2019 18:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 18:50
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 18:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 18:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 18:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 18:50
Surr: 1,2-Dichloroethane-d4	*85.6*			**0**	*81-118*	*%REC*	*1*	*23-May-2019 18:50*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*23-May-2019 18:50*
Surr: Dibromofluoromethane	*88.0*			**0**	*80-119*	*%REC*	*1*	*23-May-2019 18:50*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*23-May-2019 18:50*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**30.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 04:18
Nitrogen, Nitrate (As N)	**0.126**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	22-May-2019 04:18
Sulfate	**25.7**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 04:18
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2019 12:12
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2019 08:57

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW08-190520 Lab ID:HS19051208-06
Collection Date: 20-May-2019 11:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:14
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:14
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:14
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:14
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:14
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:14
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:14
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:14
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:14
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 19:14
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	23-May-2019 19:14
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:14
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	23-May-2019 19:14
Acetone	**3.5**		**0.40**	**1.0**	**2.0**	**UG/L**	1	23-May-2019 19:14
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:14
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:14
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:14
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	23-May-2019 19:14
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:14
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW08-190520 Lab ID:HS19051208-06
Collection Date: 20-May-2019 11:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	23-May-2019 19:14
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	23-May-2019 19:14
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 19:14
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 19:14
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:14
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:14
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:14
Surr: 1,2-Dichloroethane-d4	*85.8*			**0**	*81-118*	*%REC*	*1*	*23-May-2019 19:14*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*23-May-2019 19:14*
Surr: Dibromofluoromethane	*89.9*			**0**	*80-119*	*%REC*	*1*	*23-May-2019 19:14*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*23-May-2019 19:14*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**4.57**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 04:47
Nitrogen, Nitrate (As N)	**0.185**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	22-May-2019 04:47
Sulfate	**19.3**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 04:47
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2019 12:12
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2019 08:57

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW04-190520 Lab ID:HS19051208-07
Collection Date: 20-May-2019 12:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:38
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:38
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 19:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	23-May-2019 19:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	23-May-2019 19:38
Acetone	**5.8**		**0.40**	**1.0**	**2.0**	**UG/L**	1	23-May-2019 19:38
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:38
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	23-May-2019 19:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 19:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW04-190520 Lab ID:HS19051208-07
Collection Date: 20-May-2019 12:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	23-May-2019 19:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	23-May-2019 19:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 19:38
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 19:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 19:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
Tetrachloroethene	**4.7**		**0.30**	**0.50**	**1.0**	**UG/L**	1	23-May-2019 19:38
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
Trichloroethene	**0.58**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	23-May-2019 19:38
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 19:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 19:38
Surr: 1,2-Dichloroethane-d4	*86.6*			**0**	*81-118*	*%REC*	*1*	*23-May-2019 19:38*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*23-May-2019 19:38*
Surr: Dibromofluoromethane	*89.0*			**0**	*80-119*	*%REC*	*1*	*23-May-2019 19:38*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*23-May-2019 19:38*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**2.96**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 05:02
Nitrogen, Nitrate (As N)	**0.174**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	22-May-2019 05:02
Sulfate	**22.0**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 05:02
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2019 12:12
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2019 08:57

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW10-190520 Lab ID:HS19051208-08
Collection Date: 20-May-2019 13:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 20:02
1,1,2-Trichlor-1,2,2-trifluoroethane	**1.6**		**0.50**	**0.50**	**1.0**	**UG/L**	1	23-May-2019 20:02
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 20:02
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 20:02
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 20:02
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 20:02
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 20:02
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 20:02
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 20:02
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 20:02
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	23-May-2019 20:02
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 20:02
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	23-May-2019 20:02
Acetone	**9.6**		**0.40**	**1.0**	**2.0**	**UG/L**	1	23-May-2019 20:02
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 20:02
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 20:02
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 20:02
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	23-May-2019 20:02
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 20:02
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: 35-BWW10-190520 Lab ID:HS19051208-08
Collection Date: 20-May-2019 13:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	23-May-2019 20:02
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	23-May-2019 20:02
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 20:02
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 20:02
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 20:02
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
Tetrachloroethene	**5.5**		**0.30**	**0.50**	**1.0**	**UG/L**	1	23-May-2019 20:02
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
Trichloroethene	**9.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	23-May-2019 20:02
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 20:02
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 20:02
Surr: 1,2-Dichloroethane-d4	*84.4*			**0**	*81-118*	*%REC*	*1*	*23-May-2019 20:02*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*23-May-2019 20:02*
Surr: Dibromofluoromethane	*88.6*			**0**	*80-119*	*%REC*	*1*	*23-May-2019 20:02*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*23-May-2019 20:02*

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: Trip Blank Lab ID:HS19051208-09
Collection Date: 20-May-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 14:50
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 14:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 14:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 14:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 14:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 14:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 14:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 14:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 14:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 14:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	23-May-2019 14:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 14:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	23-May-2019 14:50
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 14:50
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 14:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 14:50
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 14:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	23-May-2019 14:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	23-May-2019 14:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051208
Sample ID: Trip Blank Lab ID:HS19051208-09
Collection Date: 20-May-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	23-May-2019 14:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	23-May-2019 14:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	23-May-2019 14:50
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	23-May-2019 14:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	23-May-2019 14:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	23-May-2019 14:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	23-May-2019 14:50
Surr: 1,2-Dichloroethane-d4	*84.9*			**0**	*81-118*	*%REC*	*1*	*23-May-2019 14:50*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*23-May-2019 14:50*
Surr: Dibromofluoromethane	*88.1*			**0**	*80-119*	*%REC*	*1*	*23-May-2019 14:50*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*23-May-2019 14:50*

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

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R339038	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS19051208-09	Trip Blank	20 May 2019 00:00			23 May 2019 14:50	1
Batch ID R339038	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Groundwater		
HS19051208-01	35-BWW19-190520	20 May 2019 08:15			23 May 2019 15:38	1
HS19051208-02	35-BWW18-190520	20 May 2019 09:05			23 May 2019 16:02	1
HS19051208-03	35-BWW01-190520	20 May 2019 09:50			23 May 2019 16:26	1
HS19051208-04	35-BWW01-190520-FD	20 May 2019 09:50			23 May 2019 18:26	1
HS19051208-05	35-BWW26-190520	20 May 2019 10:40			23 May 2019 18:50	1
HS19051208-06	35-BWW08-190520	20 May 2019 11:50			23 May 2019 19:14	1
HS19051208-07	35-BWW04-190520	20 May 2019 12:45			23 May 2019 19:38	1
HS19051208-08	35-BWW10-190520	20 May 2019 13:45			23 May 2019 20:02	1
Batch ID R339156	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS19051208-05	35-BWW26-190520	20 May 2019 10:40			22 May 2019 04:18	1
HS19051208-06	35-BWW08-190520	20 May 2019 11:50			22 May 2019 04:47	1
HS19051208-07	35-BWW04-190520	20 May 2019 12:45			22 May 2019 05:02	1
Batch ID R339660	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Groundwater		
HS19051208-05	35-BWW26-190520	20 May 2019 10:40			03 Jun 2019 12:12	1
HS19051208-06	35-BWW08-190520	20 May 2019 11:50			03 Jun 2019 12:12	1
HS19051208-07	35-BWW04-190520	20 May 2019 12:45			03 Jun 2019 12:12	1
Batch ID R339713	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS			**Matrix:** Groundwater		
HS19051208-05	35-BWW26-190520	20 May 2019 10:40			04 Jun 2019 08:57	1
HS19051208-06	35-BWW08-190520	20 May 2019 11:50			04 Jun 2019 08:57	1
HS19051208-07	35-BWW04-190520	20 May 2019 12:45			04 Jun 2019 08:57	1

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190523** Units: **UG/L** Analysis Date: **23-May-2019 13:37**
Client ID: Run ID: **VOA6_339038** SeqNo: **5088106** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

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Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190523** Units: **UG/L** Analysis Date: **23-May-2019 13:37**
Client ID: Run ID: **VOA6_339038** SeqNo: **5088106** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*42.31*	*1.0*	*50*	*0*	*84.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.85*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*44.45*	*1.0*	*50*	*0*	*88.9*	*80 - 119*				

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190523** Units: **UG/L** Analysis Date: **23-May-2019 13:37**
Client ID: Run ID: **VOA6_339038** SeqNo: **5088106** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*54.01*	*1.0*	*50*	*0*	*108*	*89 - 112*				

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190523** Units: **UG/L** Analysis Date: **23-May-2019 12:49**
Client ID: Run ID: **VOA6_339038** SeqNo: **5088105** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.5	1.0	20	0	97.5	78 - 124				
1,1,1-Trichloroethane	19.76	1.0	20	0	98.8	74 - 131				
1,1,2,2-Tetrachloroethane	21.3	1.0	20	0	107	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	19.2	1.0	20	0	96.0	70 - 136				
1,1,2-Trichloroethane	21.63	1.0	20	0	108	80 - 119				
1,1-Dichloroethane	21.15	1.0	20	0	106	77 - 125				
1,1-Dichloroethene	19.2	1.0	20	0	96.0	71 - 131				
1,1-Dichloropropene	19.25	1.0	20	0	96.3	78 - 125				
1,2,3-Trichlorobenzene	23.82	1.0	20	0	119	69 - 129				
1,2,3-Trichloropropane	20.72	1.0	20	0	104	73 - 122				
1,2,4-Trichlorobenzene	21.55	1.0	20	0	108	69 - 130				
1,2,4-Trimethylbenzene	20.1	1.0	20	0	101	76 - 124				
1,2-Dibromo-3-chloropropane	21.37	1.0	20	0	107	62 - 128				
1,2-Dibromoethane	20.6	1.0	20	0	103	77 - 121				
1,2-Dichlorobenzene	20.04	1.0	20	0	100	80 - 119				
1,2-Dichloroethane	19.59	1.0	20	0	97.9	73 - 128				
1,2-Dichloropropane	21.97	1.0	20	0	110	78 - 122				
1,3,5-Trimethylbenzene	20.04	1.0	20	0	100	75 - 124				
1,3-Dichlorobenzene	19.64	1.0	20	0	98.2	80 - 119				
1,3-Dichloropropane	21.54	1.0	20	0	108	80 - 119				
1,4-Dichlorobenzene	19.74	1.0	20	0	98.7	79 - 118				
2,2-Dichloropropane	20.16	1.0	20	0	101	60 - 139				
2-Butanone	47.43	2.0	40	0	119	56 - 143				
2-Chlorotoluene	20.07	1.0	20	0	100	79 - 122				
2-Hexanone	44.27	2.0	40	0	111	57 - 139				
4-Chlorotoluene	20.07	1.0	20	0	100	78 - 122				
4-Isopropyltoluene	19.32	1.0	20	0	96.6	77 - 127				
4-Methyl-2-pentanone	45.74	2.0	40	0	114	67 - 130				
Acetone	40.23	2.0	40	0	101	39 - 160				
Benzene	21.84	1.0	20	0	109	79 - 120				
Bromobenzene	19.73	1.0	20	0	98.6	80 - 120				
Bromochloromethane	21.37	1.0	20	0	107	78 - 123				
Bromodichloromethane	20.71	1.0	20	0	104	79 - 125				
Bromoform	20.06	1.0	20	0	100	66 - 130				

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Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
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QC BATCH REPORT

Batch ID: R339038 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190523** Units: **UG/L** Analysis Date: **23-May-2019 12:49**
Client ID: Run ID: **VOA6_339038** SeqNo: **5088105** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	21.23	1.0	20	0	106	53 - 141				
Carbon disulfide	46.74	2.0	40	0	117	64 - 133				
Carbon tetrachloride	17.45	1.0	20	0	87.2	72 - 136				
Chlorobenzene	20.98	1.0	20	0	105	82 - 118				
Chloroethane	19.26	1.0	20	0	96.3	60 - 138				
Chloroform	20.78	1.0	20	0	104	79 - 124				
Chloromethane	20.24	1.0	20	0	101	50 - 139				
cis-1,2-Dichloroethene	21.13	1.0	20	0	106	78 - 123				
cis-1,3-Dichloropropene	21.98	1.0	20	0	110	75 - 124				
Dibromochloromethane	19.61	1.0	20	0	98.1	74 - 126				
Dibromomethane	21.04	1.0	20	0	105	79 - 123				
Dichlorodifluoromethane	19.93	1.0	20	0	99.6	32 - 152				
Ethylbenzene	20.92	1.0	20	0	105	79 - 121				
Hexachlorobutadiene	19.44	1.0	20	0	97.2	66 - 134				
Isopropylbenzene	20.09	1.0	20	0	100	72 - 131				
m,p-Xylene	41.56	2.0	40	0	104	80 - 121				
Methylene chloride	22.29	2.0	20	0	111	74 - 124				
Naphthalene	22.91	1.0	20	0	115	61 - 128				
n-Butylbenzene	19.72	1.0	20	0	98.6	75 - 128				
n-Propylbenzene	19.52	1.0	20	0	97.6	76 - 126				
o-Xylene	21.13	1.0	20	0	106	78 - 122				
sec-Butylbenzene	19.19	1.0	20	0	95.9	77 - 126				
Styrene	21.17	1.0	20	0	106	78 - 123				
tert-Butylbenzene	19.28	1.0	20	0	96.4	78 - 124				
Tetrachloroethene	19.19	1.0	20	0	96.0	74 - 129				
Toluene	20.92	1.0	20	0	105	80 - 121				
trans-1,2-Dichloroethene	21.16	1.0	20	0	106	75 - 124				
trans-1,3-Dichloropropene	21.68	1.0	20	0	108	73 - 127				
Trichloroethene	20.35	1.0	20	0	102	79 - 123				
Trichlorofluoromethane	17.92	1.0	20	0	89.6	65 - 141				
Vinyl chloride	20.25	1.0	20	0	101	58 - 137				
Surr: 1,2-Dichloroethane-d4	*47.78*	*1.0*	*50*	*0*	*95.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*54.28*	*1.0*	*50*	*0*	*109*	*85 - 114*				
Surr: Dibromofluoromethane	*49.4*	*1.0*	*50*	*0*	*98.8*	*80 - 119*				

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
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QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190523** Units: **UG/L** Analysis Date: **23-May-2019 12:49**
Client ID: Run ID: **VOA6_339038** SeqNo: **5088105** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*46.25*	*1.0*	*50*	*0*	*92.5*	*89 - 112*				

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051208-01MS** Units: **UG/L** Analysis Date: **23-May-2019 16:50**
Client ID: **35-BWW19-190520** Run ID: **VOA6_339038** SeqNo: **5089895** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	17.41	1.0	20	0	87.0	78 - 124				
1,1,1-Trichloroethane	16.6	1.0	20	0	83.0	74 - 131				
1,1,2,2-Tetrachloroethane	21.34	1.0	20	0	107	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	17.46	1.0	20	0	87.3	70 - 136				
1,1,2-Trichloroethane	19.36	1.0	20	0	96.8	80 - 119				
1,1-Dichloroethane	16.85	1.0	20	0	84.2	77 - 125				
1,1-Dichloroethene	15.97	1.0	20	0	79.8	71 - 131				
1,1-Dichloropropene	18.18	1.0	20	0	90.9	78 - 125				
1,2,3-Trichlorobenzene	23.28	1.0	20	0	116	69 - 129				
1,2,3-Trichloropropane	20.1	1.0	20	0	100	73 - 122				
1,2,4-Trichlorobenzene	20.86	1.0	20	0	104	69 - 130				
1,2,4-Trimethylbenzene	19.56	1.0	20	0	97.8	76 - 124				
1,2-Dibromo-3-chloropropane	21.49	1.0	20	0	107	62 - 128				
1,2-Dibromoethane	18.38	1.0	20	0	91.9	77 - 121				
1,2-Dichlorobenzene	19.44	1.0	20	0	97.2	80 - 119				
1,2-Dichloroethane	15.78	1.0	20	0	78.9	73 - 128				
1,2-Dichloropropane	18.44	1.0	20	0	92.2	78 - 122				
1,3,5-Trimethylbenzene	20.39	1.0	20	0	102	75 - 124				
1,3-Dichlorobenzene	19.4	1.0	20	0	97.0	80 - 119				
1,3-Dichloropropane	19.16	1.0	20	0	95.8	80 - 119				
1,4-Dichlorobenzene	19.2	1.0	20	0	96.0	79 - 118				
2,2-Dichloropropane	15.29	1.0	20	0	76.4	60 - 139				
2-Butanone	39.69	2.0	40	0	99.2	56 - 143				
2-Chlorotoluene	20.32	1.0	20	0	102	79 - 122				
2-Hexanone	40.16	2.0	40	0	100	57 - 139				
4-Chlorotoluene	19.95	1.0	20	0	99.7	78 - 122				
4-Isopropyltoluene	20.56	1.0	20	0	103	77 - 127				
4-Methyl-2-pentanone	42.86	2.0	40	0	107	67 - 130				
Acetone	39.28	2.0	40	11.37	69.8	39 - 160				
Benzene	18.07	1.0	20	0	90.3	79 - 120				
Bromobenzene	18.37	1.0	20	0	91.9	80 - 120				
Bromochloromethane	16.33	1.0	20	0	81.6	78 - 123				
Bromodichloromethane	16.47	1.0	20	0	82.3	79 - 125				
Bromoform	17.35	1.0	20	0	86.7	66 - 130				

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051208-01MS** Units: **UG/L** Analysis Date: **23-May-2019 16:50**
Client ID: **35-BWW19-190520** Run ID: **VOA6_339038** SeqNo: **5089895** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	12.22	1.0	20	0	61.1	53 - 141				
Carbon disulfide	35.81	2.0	40	0	89.5	64 - 133				
Carbon tetrachloride	15.71	1.0	20	0	78.5	72 - 136				
Chlorobenzene	18.87	1.0	20	0	94.3	82 - 118				
Chloroethane	17.53	1.0	20	0	87.6	60 - 138				
Chloroform	16.52	1.0	20	0	82.6	79 - 124				
Chloromethane	13.72	1.0	20	0	68.6	50 - 139				
cis-1,2-Dichloroethene	16.51	1.0	20	0	82.5	78 - 123				
cis-1,3-Dichloropropene	18.33	1.0	20	0	91.7	75 - 124				
Dibromochloromethane	17.38	1.0	20	0	86.9	74 - 126				
Dibromomethane	17.16	1.0	20	0	85.8	79 - 123				
Dichlorodifluoromethane	13.55	1.0	20	0	67.8	32 - 152				
Ethylbenzene	18.69	1.0	20	0	93.5	79 - 121				
Hexachlorobutadiene	19.72	1.0	20	0	98.6	66 - 134				
Isopropylbenzene	18.9	1.0	20	0	94.5	72 - 131				
m,p-Xylene	38.27	2.0	40	0	95.7	80 - 121				
Methylene chloride	17.13	2.0	20	0	85.7	74 - 124				
Naphthalene	22.01	1.0	20	0	110	61 - 128				
n-Butylbenzene	20.9	1.0	20	0	105	75 - 128				
n-Propylbenzene	20.99	1.0	20	0	105	76 - 126				
o-Xylene	19.56	1.0	20	0	97.8	78 - 122				
sec-Butylbenzene	21.38	1.0	20	0	107	77 - 126				
Styrene	18.43	1.0	20	0	92.1	78 - 123				
tert-Butylbenzene	20.87	1.0	20	0	104	78 - 124				
Tetrachloroethene	18.44	1.0	20	0	92.2	74 - 129				
Toluene	18.8	1.0	20	0	94.0	80 - 121				
trans-1,2-Dichloroethene	17.02	1.0	20	0	85.1	75 - 124				
trans-1,3-Dichloropropene	17.36	1.0	20	0	86.8	73 - 127				
Trichloroethene	17.35	1.0	20	0	86.8	79 - 123				
Trichlorofluoromethane	14.65	1.0	20	0	73.2	65 - 141				
Vinyl chloride	16.4	1.0	20	0	82.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.37*	*1.0*	*50*	*0*	*90.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.21*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*45.51*	*1.0*	*50*	*0*	*91.0*	*80 - 119*				

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051208-01MS** Units: **UG/L** Analysis Date: **23-May-2019 16:50**
Client ID: **35-BWW19-190520** Run ID: **VOA6_339038** SeqNo: **5089895** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.95*	*1.0*	*50*	*0*	*108*	*89 - 112*				

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051208-01MSD** Units: **UG/L** Analysis Date: **23-May-2019 17:14**
Client ID: **35-BWW19-190520** Run ID: **VOA6_339038** SeqNo: **5089896** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	16.8	1.0	20	0	84.0	78 - 124	17.41	3.56	20	
1,1,1-Trichloroethane	16.03	1.0	20	0	80.1	74 - 131	16.6	3.52	20	
1,1,2,2-Tetrachloroethane	21.34	1.0	20	0	107	71 - 121	21.34	0	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	16.8	1.0	20	0	84.0	70 - 136	17.46	3.9	20	
1,1,2-Trichloroethane	18.78	1.0	20	0	93.9	80 - 119	19.36	3.01	20	
1,1-Dichloroethane	17.15	1.0	20	0	85.8	77 - 125	16.85	1.77	20	
1,1-Dichloroethene	15.44	1.0	20	0	77.2	71 - 131	15.97	3.35	20	
1,1-Dichloropropene	17.44	1.0	20	0	87.2	78 - 125	18.18	4.2	20	
1,2,3-Trichlorobenzene	23.29	1.0	20	0	116	69 - 129	23.28	0.0635	20	
1,2,3-Trichloropropane	20.35	1.0	20	0	102	73 - 122	20.1	1.24	20	
1,2,4-Trichlorobenzene	21.11	1.0	20	0	106	69 - 130	20.86	1.2	20	
1,2,4-Trimethylbenzene	19.32	1.0	20	0	96.6	76 - 124	19.56	1.24	20	
1,2-Dibromo-3-chloropropane	21.51	1.0	20	0	108	62 - 128	21.49	0.124	20	
1,2-Dibromoethane	18.04	1.0	20	0	90.2	77 - 121	18.38	1.89	20	
1,2-Dichlorobenzene	19.66	1.0	20	0	98.3	80 - 119	19.44	1.11	20	
1,2-Dichloroethane	15.95	1.0	20	0	79.8	73 - 128	15.78	1.05	20	
1,2-Dichloropropane	18.62	1.0	20	0	93.1	78 - 122	18.44	0.948	20	
1,3,5-Trimethylbenzene	20.28	1.0	20	0	101	75 - 124	20.39	0.566	20	
1,3-Dichlorobenzene	19.51	1.0	20	0	97.5	80 - 119	19.4	0.524	20	
1,3-Dichloropropane	18.59	1.0	20	0	92.9	80 - 119	19.16	3	20	
1,4-Dichlorobenzene	19.48	1.0	20	0	97.4	79 - 118	19.2	1.4	20	
2,2-Dichloropropane	14.72	1.0	20	0	73.6	60 - 139	15.29	3.77	20	
2-Butanone	40.95	2.0	40	0	102	56 - 143	39.69	3.13	20	
2-Chlorotoluene	20.12	1.0	20	0	101	79 - 122	20.32	0.972	20	
2-Hexanone	39.44	2.0	40	0	98.6	57 - 139	40.16	1.82	20	
4-Chlorotoluene	19.85	1.0	20	0	99.2	78 - 122	19.95	0.499	20	
4-Isopropyltoluene	20.77	1.0	20	0	104	77 - 127	20.56	1.02	20	
4-Methyl-2-pentanone	40.5	2.0	40	0	101	67 - 130	42.86	5.67	20	
Acetone	39.93	2.0	40	11.37	71.4	39 - 160	39.28	1.64	20	
Benzene	17.64	1.0	20	0	88.2	79 - 120	18.07	2.41	20	
Bromobenzene	18.22	1.0	20	0	91.1	80 - 120	18.37	0.842	20	
Bromochloromethane	16.23	1.0	20	0	81.2	78 - 123	16.33	0.571	20	
Bromodichloromethane	16.33	1.0	20	0	81.6	79 - 125	16.47	0.839	20	
Bromoform	17.2	1.0	20	0	86.0	66 - 130	17.35	0.86	20	

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051208-01MSD** Units: **UG/L** Analysis Date: **23-May-2019 17:14**
Client ID: **35-BWW19-190520** Run ID: **VOA6_339038** SeqNo: **5089896** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	12.23	1.0	20	0	61.2	53 - 141	12.22	0.114	20	
Carbon disulfide	34.7	2.0	40	0	86.8	64 - 133	35.81	3.14	20	
Carbon tetrachloride	15.13	1.0	20	0	75.7	72 - 136	15.71	3.74	20	
Chlorobenzene	18.16	1.0	20	0	90.8	82 - 118	18.87	3.83	20	
Chloroethane	17.12	1.0	20	0	85.6	60 - 138	17.53	2.37	20	
Chloroform	15.97	1.0	20	0	79.9	79 - 124	16.52	3.38	20	
Chloromethane	13.76	1.0	20	0	68.8	50 - 139	13.72	0.288	20	
cis-1,2-Dichloroethene	16.39	1.0	20	0	81.9	78 - 123	16.51	0.729	20	
cis-1,3-Dichloropropene	18.11	1.0	20	0	90.5	75 - 124	18.33	1.24	20	
Dibromochloromethane	17.15	1.0	20	0	85.8	74 - 126	17.38	1.3	20	
Dibromomethane	16.89	1.0	20	0	84.5	79 - 123	17.16	1.6	20	
Dichlorodifluoromethane	12.94	1.0	20	0	64.7	32 - 152	13.55	4.6	20	
Ethylbenzene	17.94	1.0	20	0	89.7	79 - 121	18.69	4.1	20	
Hexachlorobutadiene	19.72	1.0	20	0	98.6	66 - 134	19.72	0.0309	20	
Isopropylbenzene	18.21	1.0	20	0	91.1	72 - 131	18.9	3.72	20	
m,p-Xylene	36.7	2.0	40	0	91.7	80 - 121	38.27	4.18	20	
Methylene chloride	17.09	2.0	20	0	85.5	74 - 124	17.13	0.219	20	
Naphthalene	22.06	1.0	20	0	110	61 - 128	22.01	0.222	20	
n-Butylbenzene	20.89	1.0	20	0	104	75 - 128	20.9	0.0898	20	
n-Propylbenzene	20.77	1.0	20	0	104	76 - 126	20.99	1.07	20	
o-Xylene	18.77	1.0	20	0	93.8	78 - 122	19.56	4.12	20	
sec-Butylbenzene	20.91	1.0	20	0	105	77 - 126	21.38	2.21	20	
Styrene	17.89	1.0	20	0	89.4	78 - 123	18.43	2.97	20	
tert-Butylbenzene	20.7	1.0	20	0	104	78 - 124	20.87	0.801	20	
Tetrachloroethene	17.55	1.0	20	0	87.7	74 - 129	18.44	4.96	20	
Toluene	17.95	1.0	20	0	89.7	80 - 121	18.8	4.63	20	
trans-1,2-Dichloroethene	16.97	1.0	20	0	84.9	75 - 124	17.02	0.302	20	
trans-1,3-Dichloropropene	16.91	1.0	20	0	84.6	73 - 127	17.36	2.62	20	
Trichloroethene	17.05	1.0	20	0	85.3	79 - 123	17.35	1.74	20	
Trichlorofluoromethane	14.24	1.0	20	0	71.2	65 - 141	14.65	2.79	20	
Vinyl chloride	16.01	1.0	20	0	80.0	58 - 137	16.4	2.43	20	
Surr: 1,2-Dichloroethane-d4	*43.38*	*1.0*	*50*	*0*	*86.8*	*81 - 118*	*45.37*	*4.48*	*20*	
Surr: 4-Bromofluorobenzene	*51.71*	*1.0*	*50*	*0*	*103*	*85 - 114*	*52.21*	*0.97*	*20*	
Surr: Dibromofluoromethane	*45.46*	*1.0*	*50*	*0*	*90.9*	*80 - 119*	*45.51*	*0.114*	*20*	

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339038 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051208-01MSD** Units: **UG/L** Analysis Date: **23-May-2019 17:14**
Client ID: **35-BWW19-190520** Run ID: **VOA6_339038** SeqNo: **5089896** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.15*	*1.0*	*50*	*0*	*106*	*89 - 112*	*53.95*	*1.49*	*20*	

The following samples were analyzed in this batch:

HS19051208-01	HS19051208-02	HS19051208-03	HS19051208-04
HS19051208-05	HS19051208-06	HS19051208-07	HS19051208-08
HS19051208-09			

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339156 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW2-052119** Units: **mg/L** Analysis Date: **22-May-2019 15:27**
Client ID: Run ID: **ICS2100_339156** SeqNo: **5091245** PrepDate: DF: **1**

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

LCS Sample ID: **WLCSW2-052119** Units: **mg/L** Analysis Date: **22-May-2019 15:42**
Client ID: Run ID: **ICS2100_339156** SeqNo: **5091246** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.31	0.500	20	0	102	80 - 120				
Nitrogen, Nitrate (As N)	3.972	0.100	4	0	99.3	80 - 120				
Sulfate	19.98	0.500	20	0	99.9	80 - 120				

LCSD Sample ID: **WLCSDW2-052119** Units: **mg/L** Analysis Date: **22-May-2019 15:56**
Client ID: Run ID: **ICS2100_339156** SeqNo: **5091247** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.74	0.500	20	0	104	80 - 120	20.31	2.06	20	
Nitrogen, Nitrate (As N)	4.051	0.100	4	0	101	80 - 120	3.972	1.97	20	
Sulfate	20.43	0.500	20	0	102	80 - 120	19.98	2.22	20	

MS Sample ID: **HS19050977-01MS** Units: **mg/L** Analysis Date: **22-May-2019 13:30**
Client ID: Run ID: **ICS2100_339156** SeqNo: **5091241** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	381.7	5.00	100	292.6	89.1	80 - 120				
Nitrogen, Nitrate (As N)	23.36	1.00	20	4.152	96.0	80 - 120				
Sulfate	226.2	5.00	100	129.7	96.5	80 - 120				

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051208

QC BATCH REPORT

Batch ID: R339156 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MS Sample ID: **HS19050960-07MS** Units: **mg/L** Analysis Date: **22-May-2019 12:46**
Client ID: Run ID: **ICS2100_339156** SeqNo: **5091238** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.36	0.500	10	9.325	100	80 - 120				
Nitrogen, Nitrate (As N)	2.37	0.100	2	0.437	96.6	80 - 120				
Sulfate	16.21	0.500	10	6.048	102	80 - 120				

MSD Sample ID: **HS19050977-01MSD** Units: **mg/L** Analysis Date: **22-May-2019 13:45**
Client ID: Run ID: **ICS2100_339156** SeqNo: **5091242** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	387.6	5.00	100	292.6	95.0	80 - 120	381.7	1.53	20	
Nitrogen, Nitrate (As N)	23.82	1.00	20	4.152	98.3	80 - 120	23.36	1.95	20	
Sulfate	229.7	5.00	100	129.7	100	80 - 120	226.2	1.55	20	

MSD Sample ID: **HS19050960-07MSD** Units: **mg/L** Analysis Date: **22-May-2019 13:01**
Client ID: Run ID: **ICS2100_339156** SeqNo: **5091239** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.77	0.500	10	9.325	94.4	80 - 120	19.36	3.12	20	
Nitrogen, Nitrate (As N)	2.293	0.100	2	0.437	92.8	80 - 120	2.37	3.3	20	
Sulfate	15.72	0.500	10	6.048	96.7	80 - 120	16.21	3.08	20	

The following samples were analyzed in this batch: HS19051208-05 HS19051208-06 HS19051208-07

ALS Houston, US Date: 04-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: **HS19051208**

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
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
Maryland	343, 2018-2019	30-Jun-2019
Arkansas	19-028-0	27-Mar-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 04-Jun-19

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19051208
Date/Time Received: **21-May-2019 09:50**
Received by: **NDR**

Checklist completed by: *Paresh M. Giga* eSignature 21-May-2019 Date
Reviewed by: *RJ Modashia* eSignature 21-May-2019 Date

Matrices: **Groundwater/Water**
Carrier name: **UPS**

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):	4.6c U/c	IR25
Cooler(s)/Kit(s):	44851	
Date/Time sample(s) sent to storage:	5/21/19 15:40	

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: 35BWW-01-190520 - 2 vials received broken

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of

COC ID: LHAAP37-MAY2019-ALS TURNAROUND TIME: 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-37			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

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	3-40 ml VOA/Cool to 6 deg C	2-40ml Amber/H2SO4	1-250ml/Cool to 6 deg C							
								ANALYSIS		Vocs by 8260B	MEE by RSK175	CO2 by RSK175	TOC by Sm5310C	Anions (chloride/sulfate/nitrate) by 9056							
35BwW19-190520	LHAAP 37	25.16	25.89		WG	5/20/19	0815	3		X											
35BwW18-190520	LHAAP 37	25.60	25.82		WG	5/20/19	0905	3		X											
35BwW01-190520	LHAAP 37	7.18	7.40		WG	5/20/19	0950	3		X											
35BwW01-190520-FD	LHAAP 37	7.18	7.40		WG	5/20/19	0950	3		X											
35BwW26-190520	LHAAP 37	25.31	25.57		WG	5/20/19	1040	12		X	X	X	X	X							
35BwW08-190520	LHAAP 37	21.40	21.68		WG	5/20/19	1150	12		X	X	X	X	X							
35BwW04-190520	LHAAP 37	19.07	19.28		WG	5/20/19	1245	12		X	X	X	X	X							
35BwW10-190520	LHAAP 37	21.02	21.26		WG	5/20/19	1345	3		X											
TRIP BLANK	LHAAP 37				W	5/20/19		2		X											

HS19051208

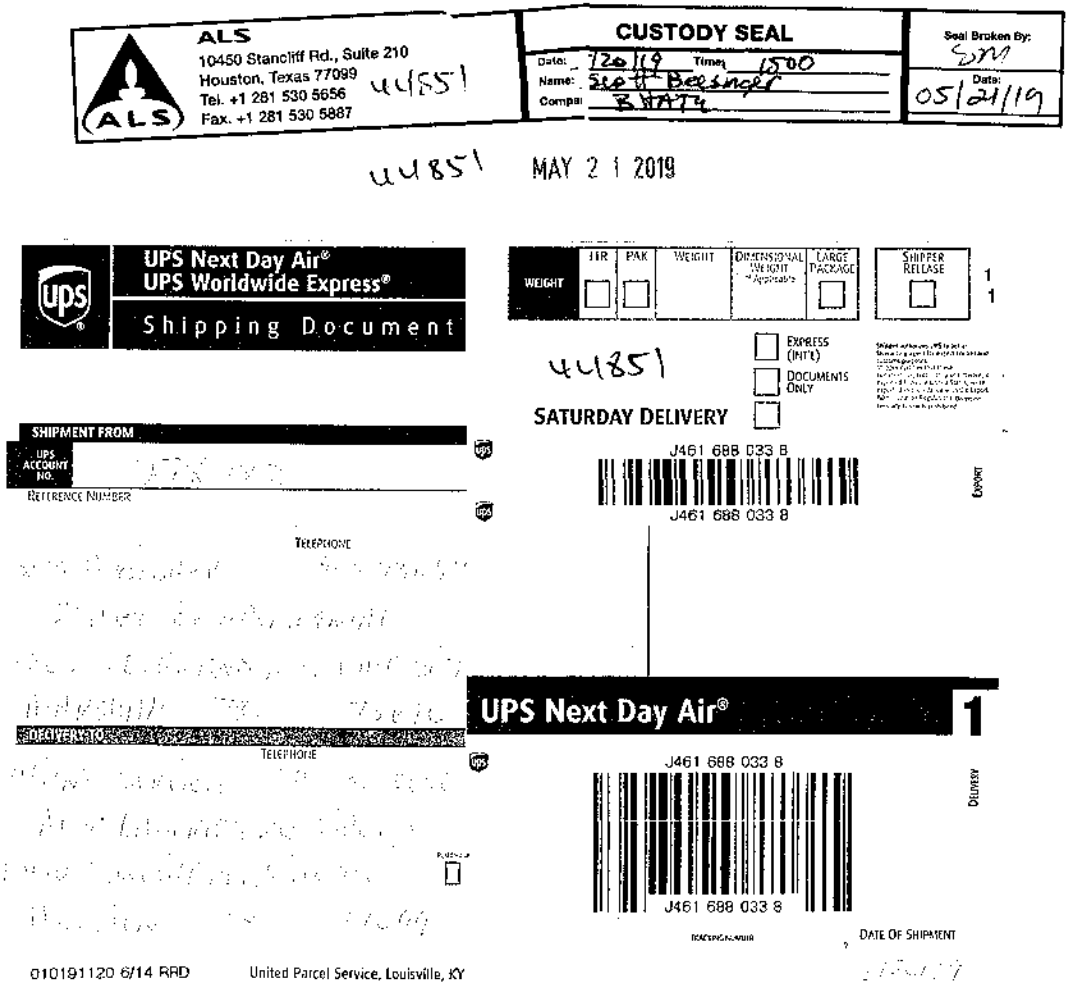
Aptim Environmental & Infrastucture. Inc.

Longhorn Army Ammunition Plant

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Susan Huang/BHATE	5/20/19 1500	NILESH KANCHOD	5/21/19 09.50

Cooler # 44851 Temp. u/c 4.6

IR # 25.



ALS
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Houston, Texas 77099
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44851

CUSTODY SEAL
Date: 5/20/19 Time: 1500
Name: Seth Belsinger
Compa: BWAT4

Seal Broken By: SM
Date: 05/21/19

44851 MAY 21 2019

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44851

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010191120 6/14 RRD United Parcel Service, Louisville, KY

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June 03, 2019

Analytical Report for Service Request No: K1904908

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

RE: HS19051208

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory May 29, 2019
For your reference, these analyses have been assigned our service request number **K1904908.**

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
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Table of Contents

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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ALS Environmental

Client: ALS Environmental - US
Project: HS19051208
Sample Matrix: Water

Service Request: K1904908
Date Received: 05/29/2019

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 water samples were received for analysis at ALS Environmental on 05/29/2019. 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 06/03/2019

Chain of Custody

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Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **11447**

SUBCONTRACT TO:

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

Phone: +1 360 501 3312

K1904908

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:	HS19051208
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19051208-05**	**35-BWW26-190520**	**Groundwater**	**20 May 2019 10:40**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 May 2019
2.	**HS19051208-06**	**35-BWW08-190520**	**Groundwater**	**20 May 2019 11:50**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 May 2019
3.	**HS19051208-07**	**35-BWW04-190520**	**Groundwater**	**20 May 2019 12:45**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			30 May 2019

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: 5/28/19 1800

Received By: _____ Date/Time: 5/29/19 0950

Cooler ID(s): _____ Temperature(s): _____

PC KL

Cooler Receipt and Preservation Form

Client ALS Houston Service Request *K19* 04908

Received: 5/29/19 Opened: 5/29/19 By: CG Unloaded: 5/29/19 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

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.1	-0.2	/	/	-0.1	374	11447	4809 7834 5037	

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

RUSH

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1904908
Project:	HS19051208	**Date Collected:**	05/20/19
Sample Matrix:	Water	**Date Received:**	05/29/19
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
35-BWW26-190520	K1904908-001	**1.82**	0.50	0.20	0.07	1	05/29/19 17:12	
35-BWW08-190520	K1904908-002	**1.83**	0.50	0.20	0.07	1	05/29/19 18:09	
35-BWW04-190520	K1904908-003	**3.21**	0.50	0.20	0.07	1	05/29/19 18:37	
Method Blank	K1904908-MB	ND U	0.50	0.20	0.07	1	05/29/19 14:06	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1904908
Project	HS19051208	**Date Collected:**	05/20/19
Sample Matrix:	Water	**Date Received:**	05/29/19
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
35-BWW26-190520	K1904908-001DUP	0.50	0.20	0.07	1.82	1.72	1.77	5	10	05/29/19
35-BWW08-190520	K1904908-002DUP	0.50	0.20	0.07	1.83	1.70	1.76	7	10	05/29/19
35-BWW04-190520	K1904908-003DUP	0.50	0.20	0.07	3.21	3.22	3.22	<1	10	05/29/19

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:**	K1904908
Project:	HS19051208	**Date Analyzed:**	05/29/19
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:	637429

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1904908-LCS	25.6	25.0	103	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1904908
Project: HS19051208

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	637429	KQ1907356-01	05/29/19 13:37	25.0	25.0	100	90-110
CCV2	637429	KQ1907356-02	05/29/19 17:40	25.0	25.1	101	90-110
CCV3	637429	KQ1907356-03	05/29/19 22:50	25.0	25.1	100	90-110
CCV4	637429	KQ1907356-04	05/30/19 03:33	25.0	24.6	98	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1904908
Project: HS19051208

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	637429	KQ1907356-05	05/29/19 13:52	0.50	0.20	0.07	ND	U
CCB2	637429	KQ1907356-06	05/29/19 17:54	0.50	0.20	0.07	ND	U
CCB3	637429	KQ1907356-07	05/29/19 23:05	0.50	0.20	0.07	ND	U
CCB4	637429	KQ1907356-08	05/30/19 03:48	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original ( ) K1904695, 4618, 4667, 4779, 4839, 4835, 4846, 4908, 4618, 4650, 4659, 4694, 4696, 4784

Tier: II II II IV II II IV IV IV II IV III IV III

Date Analyzed: 5/29/2019

Analyst: BCD / HLM

Analysis: TOC/DOC

TOC: 637429, 637430, 637431

Run # DOC: 637432

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: K1904613-13/13d, K1904595-3/3d, K1904684-2/2d, 4684-3/3d report a high %RSD. However, these samples are less than 5x the MRL.

Final Approved by: [signature] Date: 05/31/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 637429 **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
K1904595-001	Carbon, Total Organic	N/A		Water	6.20 mg/L	10 mL	6.20 mg/L	1	0.07	0.50			5/30/19 01:13:00	N	II
K1904595-002	Carbon, Total Organic	N/A		Water	28.38 mg/L	10 mL	28.4 mg/L	1	0.07	0.50			5/30/19 01:41:00	N	II
K1904618-002	Carbon, Total Organic	N/A		Water	5.48 mg/L	10 mL	110 mg/L	20	2	10			5/29/19 15:19:00	Y	II
K1904618-003	Carbon, Total Organic	N/A		Water	5.06 mg/L	10 mL	101 mg/L	20	2	10			5/29/19 16:16:00	N	II
K1904618-004	Carbon, Total Organic	N/A		Water	1.65 mg/L	10 mL	1.65 mg/L	1	0.07	0.50			5/29/19 16:44:00	N	II
K1904667-001	Carbon, Total Organic	N/A		Water	15.36 mg/L	10 mL	15.4 mg/L	1	0.07	0.50			5/29/19 14:51:00	N	II
K1904779-002	Carbon, Total Organic	N/A		Water	1.57 mg/L	10 mL	1.57 mg/L	1	0.07	0.50			5/29/19 21:26:00	N	IV
K1904779-004	Carbon, Total Organic	N/A		Water	1.55 mg/L	10 mL	1.55 mg/L	1	0.07	0.50			5/29/19 21:54:00	N	IV
K1904779-005	Carbon, Total Organic	N/A		Water	1.89 mg/L	10 mL	1.89 mg/L	1	0.07	0.50			5/29/19 22:22:00	N	IV
K1904779-006	Carbon, Total Organic	N/A		Water	2.36 mg/L	10 mL	2.36 mg/L	1	0.07	0.50			5/29/19 23:49:00	N	IV
K1904779-008	Carbon, Total Organic	N/A		Water	11.06 mg/L	10 mL	11.1 mg/L	1	0.07	0.50			5/30/19 00:17:00	N	IV
K1904834-001	Carbon, Total Organic	N/A		Water	1.36 mg/L	10 mL	1.36 mg/L	1	0.07	0.50			5/29/19 19:05:00	N	II
K1904835-001	Carbon, Total Organic	N/A		Water	16.27 mg/L	10 mL	16.3 mg/L	1	0.07	0.50			5/29/19 19:34:00	N	II
K1904835-002	Carbon, Total Organic	N/A		Water	1.29 mg/L	10 mL	1.29 mg/L	1	0.07	0.50			5/29/19 20:02:00	N	II
K1904835-003	Carbon, Total Organic	N/A		Water	8.33 mg/L	10 mL	8.33 mg/L	1	0.07	0.50			5/29/19 20:30:00	N	II
K1904835-004	Carbon, Total Organic	N/A		Water	9.54 mg/L	10 mL	9.54 mg/L	1	0.07	0.50			5/29/19 20:58:00	N	II
K1904846-002	Carbon, Total Organic	N/A		Water	3.15 mg/L	10 mL	3.15 mg/L	1	0.07	0.50			5/30/19 00:45:00	N	IV
K1904908-001	Carbon, Total Organic	N/A		Water	1.82 mg/L	10 mL	1.82 mg/L	1	0.07	0.50			5/29/19 17:12:00	N	IV
K1904908-002	Carbon, Total Organic	N/A		Water	1.83 mg/L	10 mL	1.83 mg/L	1	0.07	0.50			5/29/19 18:09:00	N	IV
K1904908-003	Carbon, Total Organic	N/A		Water	3.21 mg/L	10 mL	3.21 mg/L	1	0.07	0.50			5/29/19 18:37:00	N	IV
KQ1907356-01	Carbon, Total Organic	CCV		Water	25.04 mg/L	10 mL	25.0 mg/L	1					5/29/19 13:37:00	N	II
KQ1907356-02	Carbon, Total Organic	CCV		Water	25.14 mg/L	10 mL	25.1 mg/L	1					5/29/19 17:40:00	N	II
KQ1907356-03	Carbon, Total Organic	CCV		Water	25.12 mg/L	10 mL	25.1 mg/L	1					5/29/19 22:50:00	N	II
KQ1907356-04	Carbon, Total Organic	CCV		Water	24.58 mg/L	10 mL	24.6 mg/L	1					5/30/19 03:33:00	N	II
KQ1907356-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/29/19 13:52:00	N	II
KQ1907356-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/29/19 17:54:00	N	II
KQ1907356-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/29/19 23:05:00	N	II
KQ1907356-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 03:48:00	N	II
KQ1907356-09	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/29/19 14:06:00	N	II
KQ1907356-10	Carbon, Total Organic	LCS		Water	25.65 mg/L	10 mL	25.6 mg/L	1	0.07	0.50	103		5/29/19 14:21:00	N	II
KQ1907356-11	Carbon, Total Organic	MS	K1904618-002	Water	31.47 mg/L	10 mL	629 mg/L	20	2	10	104		5/29/19 15:47:00	N	II
KQ1907356-12	Carbon, Total Organic	DUP	K1904667-001	Water	15.79 mg/L	10 mL	15.8 mg/L	1	0.07	0.50		3	5/29/19 14:51:00	N	II
KQ1907356-13	Carbon, Total Organic	DUP	K1904618-002	Water	5.27 mg/L	10 mL	105 mg/L	20	2	10		4	5/29/19 15:19:00	N	II
KQ1907356-14	Carbon, Total Organic	DUP	K1904618-003	Water	5.05 mg/L	10 mL	101 mg/L	20	2	10		<1	5/29/19 16:16:00	N	II
KQ1907356-15	Carbon, Total Organic	DUP	K1904618-004	Water	1.59 mg/L	10 mL	1.59 mg/L	1	0.07	0.50		4	5/29/19 16:44:00	N	II
KQ1907356-16	Carbon, Total Organic	DUP	K1904908-001	Water	1.72 mg/L	10 mL	1.72 mg/L	1	0.07	0.50		5	5/29/19 17:12:00	N	IV

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

05/31/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 637429 **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
KQ1907356-17	Carbon, Total Organic	DUP	K1904908-002	Water	1.70 mg/L	10 mL	1.70 mg/L	1	0.07	0.50		7	5/29/19 18:09:00	N	IV
KQ1907356-18	Carbon, Total Organic	DUP	K1904908-003	Water	3.22 mg/L	10 mL	3.22 mg/L	1	0.07	0.50		<1	5/29/19 18:37:00	N	IV
KQ1907356-19	Carbon, Total Organic	DUP	K1904834-001	Water	1.33 mg/L	10 mL	1.33 mg/L	1	0.07	0.50		2	5/29/19 19:05:00	N	II
KQ1907356-20	Carbon, Total Organic	DUP	K1904835-001	Water	15.99 mg/L	10 mL	16.0 mg/L	1	0.07	0.50		2	5/29/19 19:34:00	N	II
KQ1907356-21	Carbon, Total Organic	DUP	K1904835-002	Water	1.19 mg/L	10 mL	1.19 mg/L	1	0.07	0.50		8	5/29/19 20:02:00	N	II
KQ1907356-22	Carbon, Total Organic	DUP	K1904835-003	Water	8.43 mg/L	10 mL	8.43 mg/L	1	0.07	0.50		1	5/29/19 20:30:00	N	II
KQ1907356-23	Carbon, Total Organic	DUP	K1904779-002	Water	1.51 mg/L	10 mL	1.51 mg/L	1	0.07	0.50		4	5/29/19 21:26:00	N	IV
KQ1907356-24	Carbon, Total Organic	DUP	K1904779-004	Water	1.51 mg/L	10 mL	1.51 mg/L	1	0.07	0.50		3	5/29/19 21:54:00	N	IV
KQ1907356-25	Carbon, Total Organic	DUP	K1904779-005	Water	1.89 mg/L	10 mL	1.89 mg/L	1	0.07	0.50		<1	5/29/19 22:22:00	N	IV
KQ1907356-26	Carbon, Total Organic	DUP	K1904779-006	Water	2.25 mg/L	10 mL	2.25 mg/L	1	0.07	0.50		5	5/29/19 23:49:00	N	IV
KQ1907356-27	Carbon, Total Organic	DUP	K1904779-008	Water	11.39 mg/L	10 mL	11.4 mg/L	1	0.07	0.50		3	5/30/19 00:17:00	N	IV
KQ1907356-28	Carbon, Total Organic	DUP	K1904846-002	Water	3.02 mg/L	10 mL	3.02 mg/L	1	0.07	0.50		4	5/30/19 00:45:00	N	IV
KQ1907356-29	Carbon, Total Organic	DUP	K1904595-001	Water	6.14 mg/L	10 mL	6.14 mg/L	1	0.07	0.50		<1	5/30/19 01:13:00	N	II
KQ1907356-30	Carbon, Total Organic	DUP	K1904595-002	Water	28.64 mg/L	10 mL	28.6 mg/L	1	0.07	0.50		<1	5/30/19 01:41:00	N	II
KQ1907356-32	Carbon, Total Organic	DUP	K1904835-004	Water	9.40 mg/L	10 mL	9.40 mg/L	1	0.07	0.50		2	5/29/19 20:58:00	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:** 637430 **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
K1904595-003	Carbon, Total Organic	N/A		Water	0.69 mg/L	10 mL	0.69 mg/L	1	0.07	0.50			5/30/19 02:09:00	N	II
K1904613-001	Carbon, Total Organic	N/A		Surface Water	2.47 mg/L	10 mL	2.47 mg/L	1	0.07	0.50			5/30/19 02:37:00	N	IV
K1904613-002	Carbon, Total Organic	N/A		Surface Water	2.57 mg/L	10 mL	2.57 mg/L	1	0.07	0.50			5/30/19 03:05:00	N	IV
K1904613-003	Carbon, Total Organic	N/A		Surface Water	2.61 mg/L	10 mL	2.61 mg/L	1	0.07	0.50			5/30/19 04:03:00	N	IV
K1904613-004	Carbon, Total Organic	N/A		Surface Water	2.31 mg/L	10 mL	2.31 mg/L	1	0.07	0.50			5/30/19 04:31:00	N	IV
K1904613-005	Carbon, Total Organic	N/A		Surface Water	4.22 mg/L	10 mL	4.22 mg/L	1	0.07	0.50			5/30/19 04:59:00	N	IV
K1904613-006	Carbon, Total Organic	N/A		Surface Water	0.98 mg/L	10 mL	0.98 mg/L	1	0.07	0.50			5/30/19 05:27:00	N	IV
K1904613-007	Carbon, Total Organic	N/A		Surface Water	2.67 mg/L	10 mL	2.67 mg/L	1	0.07	0.50			5/30/19 05:55:00	N	IV
K1904613-008	Carbon, Total Organic	N/A		Surface Water	5.26 mg/L	10 mL	5.26 mg/L	1	0.07	0.50			5/30/19 06:23:00	N	IV
K1904613-009	Carbon, Total Organic	N/A		Surface Water	5.26 mg/L	10 mL	5.26 mg/L	1	0.07	0.50			5/30/19 06:51:00	N	IV
K1904613-010	Carbon, Total Organic	N/A		Surface Water	1.49 mg/L	10 mL	1.49 mg/L	1	0.07	0.50			5/30/19 07:19:00	N	IV
K1904613-011	Carbon, Total Organic	N/A		Surface Water	2.96 mg/L	10 mL	2.96 mg/L	1	0.07	0.50			5/30/19 07:47:00	N	IV
K1904613-012	Carbon, Total Organic	N/A		Surface Water	1.67 mg/L	10 mL	1.67 mg/L	1	0.07	0.50			5/30/19 08:15:00	N	IV
K1904613-013	Carbon, Total Organic	N/A		Surface Water	0.28 mg/L	10 mL	0.28 mg/L J	1	0.07	0.50			5/30/19 09:42:00	N	IV
K1904613-014	Carbon, Total Organic	N/A		Surface Water	12.62 mg/L	10 mL	12.6 mg/L	1	0.07	0.50			5/30/19 10:10:00	N	IV
K1904613-015	Carbon, Total Organic	N/A		Surface Water	3.79 mg/L	10 mL	3.79 mg/L	1	0.07	0.50			5/30/19 10:39:00	Y	IV
K1904613-016	Carbon, Total Organic	N/A		Surface Water	4.27 mg/L	10 mL	4.27 mg/L	1	0.07	0.50			5/30/19 11:36:00	Y	IV
K1904613-017	Carbon, Total Organic	N/A		Surface Water	3.47 mg/L	10 mL	3.47 mg/L	1	0.07	0.50			5/30/19 13:02:00	N	IV
K1904613-018	Carbon, Total Organic	N/A		Surface Water	1.04 mg/L	10 mL	1.04 mg/L	1	0.07	0.50			5/30/19 13:31:00	N	IV
K1904613-019	Carbon, Total Organic	N/A		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 13:58:00	N	IV
KQ1907358-01	Carbon, Total Organic	CCV		Surface Water	25.12 mg/L	10 mL	25.1 mg/L	1					5/29/19 22:50:00	N	IV
KQ1907358-02	Carbon, Total Organic	CCV		Surface Water	24.58 mg/L	10 mL	24.6 mg/L	1					5/30/19 03:33:00	N	IV
KQ1907358-03	Carbon, Total Organic	CCV		Surface Water	24.55 mg/L	10 mL	24.6 mg/L	1					5/30/19 08:44:00	N	IV
KQ1907358-04	Carbon, Total Organic	CCV		Surface Water	24.68 mg/L	10 mL	24.7 mg/L	1					5/30/19 12:33:00	N	IV

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

05/31/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 637430 **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
KQ1907358-05	Carbon, Total Organic	CCV		Surface Water	24.45 mg/L	10 mL	24.5 mg/L	1					5/30/19 17:16:00	N	IV
KQ1907358-06	Carbon, Total Organic	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/29/19 23:05:00	N	IV
KQ1907358-07	Carbon, Total Organic	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 03:48:00	N	IV
KQ1907358-08	Carbon, Total Organic	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 08:58:00	N	IV
KQ1907358-09	Carbon, Total Organic	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 12:48:00	N	IV
KQ1907358-10	Carbon, Total Organic	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 17:31:00	N	IV
KQ1907358-11	Carbon, Total Organic	MB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/29/19 23:20:00	N	IV
KQ1907358-12	Carbon, Total Organic	LCS		Surface Water	25.27 mg/L	10 mL	25.3 mg/L	1	0.07	0.50	101		5/29/19 23:34:00	N	IV
KQ1907358-13	Carbon, Total Organic	MS	K1904613-015	Surface Water	29.22 mg/L	10 mL	29.2 mg/L	1	0.07	0.50	102		5/30/19 11:07:00	N	IV
KQ1907358-14	Carbon, Total Organic	MS	K1904613-016	Surface Water	30.08 mg/L	10 mL	30.1 mg/L	1	0.07	0.50	103		5/30/19 12:04:00	N	IV
KQ1907358-15	Carbon, Total Organic	DUP	K1904613-001	Surface Water	2.40 mg/L	10 mL	2.40 mg/L	1	0.07	0.50		3	5/30/19 02:37:00	N	IV
KQ1907358-16	Carbon, Total Organic	DUP	K1904613-002	Surface Water	2.61 mg/L	10 mL	2.61 mg/L	1	0.07	0.50		2	5/30/19 03:05:00	N	IV
KQ1907358-17	Carbon, Total Organic	DUP	K1904613-003	Surface Water	2.59 mg/L	10 mL	2.59 mg/L	1	0.07	0.50		<1	5/30/19 04:03:00	N	IV
KQ1907358-18	Carbon, Total Organic	DUP	K1904613-004	Surface Water	2.34 mg/L	10 mL	2.34 mg/L	1	0.07	0.50		1	5/30/19 04:31:00	N	IV
KQ1907358-19	Carbon, Total Organic	DUP	K1904613-005	Surface Water	4.18 mg/L	10 mL	4.18 mg/L	1	0.07	0.50		<1	5/30/19 04:59:00	N	IV
KQ1907358-20	Carbon, Total Organic	DUP	K1904613-006	Surface Water	0.95 mg/L	10 mL	0.95 mg/L	1	0.07	0.50		3	5/30/19 05:27:00	N	IV
KQ1907358-21	Carbon, Total Organic	DUP	K1904613-007	Surface Water	2.69 mg/L	10 mL	2.69 mg/L	1	0.07	0.50		<1	5/30/19 05:55:00	N	IV
KQ1907358-22	Carbon, Total Organic	DUP	K1904613-008	Surface Water	5.18 mg/L	10 mL	5.18 mg/L	1	0.07	0.50		2	5/30/19 06:23:00	N	IV
KQ1907358-23	Carbon, Total Organic	DUP	K1904613-009	Surface Water	5.22 mg/L	10 mL	5.22 mg/L	1	0.07	0.50		<1	5/30/19 06:51:00	N	IV
KQ1907358-24	Carbon, Total Organic	DUP	K1904613-010	Surface Water	1.46 mg/L	10 mL	1.46 mg/L	1	0.07	0.50		2	5/30/19 07:19:00	N	IV
KQ1907358-25	Carbon, Total Organic	DUP	K1904613-011	Surface Water	2.99 mg/L	10 mL	2.99 mg/L	1	0.07	0.50		1	5/30/19 07:47:00	N	IV
KQ1907358-26	Carbon, Total Organic	DUP	K1904613-012	Surface Water	1.65 mg/L	10 mL	1.65 mg/L	1	0.07	0.50		1	5/30/19 08:15:00	N	IV
KQ1907358-27	Carbon, Total Organic	DUP	K1904613-013	Surface Water	0.16 mg/L	10 mL	0.16 mg/L J	1	0.07	0.50		53*	5/30/19 09:42:00	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:** 637430 **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?	T
KQ1907358-28	Carbon, Total Organic	DUP	K1904613-014	Surface Water	12.41 mg/L	10 mL	12.4 mg/L	1	0.07	0.50		2	5/30/19 10:10:00	N	I
KQ1907358-29	Carbon, Total Organic	DUP	K1904613-015	Surface Water	3.63 mg/L	10 mL	3.63 mg/L	1	0.07	0.50		4	5/30/19 10:39:00	N	I
KQ1907358-30	Carbon, Total Organic	DUP	K1904613-016	Surface Water	4.27 mg/L	10 mL	4.27 mg/L	1	0.07	0.50		<1	5/30/19 11:36:00	N	I
KQ1907358-31	Carbon, Total Organic	DUP	K1904613-017	Surface Water	3.42 mg/L	10 mL	3.42 mg/L	1	0.07	0.50		2	5/30/19 13:02:00	N	I
KQ1907358-32	Carbon, Total Organic	DUP	K1904613-018	Surface Water	1.00 mg/L	10 mL	1.00 mg/L	1	0.07	0.50		4	5/30/19 13:31:00	N	I
KQ1907358-33	Carbon, Total Organic	DUP	K1904613-019	Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	5/30/19 13:58:00	N	I
KQ1907358-35	Carbon, Total Organic	DUP	K1904595-003	Water	0.53 mg/L	10 mL	0.53 mg/L	1	0.07	0.50		26*	5/30/19 02:09:00	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:** 637431 **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?	T
K1904650-001	Carbon, Total Organic	N/A		Water	3.64 mg/L	10 mL	14.5 mg/L	4	0.3	2.0			5/30/19 14:27:00	N	
K1904659-001	Carbon, Total Organic	N/A		Surface Water	3.60 mg/L	10 mL	3.60 mg/L	1	0.07	0.50			5/30/19 14:55:00	N	I
K1904659-002	Carbon, Total Organic	N/A		Surface Water	4.87 mg/L	10 mL	4.87 mg/L	1	0.07	0.50			5/30/19 15:23:00	N	I
K1904659-003	Carbon, Total Organic	N/A		Surface Water	5.26 mg/L	10 mL	5.26 mg/L	1	0.07	0.50			5/30/19 15:51:00	N	I
K1904659-004	Carbon, Total Organic	N/A		Surface Water	4.72 mg/L	10 mL	4.72 mg/L	1	0.07	0.50			5/30/19 16:19:00	Y	I
K1904659-005	Carbon, Total Organic	N/A		Surface Water	6.14 mg/L	10 mL	6.14 mg/L	1	0.07	0.50			5/30/19 18:15:00	N	I
K1904659-006	Carbon, Total Organic	N/A		Surface Water	2.36 mg/L	10 mL	2.36 mg/L	1	0.07	0.50			5/30/19 18:43:00	N	I
K1904684-001	Carbon, Total Organic	N/A		Surface Water	0.64 mg/L	10 mL	0.64 mg/L	1	0.07	0.50			5/30/19 19:11:00	N	III
K1904684-002	Carbon, Total Organic	N/A		Surface Water	0.29 mg/L	10 mL	0.29 mg/L J	1	0.07	0.50			5/30/19 19:39:00	Y	III
K1904684-003	Carbon, Total Organic	N/A		Surface Water	0.29 mg/L	10 mL	0.29 mg/L J	1	0.07	0.50			5/30/19 20:36:00	N	III
K1904684-004	Carbon, Total Organic	N/A		Surface Water	0.65 mg/L	10 mL	0.65 mg/L	1	0.07	0.50			5/30/19 21:05:00	N	III
K1904686-001	Carbon, Total Organic	N/A		Surface Water	0.65 mg/L	10 mL	0.65 mg/L	1	0.07	0.50			5/30/19 22:03:00	N	IV
K1904686-002	Carbon, Total Organic	N/A		Ground Water	0.35 mg/L	10 mL	0.35 mg/L J	1	0.07	0.50			5/30/19 22:31:00	N	IV
KQ1907361-01	Carbon, Total Organic	CCV		Surface Water	24.68 mg/L	10 mL	24.7 mg/L	1					5/30/19 12:33:00	N	IV
KQ1907361-02	Carbon, Total Organic	CCV		Surface Water	24.45 mg/L	10 mL	24.5 mg/L	1					5/30/19 17:16:00	N	IV
KQ1907361-03	Carbon, Total Organic	CCV		Surface Water	24.75 mg/L	10 mL	24.8 mg/L	1					5/30/19 21:33:00	N	IV
KQ1907361-04	Carbon, Total Organic	CCV		Surface Water	24.58 mg/L	10 mL	24.6 mg/L	1					5/31/19 01:49:00	N	IV
KQ1907361-05	Carbon, Total Organic	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 12:48:00	N	IV
KQ1907361-06	Carbon, Total Organic	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 17:31:00	N	IV
KQ1907361-07	Carbon, Total Organic	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 21:48:00	N	IV
KQ1907361-08	Carbon, Total Organic	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/31/19 02:03:00	N	IV
KQ1907361-09	Carbon, Total Organic	MB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 09:13:00	N	IV
KQ1907361-10	Carbon, Total Organic	LCS		Surface Water	25.07 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		5/30/19 09:28:00	N	IV
KQ1907361-11	Carbon, Total Organic	MS	K1904659-004	Surface Water	30.53 mg/L	10 mL	30.5 mg/L	1	0.07	0.50	103		5/30/19 16:47:00	N	IV

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

05/31/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 637431 **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?	T
KQ1907361-12	Carbon, Total Organic	MS	K1904684-002	Surface Water	25.77 mg/L	10 mL	25.8 mg/L	1	0.07	0.50	102		5/30/19 20:07:00	N	II
KQ1907361-13	Carbon, Total Organic	DUP	K1904659-001	Surface Water	3.64 mg/L	10 mL	3.64 mg/L	1	0.07	0.50		<1	5/30/19 14:55:00	N	I
KQ1907361-14	Carbon, Total Organic	DUP	K1904659-002	Surface Water	4.80 mg/L	10 mL	4.80 mg/L	1	0.07	0.50		1	5/30/19 15:23:00	N	I
KQ1907361-15	Carbon, Total Organic	DUP	K1904659-003	Surface Water	5.19 mg/L	10 mL	5.19 mg/L	1	0.07	0.50		1	5/30/19 15:51:00	N	IV
KQ1907361-16	Carbon, Total Organic	DUP	K1904659-004	Surface Water	4.85 mg/L	10 mL	4.85 mg/L	1	0.07	0.50		3	5/30/19 16:19:00	N	IV
KQ1907361-17	Carbon, Total Organic	DUP	K1904659-005	Surface Water	6.07 mg/L	10 mL	6.07 mg/L	1	0.07	0.50		1	5/30/19 18:15:00	N	IV
KQ1907361-18	Carbon, Total Organic	DUP	K1904659-006	Surface Water	2.31 mg/L	10 mL	2.31 mg/L	1	0.07	0.50		2	5/30/19 18:43:00	N	IV
KQ1907361-19	Carbon, Total Organic	DUP	K1904684-001	Surface Water	0.68 mg/L	10 mL	0.68 mg/L	1	0.07	0.50		7	5/30/19 19:11:00	N	III
KQ1907361-20	Carbon, Total Organic	DUP	K1904684-002	Surface Water	0.32 mg/L	10 mL	0.32 mg/L J	1	0.07	0.50		11*	5/30/19 19:39:00	N	III
KQ1907361-21	Carbon, Total Organic	DUP	K1904684-003	Surface Water	0.23 mg/L	10 mL	0.23 mg/L J	1	0.07	0.50		25*	5/30/19 20:36:00	N	III
KQ1907361-22	Carbon, Total Organic	DUP	K1904684-004	Surface Water	0.62 mg/L	10 mL	0.62 mg/L	1	0.07	0.50		3	5/30/19 21:05:00	N	III
KQ1907361-23	Carbon, Total Organic	DUP	K1904686-001	Surface Water	0.64 mg/L	10 mL	0.64 mg/L	1	0.07	0.50		1	5/30/19 22:03:00	N	IV
KQ1907361-24	Carbon, Total Organic	DUP	K1904686-002	Ground Water	0.32 mg/L	10 mL	0.32 mg/L J	1	0.07	0.50		9	5/30/19 22:31:00	N	IV
KQ1907361-25	Carbon, Total Organic	DUP	K1904650-001	Water	3.68 mg/L	10 mL	14.7 mg/L	4	0.3	2.0		1	5/30/19 14:27:00	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:** 637432 **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
K1904784-001	Carbon, Dissolved Organic (DOC)	N/A		Ground Water	11.75 mg/L	10 mL	11.7 mg/L	1	0.07	0.50			5/30/19 22:59:00	N	III
K1904784-002	Carbon, Dissolved Organic (DOC)	N/A		Ground Water	2.15 mg/L	10 mL	2.15 mg/L	1	0.07	0.50			5/30/19 23:27:00	N	III
K1904784-003	Carbon, Dissolved Organic (DOC)	N/A		Ground Water	3.09 mg/L	10 mL	3.09 mg/L	1	0.07	0.50			5/31/19 00:24:00	N	III
K1904784-004	Carbon, Dissolved Organic (DOC)	N/A		Ground Water	9.55 mg/L	10 mL	9.55 mg/L	1	0.07	0.50			5/31/19 00:53:00	N	III
KQ1907363-01	Carbon, Dissolved Organic (DOC)	CCV		Ground Water	24.75 mg/L	10 mL	24.8 mg/L	1					5/30/19 21:33:00	N	III
KQ1907363-02	Carbon, Dissolved Organic (DOC)	CCV		Ground Water	24.58 mg/L	10 mL	24.6 mg/L	1					5/31/19 01:49:00	N	III
KQ1907363-03	Carbon, Dissolved Organic (DOC)	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 21:48:00	N	III
KQ1907363-04	Carbon, Dissolved Organic (DOC)	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/31/19 02:03:00	N	III
KQ1907363-05	Carbon, Dissolved Organic (DOC)	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/30/19 17:45:00	N	III
KQ1907363-06	Carbon, Dissolved Organic (DOC)	LCS		Ground Water	25.14 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	101		5/30/19 18:00:00	N	III
KQ1907363-07	Carbon, Dissolved Organic (DOC)	MS	K1904784-002	Ground Water	28.22 mg/L	10 mL	28.2 mg/L	1	0.07	0.50	104		5/30/19 23:55:00	N	III
KQ1907363-08	Carbon, Dissolved Organic (DOC)	DUP	K1904784-001	Ground Water	12.25 mg/L	10 mL	12.3 mg/L	1	0.07	0.50		4	5/30/19 22:59:00	N	III
KQ1907363-09	Carbon, Dissolved Organic (DOC)	DUP	K1904784-002	Ground Water	2.06 mg/L	10 mL	2.06 mg/L	1	0.07	0.50		4	5/30/19 23:27:00	N	III
KQ1907363-10	Carbon, Dissolved Organic (DOC)	DUP	K1904784-003	Ground Water	3.12 mg/L	10 mL	3.12 mg/L	1	0.07	0.50		<1	5/31/19 00:24:00	N	III
KQ1907363-11	Carbon, Dissolved Organic (DOC)	DUP	K1904784-004	Ground Water	9.69 mg/L	10 mL	9.69 mg/L	1	0.07	0.50		1	5/31/19 00:53:00	N	III

05/31/19

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

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	C] CCV 25 ppm [25 p	1	25.045	0.0000	25.0446	25.0446	25.0	5/29/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/29/2019
4	MB1	1	0.000	0.0000	0.0000	0	<0.5	5/29/2019
5	[TOC] LCS [24ppm]	1	25.647	0.0000	25.6470	25.647	25.6	5/29/2019
6	K1904667-001	1	15.359	0.0000	15.3587	15.3587	15.36	5/29/2019
7	K1904667-001d	1	15.794	0.0000	15.7939	15.7939	15.8	5/29/2019
8	K1904618-002	20	5.485	0.0000	5.4849	109.698	110	5/29/2019
9	K1904618-002d	20	5.272	0.0000	5.2720	105.44	105.44	5/29/2019
10	K1904618-002ms	20	31.475	0.0000	31.4748	629.496	629.50	5/29/2019
11	K1904618-003	20	5.063	0.0000	5.0627	101.254	101.3	5/29/2019
12	K1904618-003d	20	5.051	0.0000	5.0509	101.018	101.02	5/29/2019
13	K1904618-004	1	1.655	0.0000	1.6547	1.6547	1.65	5/29/2019
14	K1904618-004d	1	1.594	0.0000	1.5940	1.594	1.59	5/29/2019
15	K1904908-001	1	1.819	0.0000	1.8185	1.8185	1.8	5/29/2019
16	K1904908-001d	1	1.724	0.0000	1.7235	1.7235	1.7	5/29/2019
17	C] CCV 25 ppm [25 p	1	25.135	0.0000	25.1354	25.1354	25.14	5/29/2019
18	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/29/2019
19	K1904908-002	1	1.827	0.0000	1.8272	1.8272	1.8	5/29/2019
20	K1904908-002d	1	1.700	0.0000	1.6999	1.6999	1.70	5/29/2019
21	K1904908-003	1	3.212	0.0000	3.2120	3.212	3.21	5/29/2019
22	K1904908-003d	1	3.219	0.0000	3.2185	3.2185	3.2	5/29/2019
23	K1904834-001	1	1.360	0.0000	1.3599	1.3599	1.4	5/29/2019
24	K1904834-001d	1	1.328	0.0000	1.3283	1.3283	1.33	5/29/2019
25	K1904835-001	1	16.269	0.0000	16.2689	16.2689	16.27	5/29/2019

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	5/29/19
Reviewed By:	Date Reviewed	05/31/19

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	K1904835-001d	1	15.993	0.0000	15.9934	15.9934	15.99	5/29/2019
27	K1904835-002	1	1.287	0.0000	1.2866	1.2866	1.29	5/29/2019
28	K1904835-002d	1	1.189	0.0000	1.1892	1.1892	1.2	5/29/2019
29	K1904835-003	1	8.327	0.0000	8.3270	8.327	8.3	5/29/2019
30	K1904835-003d	1	8.434	0.0000	8.4337	8.4337	8.4	5/29/2019
31	K1904835-004	1	9.544	0.0000	9.5442	9.5442	9.5	5/29/2019
32	K1904835-004d	1	9.398	0.0000	9.3976	9.3976	9.4	5/29/2019
33	K1904779-002	1	1.565	0.0000	1.5653	1.5653	1.6	5/29/2019
34	K1904779-002d	1	1.511	0.0000	1.5111	1.5111	1.5	5/29/2019
35	K1904779-004	1	1.553	0.0000	1.5531	1.5531	1.6	5/29/2019
36	K1904779-004d	1	1.514	0.0000	1.5143	1.5143	1.5	5/29/2019
37	K1904779-005	1	1.888	0.0000	1.8881	1.8881	1.9	5/29/2019
38	K1904779-005d	1	1.886	0.0000	1.8856	1.8856	1.9	5/29/2019
39	C] CCV 25 ppm [25 p	1	25.119	0.0000	25.1187	25.1187	25.1	5/29/2019
40	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/29/2019
41	K1904779-006	1	2.361	0.0000	2.3614	2.3614	2.4	5/29/2019
42	K1904779-006d	1	2.252	0.0000	2.2515	2.2515	2.3	5/29/2019
43	K1904779-008	1	11.056	0.0000	11.0562	11.0562	11.1	5/30/2019
44	K1904779-008d	1	11.393	0.0000	11.3930	11.393	11.4	5/30/2019
45	K1904846-002	1	3.154	0.0000	3.1539	3.1539	3.2	5/30/2019
46	K1904846-002d	1	3.018	0.0000	3.0182	3.0182	3.0	5/30/2019
47	K1904595-001	1	6.199	0.0000	6.1994	6.1994	6.2	5/30/2019
48	K1904595-001d	1	6.143	0.0000	6.1433	6.1433	6.1	5/30/2019
49	K1904595-002	1	28.377	0.0000	28.3774	28.3774	28.4	5/30/2019
50	K1904595-002d	1	28.641	0.0000	28.6411	28.6411	28.6	5/30/2019

Analyzed By: DEP	Date Analyzed 5/29/19
Reviewed By: [signature]	Date Reviewed 05/31/19

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	C] CCV 25 ppm [25 p	1	24.579	0.0000	24.5788	24.5788	24.58	5/30/2019
52	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
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:	KP	Date Analyzed	5/29/19
Reviewed By:	[signature]	Date Reviewed	05/31/19

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	C] CCV 25 ppm [25 p	1	25.119	0.0000	25.1187	25.1187	25.1	5/29/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/29/2019
4	MB2	1	0.000	0.0000	0.0000	0	<0.5	5/29/2019
5	[TOC] LCS [24ppm]	1	25.267	0.0000	25.2668	25.2668	25.3	5/29/2019
6	K1904595-003	1	0.688	0.0000	0.6882	0.6882	0.69	5/30/2019
7	K1904595-003d	1	0.528	0.0000	0.5282	0.5282	0.5	5/30/2019
8	K1904613-001	1	2.471	0.0000	2.4707	2.4707	2	5/30/2019
9	K1904613-001d	1	2.401	0.0000	2.4005	2.4005	2.40	5/30/2019
10	K1904613-002	1	2.569	0.0000	2.5693	2.5693	2.57	5/30/2019
11	K1904613-002d	1	2.610	0.0000	2.6095	2.6095	2.6	5/30/2019
12	C] CCV 25 ppm [25 p	1	24.579	0.0000	24.5788	24.5788	24.58	5/30/2019
13	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
14	K1904613-003	1	2.607	0.0000	2.6067	2.6067	2.61	5/30/2019
15	K1904613-003d	1	2.592	0.0000	2.5923	2.5923	2.6	5/30/2019
16	K1904613-004	1	2.310	0.0000	2.3104	2.3104	2.3	5/30/2019
17	K1904613-004d	1	2.345	0.0000	2.3445	2.3445	2.34	5/30/2019
18	K1904613-005	1	4.217	0.0000	4.2169	4.2169	4.2	5/30/2019
19	K1904613-005d	1	4.177	0.0000	4.1765	4.1765	4.2	5/30/2019
20	K1904613-006	1	0.976	0.0000	0.9759	0.9759	0.98	5/30/2019
21	K1904613-006d	1	0.946	0.0000	0.9455	0.9455	0.95	5/30/2019
22	K1904613-007	1	2.669	0.0000	2.6689	2.6689	2.7	5/30/2019
23	K1904613-007d	1	2.695	0.0000	2.6945	2.6945	2.7	5/30/2019
24	K1904613-008	1	5.265	0.0000	5.2648	5.2648	5.26	5/30/2019
25	K1904613-008d	1	5.184	0.0000	5.1839	5.1839	5.18	5/30/2019

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	5/29/19
Reviewed By:		Date Reviewed	05/31/19

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	K1904613-009	1	5.257	0.0000	5.2568	5.2568	5.26	5/30/2019
27	K1904613-009d	1	5.221	0.0000	5.2208	5.2208	5.22	5/30/2019
28	K1904613-010	1	1.486	0.0000	1.4863	1.4863	1.5	5/30/2019
29	K1904613-010d	1	1.459	0.0000	1.4586	1.4586	1.5	5/30/2019
30	K1904613-011	1	2.958	0.0000	2.9578	2.9578	3.0	5/30/2019
31	K1904613-011d	1	2.989	0.0000	2.9891	2.9891	3.0	5/30/2019
32	K1904613-012	1	1.675	0.0000	1.6746	1.6746	1.7	5/30/2019
33	K1904613-012d	1	1.655	0.0000	1.6549	1.6549	1.7	5/30/2019
34	C] CCV 25 ppm [25 p	1	24.555	0.0000	24.5548	24.5548	24.6	5/30/2019
35	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
36	K1904613-013	1	0.278	0.0000	0.2779	0.2779	<0.5	5/30/2019
37	K1904613-013d	1	0.162	0.0000	0.1615	0.1615	<0.5	5/30/2019
38	K1904613-014	1	12.624	0.0000	12.6240	12.624	12.6	5/30/2019
39	K1904613-014d	1	12.407	0.0000	12.4072	12.4072	12.4	5/30/2019
40	K1904613-015	1	3.786	0.0000	3.7864	3.7864	3.8	5/30/2019
41	K1904613-015d	1	3.633	0.0000	3.6334	3.6334	3.6	5/30/2019
42	K1904613-015ms	1	29.222	0.0000	29.2218	29.2218	29.2	5/30/2019
43	K1904613-016	1	4.270	0.0000	4.2698	4.2698	4.3	5/30/2019
44	K1904613-016d	1	4.265	0.0000	4.2652	4.2652	4.3	5/30/2019
45	K1904613-016ms	1	30.083	0.0000	30.0831	30.0831	30.1	5/30/2019
46	C] CCV 25 ppm [25 p	1	24.682	0.0000	24.6815	24.6815	24.7	5/30/2019
47	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
48	K1904613-017	1	3.473	0.0000	3.4725	3.4725	3.5	5/30/2019
49	K1904613-017d	1	3.420	0.0000	3.4199	3.4199	3.4	5/30/2019
50	K1904613-018	1	1.040	0.0000	1.0398	1.0398	1.0	5/30/2019

Analyzed By:	BVP	Date Analyzed	5/29/19
Reviewed By:	[signature]	Date Reviewed	05/31/19

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	K1904613-018d	1	1.004	0.0000	1.0036	1.0036	1.00	5/30/2019
52	K1904613-019	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
53	K1904613-019d	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
54	C] CCV 25 ppm [25 p	1	24.455	0.0000	24.4546	24.4546	24.5	5/30/2019
55	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
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:	BVP	Date Analyzed	5/29/19
Reviewed By:		Date Reviewed	05/31/19

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	MB3	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
3	[TOC] LCS [25ppm]	1	25.070	0.0000	25.0701	25.0701	25.1	5/30/2019
4	C] CCV 25 ppm [25 p	1	24.682	0.0000	24.6815	24.6815	24.7	5/30/2019
5	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
6	K1904650-001	4	3.636	0.0000	3.6356	14.5424	14.54	5/30/2019
7	K1904650-001d	4	3.676	0.0000	3.6757	14.7028	14.7	5/30/2019
8	K1904659-001	1	3.602	0.0000	3.6020	3.602	4	5/30/2019
9	K1904659-001d	1	3.637	0.0000	3.6368	3.6368	3.64	5/30/2019
10	K1904659-002	1	4.869	0.0000	4.8687	4.8687	4.87	5/30/2019
11	K1904659-002d	1	4.804	0.0000	4.8044	4.8044	4.8	5/30/2019
12	K1904659-003	1	5.264	0.0000	5.2639	5.2639	5.26	5/30/2019
13	K1904659-003d	1	5.191	0.0000	5.1908	5.1908	5.19	5/30/2019
14	K1904659-004	1	4.721	0.0000	4.7210	4.721	4.72	5/30/2019
15	K1904659-004d	1	4.847	0.0000	4.8471	4.8471	4.8	5/30/2019
16	K1904659-004ms	1	30.534	0.0000	30.5342	30.5342	30.5	5/30/2019
17	C] CCV 25 ppm [25 p	1	24.455	0.0000	24.4546	24.4546	24.45	5/30/2019
18	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
19	K1904659-005	1	6.135	0.0000	6.1352	6.1352	6.1	5/30/2019
20	K1904659-005d	1	6.071	0.0000	6.0714	6.0714	6.07	5/30/2019
21	K1904659-006	1	2.356	0.0000	2.3558	2.3558	2.36	5/30/2019
22	K1904659-006d	1	2.312	0.0000	2.3122	2.3122	2.3	5/30/2019
23	K1904684-001	1	0.638	0.0000	0.6384	0.6384	0.6	5/30/2019
24	K1904684-001d	1	0.682	0.0000	0.6824	0.6824	0.68	5/30/2019
25	K1904684-002	1	0.287	0.0000	0.2867	0.2867	<0.5	5/30/2019

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	5/29/19	
Reviewed By:	Date Reviewed	05/31/19	

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	K1904684-002d	1	0.320	0.0000	0.3202	0.3202	<0.5	5/30/2019
27	K1904684-002ms	1	25.771	0.0000	25.7713	25.7713	25.77	5/30/2019
28	K1904684-003	1	0.290	0.0000	0.2898	0.2898	<0.5	5/30/2019
29	K1904684-003d	1	0.226	0.0000	0.2259	0.2259	<0.5	5/30/2019
30	K1904684-004	1	0.645	0.0000	0.6451	0.6451	0.6	5/30/2019
31	K1904684-004d	1	0.624	0.0000	0.6239	0.6239	0.6	5/30/2019
32	C] CCV 25 ppm [25 p	1	24.753	0.0000	24.7529	24.7529	24.8	5/30/2019
33	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
34	K1904686-001	1	0.645	0.0000	0.6451	0.6451	0.6	5/30/2019
35	K1904686-001d	1	0.637	0.0000	0.6373	0.6373	0.6	5/30/2019
36	K1904686-002	1	0.354	0.0000	0.3542	0.3542	<0.5	5/30/2019
37	K1904686-002d	1	0.322	0.0000	0.3221	0.3221	<0.5	5/30/2019
38	C] CCV 25 ppm [25 p	1	24.579	0.0000	24.5794	24.5794	24.6	5/31/2019
39	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/31/2019
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 5/29/19
Reviewed By:	Date Reviewed 05/31/19

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	MB4	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
3	[TOC] LCS [25ppm]	1	25.143	0.0000	25.1430	25.143	25.1	5/30/2019
4	C] CCV 25 ppm [25 p	1	24.753	0.0000	24.7529	24.7529	24.8	5/30/2019
5	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/30/2019
6	K1904684-001	1	11.749	0.0000	11.7488	11.7488	11.75	5/30/2019
7	K1904684-001d	1	12.252	0.0000	12.2519	12.2519	12.3	5/30/2019
8	K1904684-002	1	2.151	0.0000	2.1510	2.151	2	5/30/2019
9	K1904684-002d	1	2.059	0.0000	2.0591	2.0591	2.06	5/30/2019
10	K1904684-002ms	1	28.219	0.0000	28.2190	28.219	28.22	5/30/2019
11	K1904684-003	1	3.093	0.0000	3.0930	3.093	3.1	5/31/2019
12	K1904684-003d	1	3.124	0.0000	3.1237	3.1237	3.12	5/31/2019
13	K1904684-004	1	9.548	0.0000	9.5480	9.548	9.55	5/31/2019
14	K1904684-004d	1	9.690	0.0000	9.6900	9.69	9.69	5/31/2019
15	C] CCV 25 ppm [25 p	1	24.579	0.0000	24.5794	24.5794	24.6	5/31/2019
16	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/31/2019
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:	BCD	Date Analyzed	5/29/19	
Reviewed By:		Date Reviewed	05/31/19	

TOC:637429, 637430, 637431
DOC:637432

Schedule: 05292019

Version: 6
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/05/29 12:33 - Wednesday

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	K1904667-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1904618-002.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K1904618-002.01 ms 20x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
7	Sample	K1904618-003.01 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1904618-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1904908-001.01	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
10	Sample	K1904908-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1904908-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1904834-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1904835-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1904835-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1904835-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1904835-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1904779-002.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1904779-004.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1904779-005.11	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	K1904779-006.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1904779-008.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1904846-002.09	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1904595-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1904595-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1904595-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1904613-001.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1904613-002.06	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	K1904613-003.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1904613-004.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1904613-005.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1904613-006.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1904613-007.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1904613-008.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1904613-009.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1904613-010.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1904613-011.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1904613-012.06	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: 05292019

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	K1904613-013.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1904613-014.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1904613-015.18	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1904613-015.18 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
44	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
45	Sample	K1904613-016.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1904613-016.06 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	K1904613-017.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1904613-018.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1904613-019.06	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1904650-001.04 4x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1904659-001.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample	K1904659-002.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample	K1904659-003.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1904659-004.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1904659-004.14 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
57	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
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	K1904659-005.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1904659-006.08	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1904684-001.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1904684-002.18	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample	K1904684-002.18 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
64	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
65	Sample	K1904684-003.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1904684-004.11	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
67	Sample	K1904686-001.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1904686-002.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample	K1904684-001.08 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
70	Sample	K1904684-002.15 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
71	Sample	K1904684-002.15 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
72	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
73	Sample	K1904684-003.08 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
74	Sample	K1904684-004.08 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
75	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 - 05292019
Wednesday, May 29, 2019 10:47 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/05/31 09:10 - Friday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	05292019	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) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6)		
Comment:			

Report Results

05/31/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/05/29 10:47

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.55	18.80	6.25	49.84	08:00
2	TC Clean	14.40	17.68	3.28	49.63	07:15
3	TC Clean	2.66	5.87	3.21	49.63	07:02
4	TC Clean	2.13	5.15	3.02	49.60	07:01

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/05/29 11:21

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.80	14.90	3.10	49.77	07:59
2	TC Clean	4.51	7.53	3.02	49.58	07:16
3	TC Clean	1.69	4.88	3.20	49.56	07:02

4	TC Clean	1.54	4.45	2.90	49.55	07:02

Sample Type: Clean From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/05/29 11:55

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.55	14.56	3.01	49.68	07:58
2	TC Clean	4.42	7.26	2.84	49.52	07:17
3	TC Clean	1.80	4.82	3.02	49.71	07:03
4	TC Clean	1.59	4.61	3.03	49.57	07:02

Sample Type: Blank (Creating v1261) From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/05/29 12:31

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.64	14.56	2.92	49.71	07:59
2	TC Clean	4.01	6.91	2.90	49.58	07:17
3	TC Clean	1.67	4.62	2.95	49.70	07:03
4	TC Clean	1.31	4.14	2.83	49.61	07:00
5	Reagent Blank	6.67	9.52	2.85	49.63	08:13
6	Acid Blank	2.35	5.15	2.80	49.79	08:03

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.1574 ppm	0.0000 ppm	0.0000%	2019/05/29 13:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1574	1.5736	10.03	13.03	3.00	49.85	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 6

	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)	25.0446 ppm (PASS)	0.0000 ppm	0%	2019/05/29 13:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0446	250.4464	179.46	182.61	3.15	49.82	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 6

	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%	2019/05/29 13:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.39	11.48	3.09	49.88	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/29 14:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.39	10.53	3.14	49.93	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 6

	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)	25.6470 ppm (PASS)	0.0000 ppm	0%	2019/05/29 14:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.6470	256.4703	183.55	186.67	3.12	49.92	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	2	TOC	ICS	0.1329 ppm	0.0000 ppm	0.0000%	2019/05/29 14:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1329	1.3291	9.86	12.98	3.12	49.86	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	3	TOC	K1904667-001.01	15.5763 ppm	0.3077 ppm	1.9800%	2019/05/29 14:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.3587	153.5873	113.22	116.29	3.07	49.92	10:28
2	TOC	15.7939	157.9392	116.17	119.37	3.21	49.95	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	4	TOC	K1904618-002.01 20x	5.3785 ppm	0.1505 ppm	2.8000%	2019/05/29 15:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.4849	54.8490	46.19	49.32	3.13	49.93	10:29
2	TOC	5.2720	52.7202	44.75	47.81	3.06	49.92	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◉	5	TOC	K1904618-002.01 ms 20x	31.4748 ppm	0.0000 ppm	0.0000%	2019/05/29 15:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.4748	314.7481	222.61	225.74	3.13	49.99	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	RB	0.0590 ppm	0.0000 ppm	0.0000%	2019/05/29 16:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0590	0.5895	9.36	12.49	3.13	49.92	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1904618-003.01 20x	5.0568 ppm	0.0083 ppm	0.1600%	2019/05/29 16:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.0627	50.6268	43.33	46.50	3.18	49.97	10:28
2	TOC	5.0509	50.5089	43.25	46.31	3.07	50.01	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1904618-004.01	1.6244 ppm	0.0429 ppm	2.6400%	2019/05/29 16:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6547	16.5472	20.19	23.29	3.09	49.93	10:29
2	TOC	1.5940	15.9403	19.78	22.96	3.17	50.01	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1904908-001.01	1.7710 ppm	0.0672 ppm	3.7900%	2019/05/29 17:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8185	18.1854	21.30	24.37	3.06	50.02	10:27
2	TOC	1.7235	17.2352	20.66	23.83	3.17	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 6

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1354 ppm (PASS)	0.0000 ppm	0%	2019/05/29 17:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1354	251.3539	180.08	183.14	3.06	49.99	10:30

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 6

	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%	2019/05/29 17:54

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.25	11.25	3.00	50.16	10:30

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

STD Conc - Pos D: 0 ppmC

Sample Type: Sample

From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K1904908-002.01	1.7636 ppm	0.0900 ppm	5.1000%	2019/05/29 18:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8272	18.2723	21.36	24.18	2.82	50.16	10:25
2	TOC	1.6999	16.9995	20.50	23.61	3.11	50.14	10:26

Dilution: 1:10

Blank Contribution: (TC) 8.9608 (IC) (v1261)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1904908-003.01	3.2153 ppm	0.0046 ppm	0.1400%	2019/05/29 18:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2120	32.1204	30.76	33.77	3.01	50.09	10:28
2	TOC	3.2185	32.1853	30.81	33.87	3.06	50.03	10:25

Dilution: 1:10

Blank Contribution: (TC) 8.9608 (IC)

Method: CAS_salt_010711

Calibration: CAS_salt_010711

(v1261) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1904834-001.01	1.3441 ppm	0.0224 ppm	1.6700%	2019/05/29 19:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3599	13.5994	18.19	21.09	2.89	49.94	10:26
2	TOC	1.3283	13.2826	17.98	21.06	3.09	49.89	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1904835-001.01	16.1311 ppm	0.1948 ppm	1.2100%	2019/05/29 19:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.2689	162.6888	119.39	122.35	2.96	49.84	10:26
2	TOC	15.9934	159.9339	117.52	120.81	3.28	49.79	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1904835-002.01	1.2379 ppm	0.0689 ppm	5.5600%	2019/05/29 20:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2866	12.8657	17.69	20.60	2.91	49.77	10:26
2	TOC	1.1892	11.8919	17.03	20.01	2.98	49.81	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1904835-003.01	8.3803 ppm	0.0754 ppm	0.9000%	2019/05/29 20:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.3270	83.2700	65.48	68.65	3.17	49.80	10:25
2	TOC	8.4337	84.3366	66.21	69.25	3.05	49.77	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1904835-004.01	9.4709 ppm	0.1037 ppm	1.0900%	2019/05/29 20:58

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

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	9.5442	95.4416	73.75	76.61	2.87	49.79	10:28
2	TOC	9.3976	93.9757	72.75	75.67	2.92	49.77	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K1904779-002.11	1.5382 ppm	0.0383 ppm	2.4900%	2019/05/29 21:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5653	15.6530	19.59	22.48	2.89	49.78	10:24
2	TOC	1.5111	15.1109	19.22	22.21	2.99	49.82	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K1904779-004.11	1.5337 ppm	0.0274 ppm	1.7900%	2019/05/29 21:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5531	15.5307	19.50	22.54	3.04	49.84	10:28
2	TOC	1.5143	15.1433	19.24	22.32	3.08	49.87	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K1904779-005.11	1.8868 ppm	0.0018 ppm	0.0900%	2019/05/29 22:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8881	18.8808	21.78	24.83	3.06	49.87	10:28
2	TOC	1.8856	18.8557	21.76	24.81	3.05	49.91	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 6

	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)	25.1187 ppm (PASS)	0.0000 ppm	0%	2019/05/29 22:50

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

B	TOC	25 ppm	1	25.1187	251.1874	179.97	183.05	3.08	49.91	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 6

	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%	2019/05/29 23:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.97	10.91	2.94	49.92	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample

From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/29 23:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.70	10.50	2.80	49.93	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 6

	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)	25.2668 ppm (PASS)	0.0000 ppm	0%	2019/05/29 23:34

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.2668	252.6680	180.97	183.91	2.93	49.94	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1904779-006.11	2.3065 ppm	0.0777 ppm	3.3700%	2019/05/29 23:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3614	23.6142	24.99	28.06	3.07	49.95	10:26
2	TOC	2.2515	22.5152	24.24	27.37	3.13	49.96	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1904779-008.11	11.2246 ppm	0.2381 ppm	2.1200%	2019/05/30 00:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.0562	110.5625	84.01	87.12	3.11	49.95	10:28
2	TOC	11.3930	113.9302	86.30	89.17	2.87	49.98	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K1904846-002.09	3.0860 ppm	0.0959 ppm	3.1100%	2019/05/30 00:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1539	31.5385	30.37	33.40	3.04	49.98	10:26
2	TOC	3.0182	30.1817	29.45	32.52	3.08	49.99	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1904595-001.03	6.1713 ppm	0.0397 ppm	0.6400%	2019/05/30 01:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.1994	61.9940	51.04	53.77	2.73	49.98	10:25
2	TOC	6.1433	61.4327	50.66	53.65	2.99	50.01	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1904595-002.03	28.5093 ppm	0.1865 ppm	0.6500%	2019/05/30 01:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	28.3774	283.7741	201.58	204.58	3.00	50.00	10:29
2	TOC	28.6411	286.4111	203.38	206.54	3.17	50.01	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1904595-003.03	0.6082 ppm	0.1131 ppm	18.6000%	2019/05/30 02:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6882	6.8816	13.63	16.75	3.12	50.00	10:28
2	TOC	0.5282	5.2817	12.55	15.51	2.96	50.02	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1904613-001.06	2.4356 ppm	0.0497 ppm	2.0400%	2019/05/30 02:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4707	24.7073	25.73	28.77	3.03	50.03	10:31
2	TOC	2.4005	24.0046	25.26	28.32	3.07	50.03	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1904613-002.06	2.5894 ppm	0.0284 ppm	1.1000%	2019/05/30 03:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5693	25.6929	26.40	29.51	3.11	50.02	10:28
2	TOC	2.6095	26.0950	26.67	29.77	3.09	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 6

	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)	24.5788 ppm (PASS)	0.0000 ppm	0%	2019/05/30 03:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5788	245.7881	176.30	179.33	3.02	50.04	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 6

	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%	2019/05/30 03:48

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.83	11.06	3.23	50.04	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1904613-003.06	2.5995 ppm	0.0102 ppm	0.3900%	2019/05/30 04:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6067	26.0671	26.65	29.67	3.02	50.02	10:27
2	TOC	2.5923	25.9227	26.56	29.56	3.00	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1904613-004.06	2.3275 ppm	0.0241 ppm	1.0300%	2019/05/30 04:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3104	23.1044	24.64	27.91	3.27	50.03	10:27
2	TOC	2.3445	23.4448	24.88	27.86	2.99	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1904613-005.06	4.1967 ppm	0.0285 ppm	0.6800%	2019/05/30 04:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2169	42.1691	37.58	40.53	2.95	50.05	10:29

2	TOC	4.1765	41.7655	37.31	40.34	3.03	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1904613-006.06	0.9607 ppm	0.0215 ppm	2.2300%	2019/05/30 05:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9759	9.7587	15.58	18.53	2.95	50.04	10:24
2	TOC	0.9455	9.4552	15.38	18.48	3.10	50.06	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1904613-007.06	2.6817 ppm	0.0181 ppm	0.6800%	2019/05/30 05:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.6689	26.6887	27.08	30.10	3.03	50.09	10:27
2	TOC	2.6945	26.9451	27.25	30.17	2.92	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1904613-008.06	5.2244 ppm	0.0572 ppm	1.0900%	2019/05/30 06:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2648	52.6480	44.70	47.62	2.92	50.10	10:28
2	TOC	5.1839	51.8392	44.15	47.00	2.85	50.11	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1904613-009.06	5.2388 ppm	0.0255 ppm	0.4900%	2019/05/30 06:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2568	52.5685	44.64	47.56	2.91	50.09	10:31
2	TOC	5.2208	52.2075	44.40	47.41	3.01	50.11	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

◈	36	TOC	K1904613-010.06	1.4725 ppm	0.0196 ppm	1.3300%	2019/05/30 07:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4863	14.8634	19.05	22.04	2.99	50.11	10:29
2	TOC	1.4586	14.5864	18.86	21.85	2.99	50.10	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1904613-011.06	2.9735 ppm	0.0222 ppm	0.7500%	2019/05/30 07:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9578	29.5777	29.04	31.97	2.93	50.09	10:27
2	TOC	2.9891	29.8915	29.25	32.33	3.08	50.07	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1904613-012.06	1.6647 ppm	0.0140 ppm	0.8400%	2019/05/30 08:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6746	16.7461	20.33	23.41	3.08	50.08	10:32
2	TOC	1.6549	16.5487	20.19	23.25	3.05	50.05	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 6

	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)	24.5548 ppm (PASS)	0.0000 ppm	0%	2019/05/30 08:44

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5548	245.5480	176.14	179.11	2.97	50.04	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 6

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% 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%	2019/05/30 08:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.81	10.96	3.15	50.02	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/30 09:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.37	10.42	3.05	50.06	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 6

	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)	25.0701 ppm (PASS)	0.0000 ppm	0%	2019/05/30 09:28

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0701	250.7012	179.64	182.63	3.00	50.00	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1904613-013.06	0.2197 ppm	0.0823 ppm	37.4600%	2019/05/30 09:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2779	2.7787	10.85	13.84	2.99	50.03	10:27
2	TOC	0.1615	1.6149	10.06	13.14	3.08	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1904613-014.06	12.5156 ppm	0.1533 ppm	1.2300%	2019/05/30 10:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.6240	126.2403	94.65	97.75	3.09	49.97	10:27
2	TOC	12.4072	124.0717	93.18	96.37	3.19	49.95	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1904613-015.18	3.7099 ppm	0.1082 ppm	2.9200%	2019/05/30 10:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.7864	37.8644	34.66	37.58	2.91	49.95	10:30
2	TOC	3.6334	36.3338	33.62	36.54	2.92	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1904613-015.18 ms	29.2218 ppm	0.0000 ppm	0.0000%	2019/05/30 11:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.2218	292.2185	207.32	210.34	3.02	49.91	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/30 11:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.95	12.05	3.09	49.91	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K1904613-016.06	4.2675 ppm	0.0032 ppm	0.0800%	2019/05/30 11:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	4.2698	42.6980	37.94	41.06	3.11	49.87	10:28
2	TOC	4.2652	42.6523	37.91	40.96	3.05	49.92	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1904613-016.06 ms	30.0831 ppm	0.0000 ppm	0.0000%	2019/05/30 12:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	30.0831	300.8308	213.16	216.12	2.95	50.02	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/30 12:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.84	11.79	2.95	50.00	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 6

	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)	24.6815 ppm (PASS)	0.0000 ppm	0%	2019/05/30 12:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6815	246.8149	177.00	180.10	3.10	50.07	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 6

	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%	2019/05/30 12:48

	Base		Rep							Run

Pos	Analysis Type	ID	#	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Time
D	TOC	0 ppm	1	0.0000	0.0000	8.23	11.21	2.98	50.01	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1904613-017.06	3.4462 ppm	0.0372 ppm	1.0800%	2019/05/30 13:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.4725	34.7251	32.53	35.51	2.98	50.08	10:29
2	TOC	3.4199	34.1991	32.17	35.13	2.96	50.10	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1904613-018.06	1.0217 ppm	0.0256 ppm	2.5100%	2019/05/30 13:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0398	10.3981	16.02	19.16	3.14	50.06	10:24
2	TOC	1.0036	10.0357	15.77	18.91	3.14	50.10	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1904613-019.06	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/30 13:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.85	11.86	3.01	50.11	10:28
2	TOC	0.0000	0.0000	8.52	11.80	3.28	50.08	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1904650-001.04 4x	3.6556 ppm	0.0283 ppm	0.7800%	2019/05/30 14:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.6356	36.3559	33.64	36.74	3.11	50.03	10:26
2	TOC	3.6757	36.7566	33.91	36.89	2.97	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1904659-001.08	3.6194 ppm	0.0246 ppm	0.6800%	2019/05/30 14:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.6020	36.0200	33.41	36.50	3.09	50.07	10:28
2	TOC	3.6368	36.3677	33.65	36.50	2.85	50.09	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	K1904659-002.08	4.8365 ppm	0.0454 ppm	0.9400%	2019/05/30 15:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.8687	48.6866	42.01	44.95	2.94	50.14	10:26
2	TOC	4.8044	48.0443	41.57	44.56	2.99	50.13	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1904659-003.08	5.2274 ppm	0.0517 ppm	0.9900%	2019/05/30 15:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2639	52.6392	44.69	47.73	3.04	50.08	10:26
2	TOC	5.1908	51.9085	44.20	47.19	3.00	50.11	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1904659-004.14	4.7841 ppm	0.0892 ppm	1.8600%	2019/05/30 16:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.7210	47.2104	41.01	43.91	2.90	50.12	10:27
2	TOC	4.8471	48.4715	41.86	44.74	2.88	50.11	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1904659-004.14 ms	30.5342 ppm	0.0000 ppm	0.0000%	2019/05/30 16:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	30.5342	305.3417	216.22	219.27	3.04	50.12	10:33

Dilution
1:10

Blank Contribution
(TC) 8.9608 (IC) (v1261)

Method
CAS_salt_010711 (v4)

Calibration
CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/30 17:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.40	11.52	3.12	50.14	10:30

Dilution
1:10

Blank Contribution
(TC) 8.9608 (IC) (v1261)

Method
CAS_salt_010711 (v4)

Calibration
CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 6

	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)	24.4546 ppm (PASS)	0.0000 ppm	0%	2019/05/30 17:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4546	244.5462	175.46	178.56	3.10	50.16	10:33

Completion State
Success - Criteria met.

Success Action
Do Nothing

Method
CAS_salt_010711 (v4)

Calibration
CAS_salt_010711 (v30)

STD Conc - Pos B
50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 6

	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%	2019/05/30 17:31

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.98	11.14	3.16	50.17	10:32

Completion State
Success - Criteria met.

Success Action
Do Nothing

Method
CAS_salt_010711 (v4)

Calibration
CAS_salt_010711 (v30)

STD Conc - Pos D
0 ppmC

Sample Type: Sample

From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/30 17:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.28	10.32	3.04	50.17	10:30

Dilution: 1:10

Blank Contribution: (TC) 8.9608 (IC) (v1261)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 6

	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)	25.1430 ppm (PASS)	0.0000 ppm	0%	2019/05/30 18:00

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1430	251.4305	180.13	183.16	3.03	50.17	10:33

Completion State: Success - Criteria met.

Success Action: Do Nothing

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

STD Conc - Pos C: 25 ppmC

Sample Type: Sample

From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1904659-005.08	6.1033 ppm	0.0451 ppm	0.7400%	2019/05/30 18:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.1352	61.3517	50.61	53.76	3.16	50.22	10:29
2	TOC	6.0714	60.7138	50.17	53.24	3.06	50.22	10:26

Dilution: 1:10

Blank Contribution: (TC) 8.9608 (IC) (v1261)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1904659-006.08	2.3340 ppm	0.0308 ppm	1.3200%	2019/05/30 18:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3558	23.5582	24.95	27.89	2.94	50.14	10:31
2	TOC	2.3122	23.1221	24.66	27.86	3.21	50.09	10:29

Dilution: 1:10

Blank Contribution: (TC) 8.9608 (IC) (v1261)

Method: CAS_salt_010711 (v4)

Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	K1904684-001.11	0.6604 ppm	0.0311 ppm	4.7200%	2019/05/30 19:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6384	6.3836	13.29	16.44	3.15	50.01	10:28
2	TOC	0.6824	6.8241	13.59	16.60	3.00	49.92	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1904684-002.18	0.3034 ppm	0.0236 ppm	7.7900%	2019/05/30 19:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2867	2.8671	10.91	13.91	3.00	49.87	10:25
2	TOC	0.3202	3.2015	11.13	14.27	3.13	49.83	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1904684-002.18 ms	25.7713 ppm	0.0000 ppm	0.0000%	2019/05/30 20:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.7713	257.7132	183.90	186.95	3.05	49.81	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/30 20:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.87	10.93	3.05	49.83	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1904684-003.11	0.2578 ppm	0.0452 ppm	17.5300%	2019/05/30 20:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2898	2.8980	10.93	13.81	2.88	49.81	10:29
2	TOC	0.2259	2.2587	10.49	13.65	3.16	49.79	10:27

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1904684-004.11	0.6345 ppm	0.0150 ppm	2.3600%	2019/05/30 21:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6451	6.4514	13.34	16.41	3.07	49.79	10:27
2	TOC	0.6239	6.2392	13.20	16.34	3.14	49.81	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 6

	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)	24.7529 ppm (PASS)	0.0000 ppm	0%	2019/05/30 21:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.7529	247.5294	177.48	180.60	3.11	49.83	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 6

	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%	2019/05/30 21:48

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.64	10.79	3.14	49.80	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 6

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1904686-001.07	0.6412 ppm	0.0055 ppm	0.8600%	2019/05/30 22:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6451	6.4514	13.34	16.48	3.14	49.82	10:31
2	TOC	0.6373	6.3733	13.29	16.40	3.11	49.84	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	K1904686-002.07	0.3381 ppm	0.0227 ppm	6.7200%	2019/05/30 22:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3542	3.5418	11.36	14.42	3.06	49.85	10:26
2	TOC	0.3221	3.2207	11.15	14.17	3.02	49.86	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1904684-001.08 doc	12.0003 ppm	0.3557 ppm	2.9600%	2019/05/30 22:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.7488	117.4880	88.71	91.63	2.92	49.87	10:25
2	TOC	12.2519	122.5190	92.13	95.15	3.02	49.87	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1904684-002.15 doc	2.1051 ppm	0.0650 ppm	3.0900%	2019/05/30 23:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1510	21.5104	23.56	26.91	3.35	49.89	10:26
2	TOC	2.0591	20.5912	22.94	25.91	2.97	49.90	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1904684-002.15 ms doc	28.2190 ppm	0.0000 ppm	0.0000%	2019/05/30 23:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2190	282.1904	200.51	203.65	3.14	49.89	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC)	CAS_salt_010711	CAS_salt_010711

(v1261) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/31 00:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.75	10.80	3.05	49.91	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	73	TOC	K1904684-003.08 doc	3.1083 ppm	0.0217 ppm	0.7000%	2019/05/31 00:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0930	30.9301	29.96	32.94	2.99	49.90	10:28
2	TOC	3.1237	31.2365	30.16	33.15	2.99	49.91	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	74	TOC	K1904684-004.08 doc	9.6190 ppm	0.1004 ppm	1.0400%	2019/05/31 00:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.5480	95.4799	73.77	76.78	3.01	49.91	10:25
2	TOC	9.6900	96.9000	74.74	78.02	3.28	49.96	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	75	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/31 01:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.07	11.00	2.93	49.94	10:29
2	TOC	0.0000	0.0000	7.46	10.42	2.96	49.94	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.9608 (IC) (v1261)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 6

	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	24.5794	0.0000	0%	2019/05/31 01:49

					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	24.5794	245.7940	176.31	179.57	3.27	49.94	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 6

	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%	2019/05/31 02:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.57	10.63	3.06	49.95	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	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
v1260	1.1683	1.2700	0.0000	0.0000	0.0000	2019/05/24 13:06	Fusion1 (Fusion1)
v1261	2.2230	2.3490	0.0000	0.0000	0.0000	2019/05/29 13:22	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

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	2019/05/31 02:21

ALS Environmental

StarLIMS Run: 637429, 637430, 637431, 637432,

Analysis: TOC/DOC

Method: 415.1, SM 5310 C, 9060, 9060A

CCV: 11-GEN-05-77K 50 ppm LCS: 11-GEN-05-77D 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-78B

21 % H3PO4: 11-GEN-05-78C

Equipment ID: K-TOC-03

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

FILTER ID: NA

Analyzed By: BCD	Date Analyzed: 5/29/19
Reviewed By:	Date Reviewed: 05/31/19

2655 Park Center Dr., Suite A
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LABORATORY REPORT

June 3, 2019

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

RE: HS19051208

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on May 22, 2019. For your reference, these analyses have been assigned our service request number P1902949.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 1:04, June 03, 2019

Hayden Akers
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: ALS Laboratory Group
Project: HS19051208

Service Request No: P1902949

CASE NARRATIVE

The samples were received intact under chain of custody on May 22, 2019 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1521096
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-006
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

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ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS19051208

Service Request: P1902949

Date Received: 5/22/2019
Time Received: 09:21

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35-BWW26-190520	P1902949-001	Water	5/20/2019	10:40	X	X
35-BWW08-190520	P1902949-002	Water	5/20/2019	11:50	X	X
35-BWW04-190520	P1902949-003	Water	5/20/2019	12:45	X	X

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: **Texas**

COC ID: **11342**

SUBCONTRACT TO:

P1903949

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

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:	HS19051208
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19051208-05**	**35-BWW26-190520**	**Groundwater**	**20 May 2019 10:40**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			30 May 2019
2.	**HS19051208-06**	**35-BWW08-190520**	**Groundwater**	**20 May 2019 11:50**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			30 May 2019
3.	**HS19051208-07**	**35-BWW04-190520**	**Groundwater**	**20 May 2019 12:45**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			30 May 2019

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: 5/21/19 1800

Received By: _____ Date/Time: 5/22/19 0921

Cooler ID(s): _____ Temperature(s): 3°C wet ice
TEMP Blank

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1902949

Project: HS19051208

Sample(s) received on: 5/22/19 Date opened: 5/22/19 by: SANDERSON

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C Thermometer ID CO907034581 Wet Ice			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Sealing Lid of Cooler Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1902949-001.01	40mL VOA NP		6		A	wh 5/29/19
P1902949-001.02	40mL VOA NP				A	
P1902949-001.03	40mL VOA NP				A	
P1902949-001.04	40ml VOA HCL		1		A	wh 5/28/19
P1902949-001.05	40ml VOA HCL				A	
P1902949-001.06	40ml VOA HCL				A	
P1902949-002.01	40mL VOA NP		6		A	wh 5/29/19
P1902949-002.02	40mL VOA NP				A	
P1902949-002.03	40mL VOA NP				A	
P1902949-002.04	40ml VOA HCL		1		A	wh 5/28/19
P1902949-002.05	40ml VOA HCL				A	
P1902949-002.06	40ml VOA HCL				A	
P1902949-003.01	40mL VOA NP		6		A	wh 5/29/19
P1902949-003.02	40mL VOA NP				A	
P1902949-003.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1902949

Project: HS19051208

Sample(s) received on: 5/22/19 Date opened: 5/22/19 by: SANDERSON

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1902949-003.04	40ml VOA HCL		1		A	wh 5/28/19
P1902949-003.05	40ml VOA HCL				A	
P1902949-003.06	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS19051208** ALS Project ID: P1902949

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 5/20/19
Analyst: Wade Henton Date Received: 5/22/19
Matrix: Water Date Analyzed: 5/29/19
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35-BWW26-190520	P1902949-001	0.050	**580,000**	2,000	1,700	740	
35-BWW08-190520	P1902949-002	0.050	**610,000**	2,000	1,700	740	
35-BWW04-190520	P1902949-003	0.050	**670,000**	2,000	1,700	740	
Method Control Sample	P190529-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1902949
Client Project ID: **HS19051208** ALS Sample ID: P190529-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/29/19
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,800	19,200	**86**	**84**	80-122	2	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35-BWW26-190520**
Client Project ID: **HS19051208**

ALS Project ID: P1902949
ALS Sample ID: P1902949-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/20/19
Date Received: 5/22/19
Date Analyzed: 5/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35-BWW08-190520**
Client Project ID: **HS19051208**

ALS Project ID: P1902949
ALS Sample ID: P1902949-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/20/19
Date Received: 5/22/19
Date Analyzed: 5/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35-BWW04-190520**
Client Project ID: **HS19051208**

ALS Project ID: P1902949
ALS Sample ID: P1902949-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/20/19
Date Received: 5/22/19
Date Analyzed: 5/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample** ALS Project ID: P1902949
Client Project ID: **HS19051208** ALS Sample ID: P190528-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/28/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS19051208**

ALS Project ID: P1902949
ALS Sample ID: P190528-LCS
P190528-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.34	2.36	**93**	**94**	73-125	1	26	
74-85-1	Ethene	4.40	5.07	5.17	**115**	**118**	72-133	3	11	
74-84-0	Ethane	4.72	4.68	4.81	**99**	**102**	74-131	3	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 14:06:25
Operator : WH
Sample : P1902949-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:45:29 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

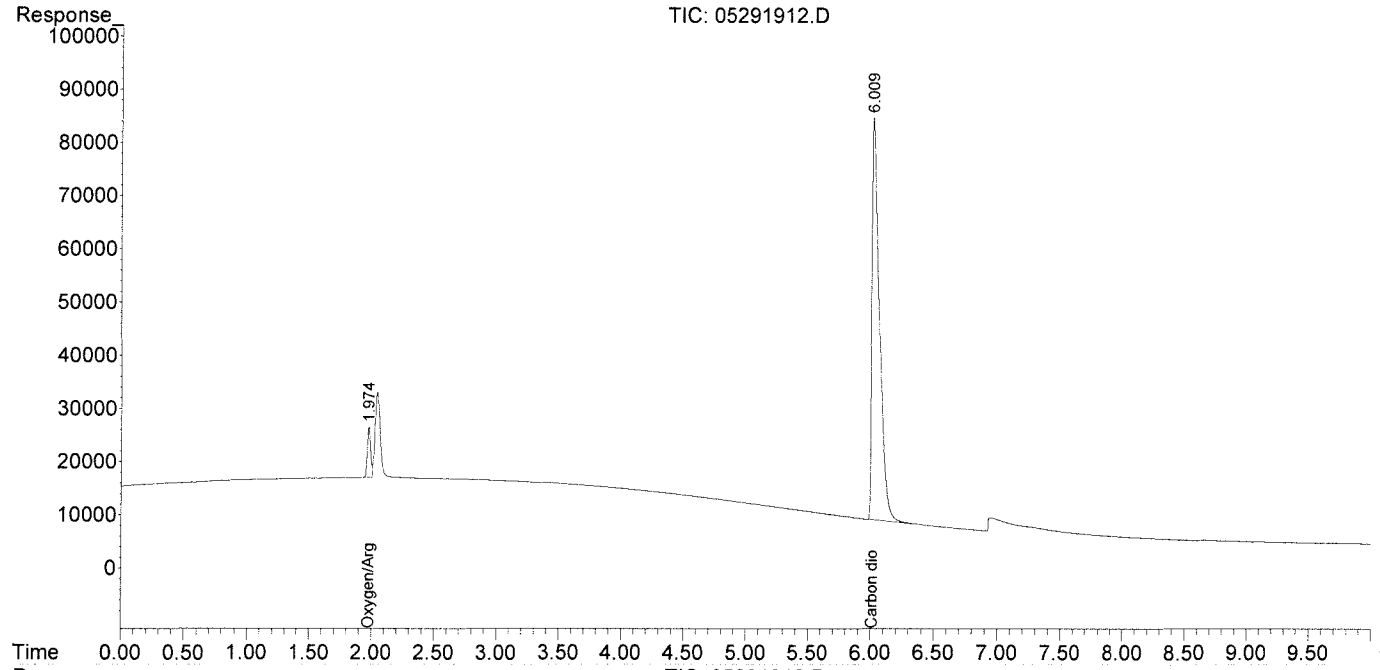
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.975f	173060	0.036	ppm
2)	Carbon monoxide	1.975f	173060	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.011	3137789	13367.699	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

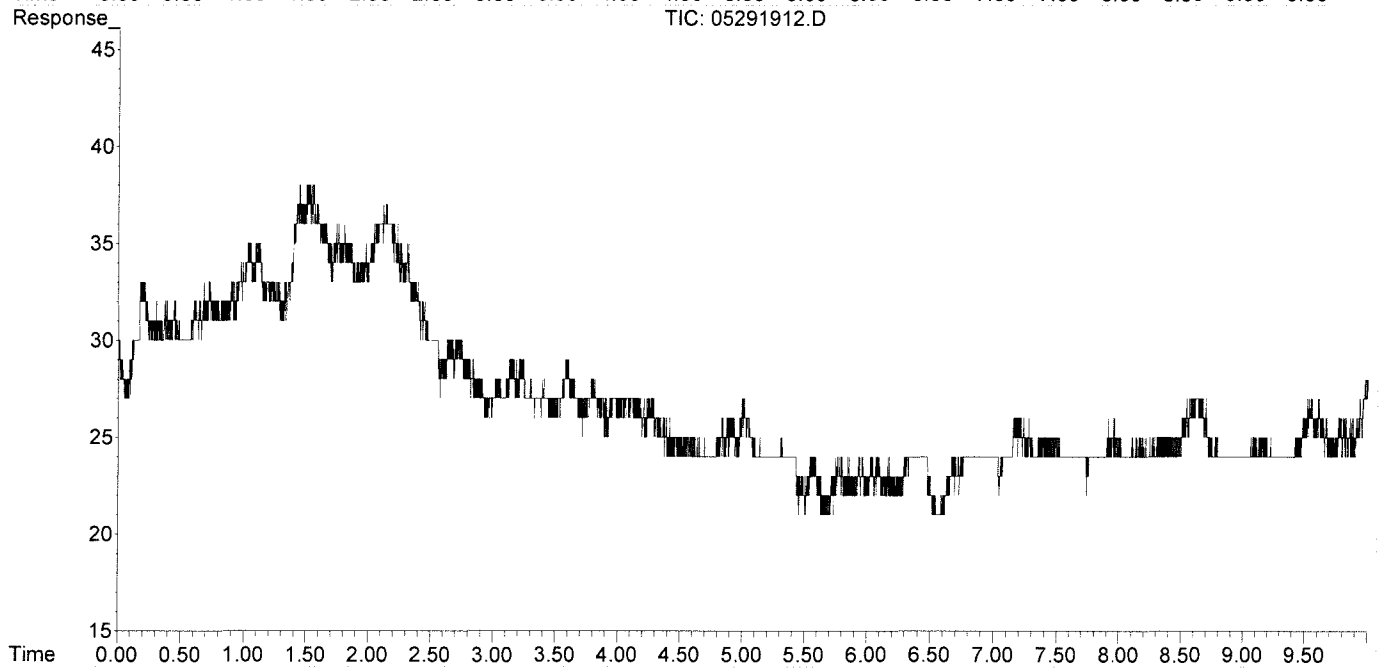
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 14:06:25
Operator : WH
Sample : P1902949-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:45:29 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 14:29:19
Operator : WH
Sample : P1902949-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:45:33 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

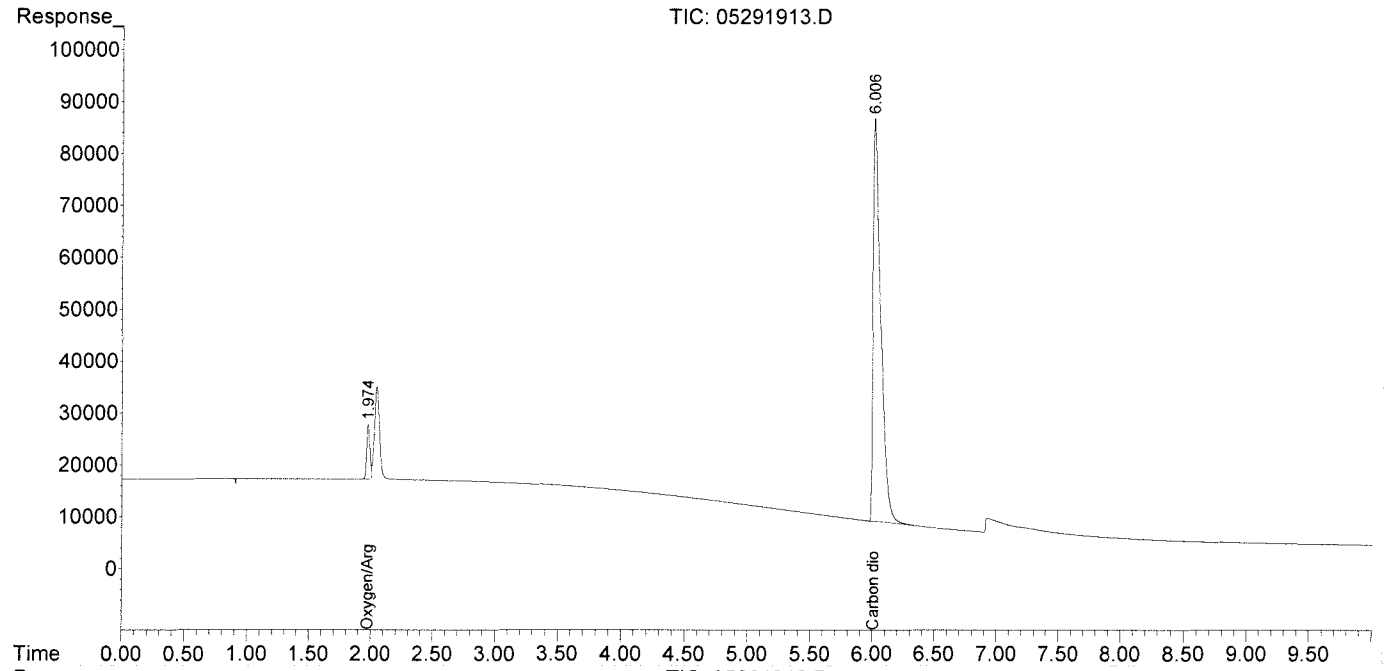
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.975f	188968	0.040	ppm
2)	Carbon monoxide	1.975f	188968	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.007	3286437	14000.973	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

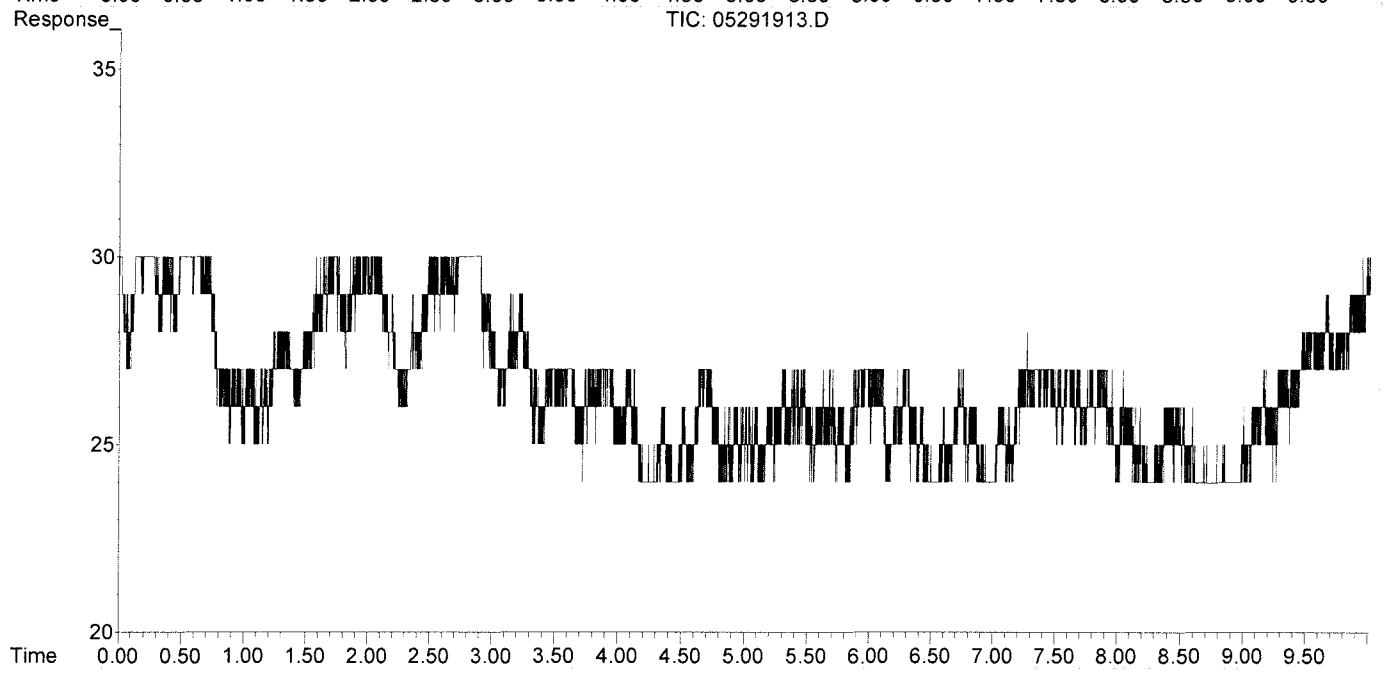
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 14:29:19
Operator : WH
Sample : P1902949-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:45:33 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 14:47:19
Operator : WH
Sample : P1902949-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:45:37 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

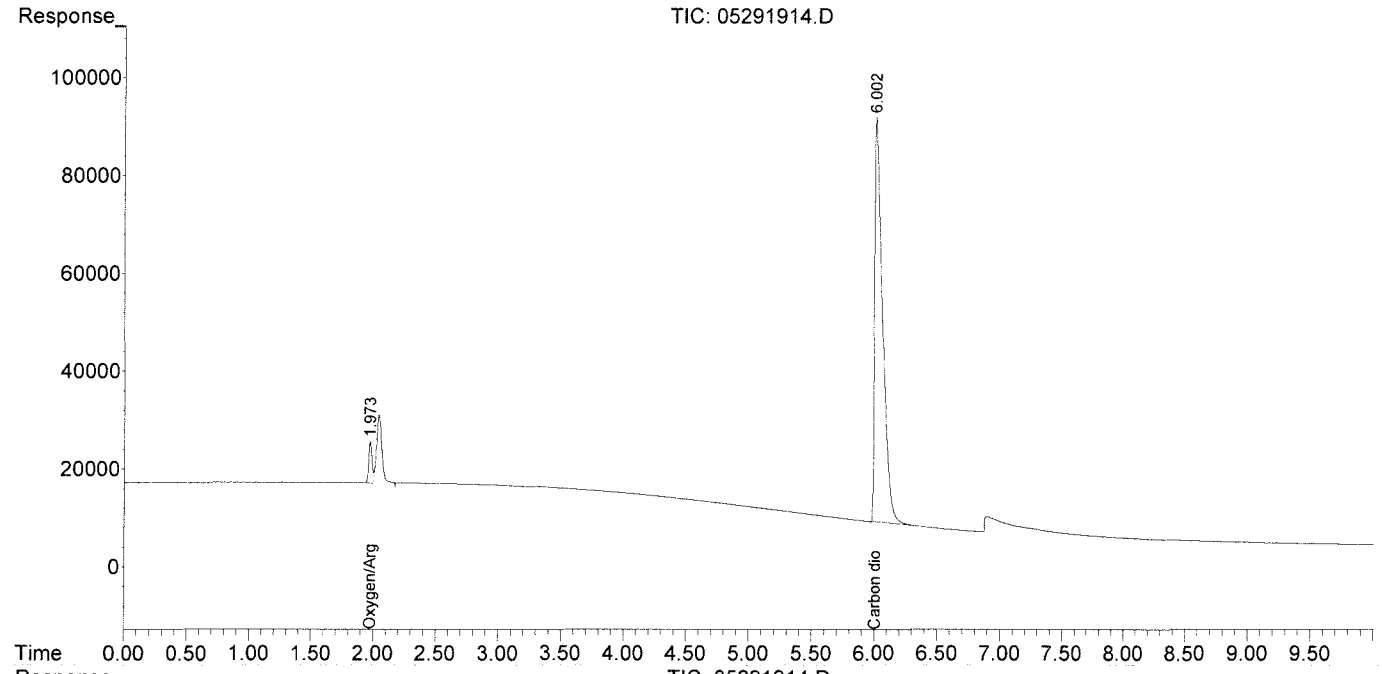
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.973f	156947	0.033	ppm
2)	Carbon monoxide	1.973f	156947	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.003	3601431	15342.920	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

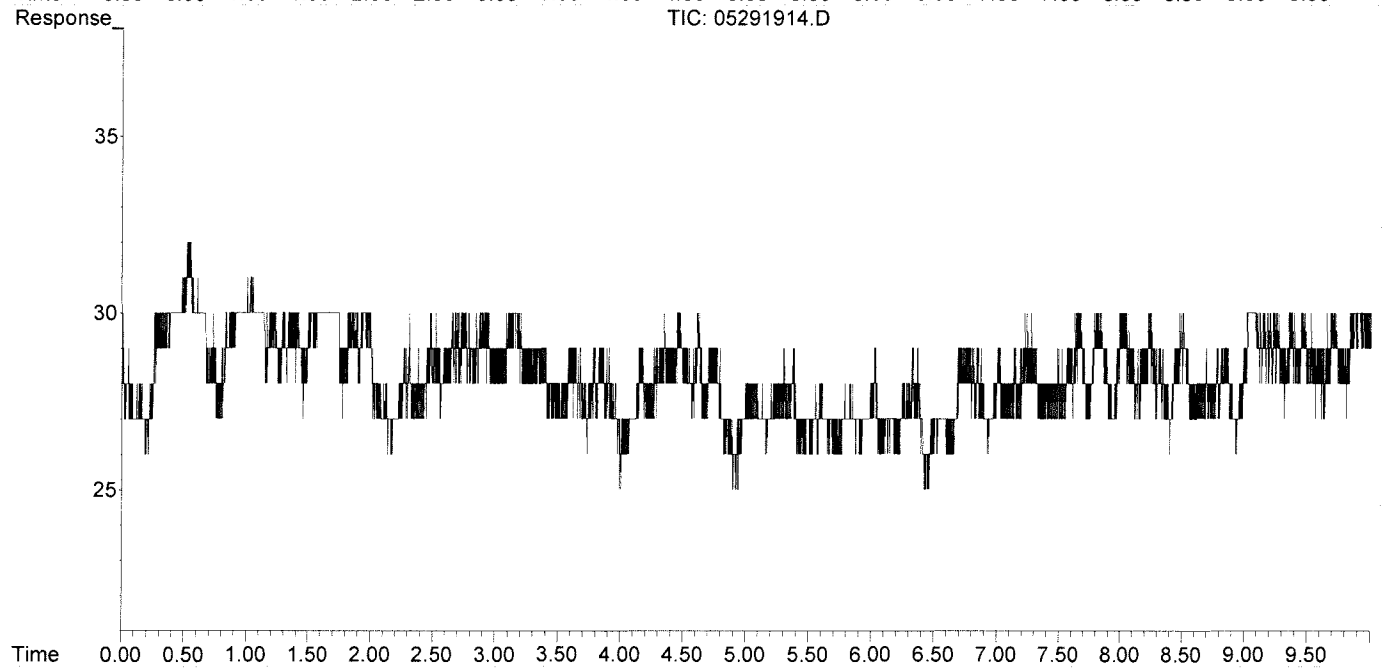
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 14:47:19
Operator : WH
Sample : P1902949-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:45:37 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:59:04
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:40:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

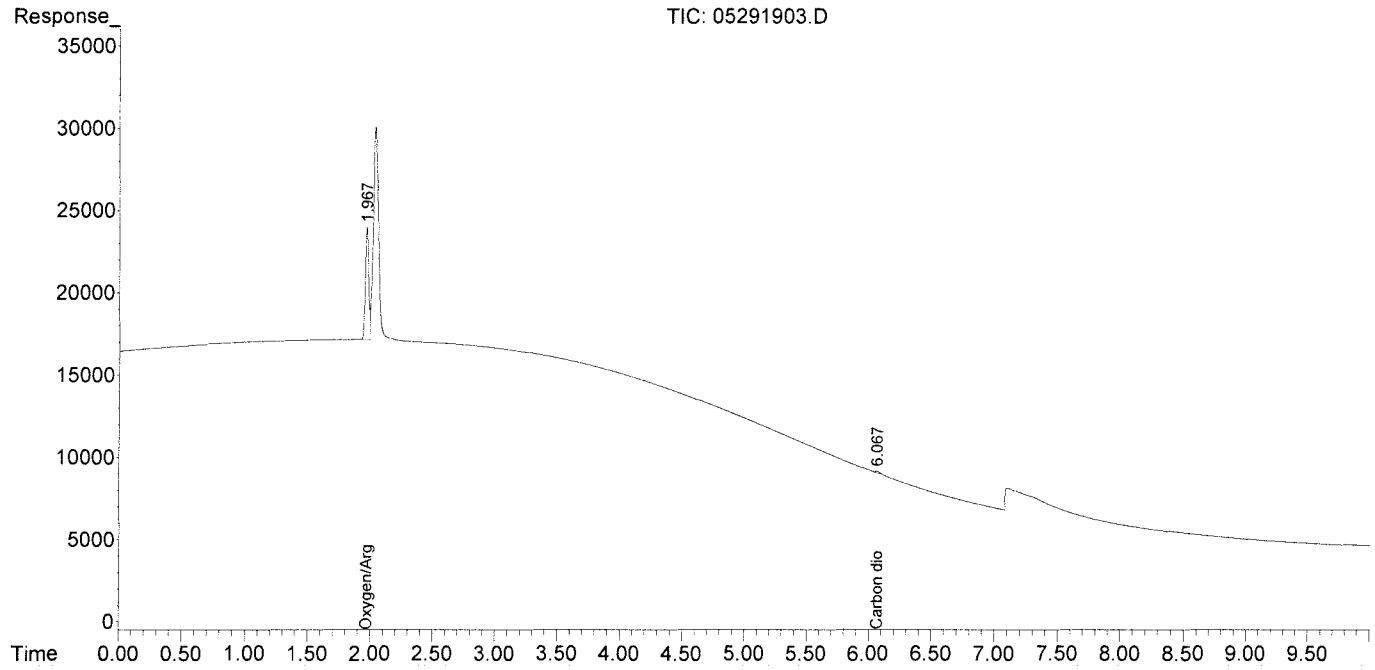
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.967f	126814	0.027	ppm	
2)	Carbon monoxide	1.967f	126814	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.067	2625	11.184	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

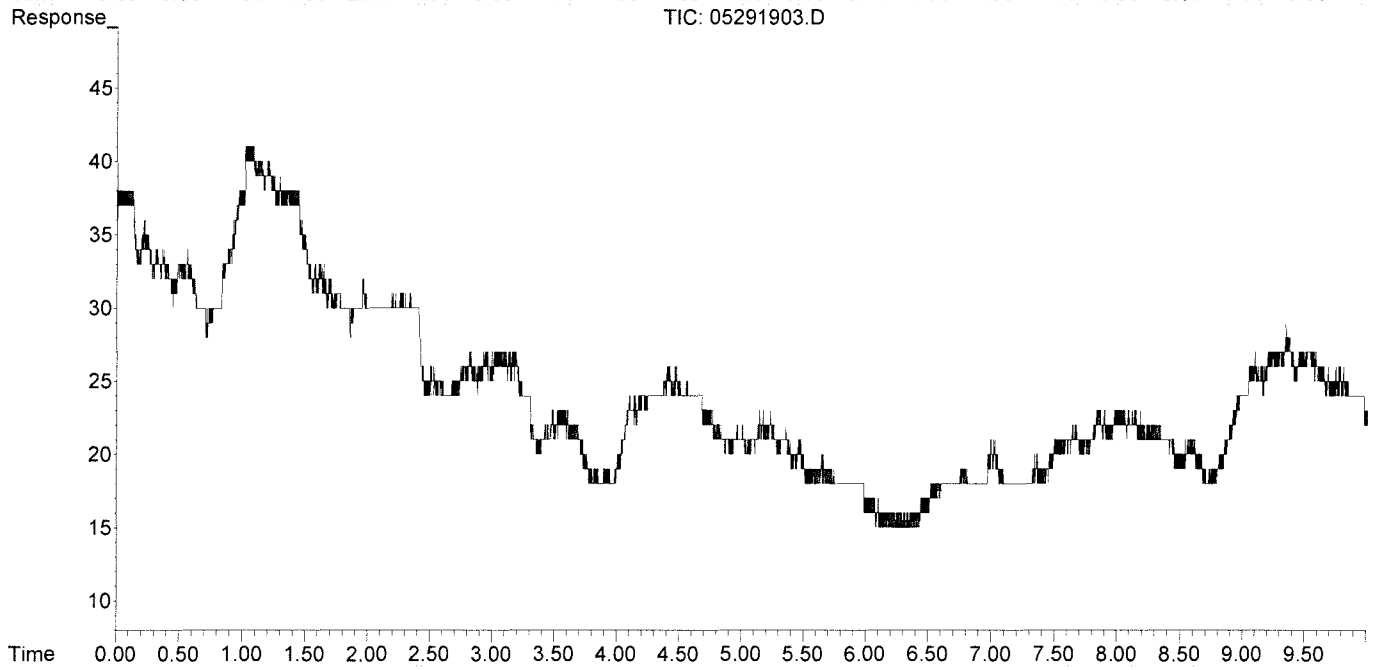
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:59:04
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:40:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

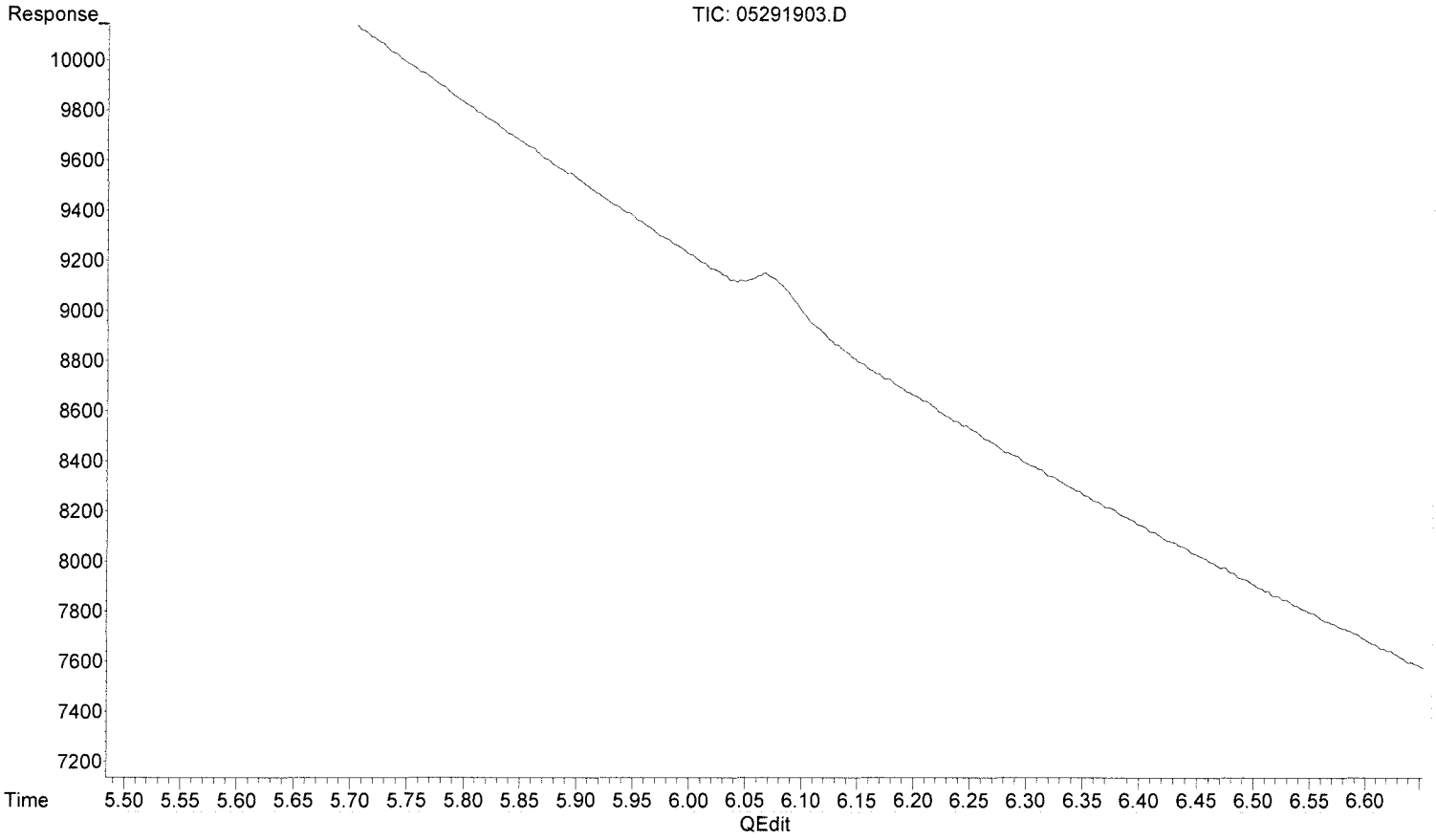




Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:59:04
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:40:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.039min 0.000 ppm

response 0

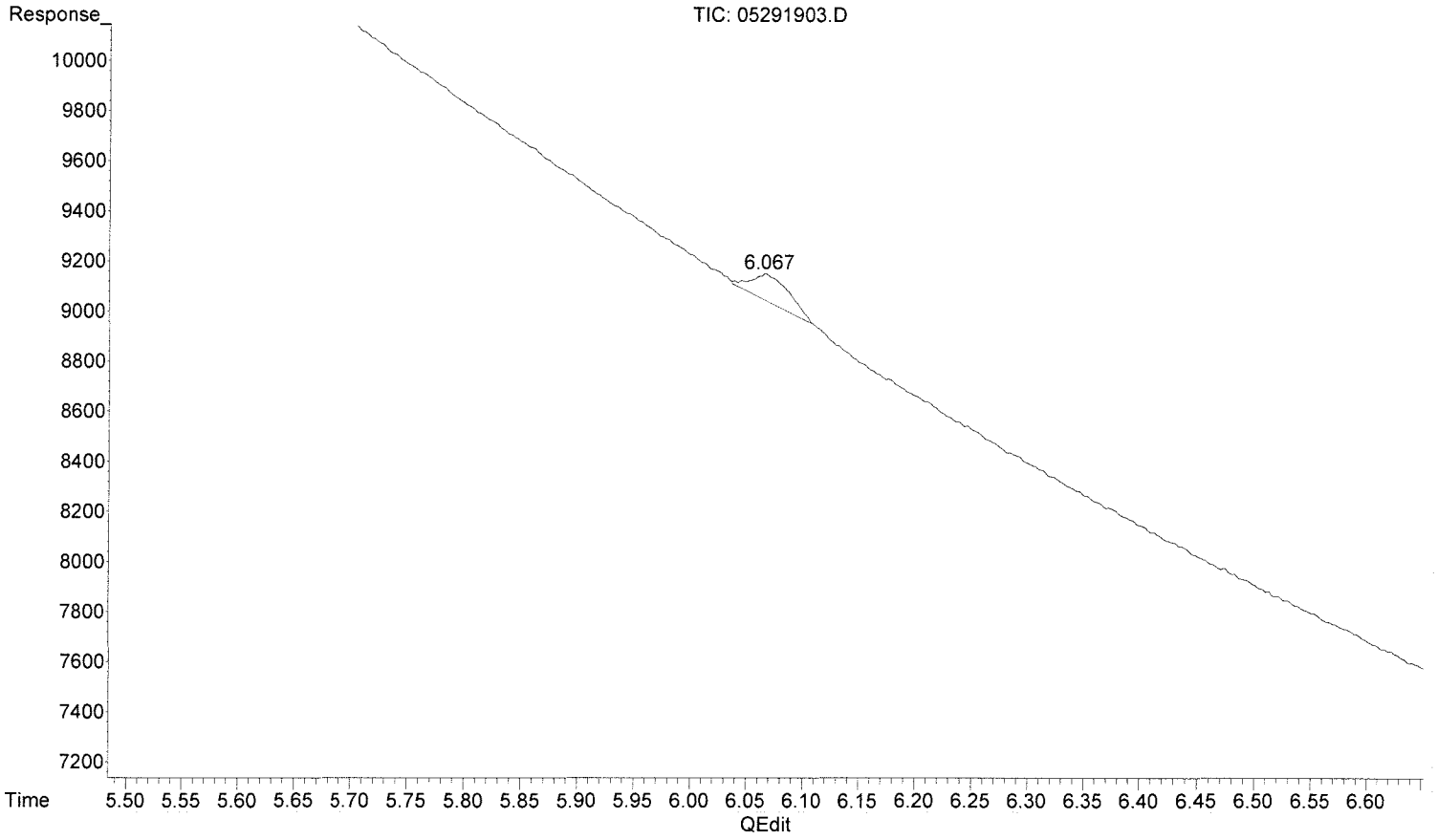
(+) = Expected Retention Time

00956377

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:59:04
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:40:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.067min 11.184 ppm m

response 2625

MF 5/29/19

5/29/19 mc

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:28:16
Operator : WH
Sample : lcs tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 11:45:26 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

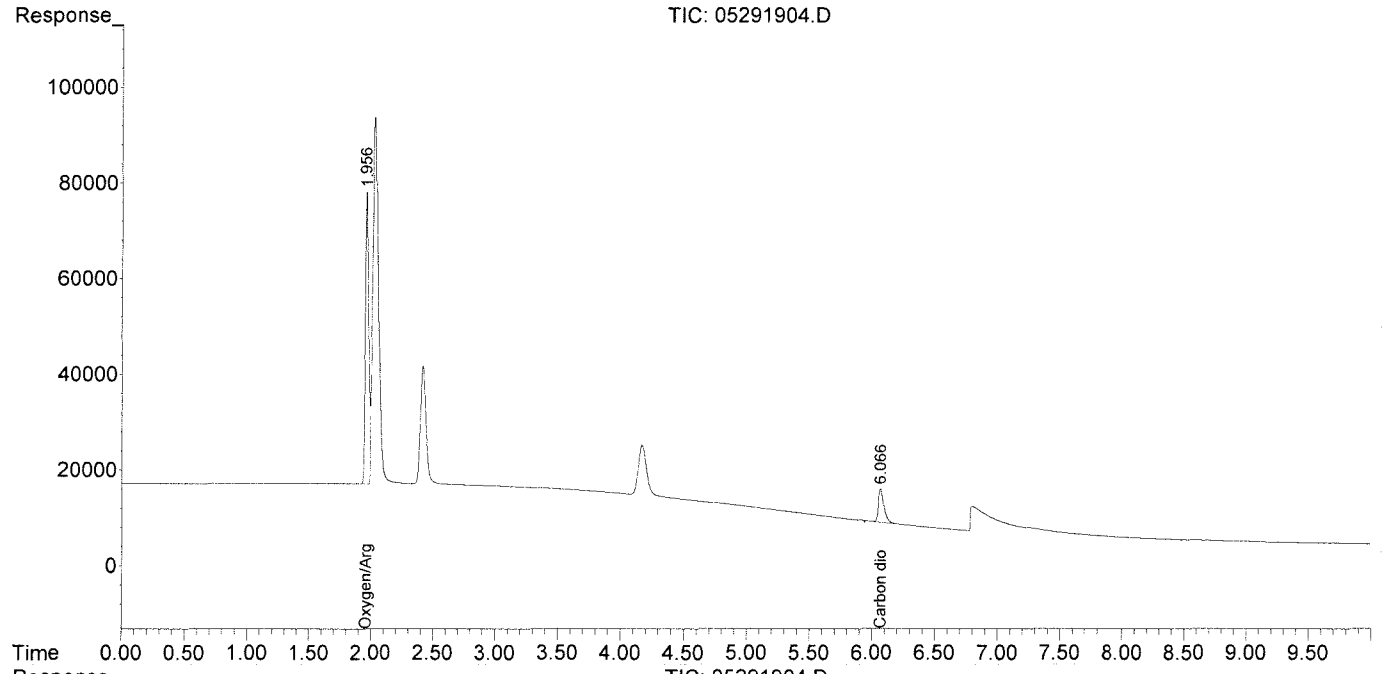
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.957f	1106500	0.232	ppm	
2)	Carbon monoxide	1.957f	1106500	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.066	215894	919.758	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

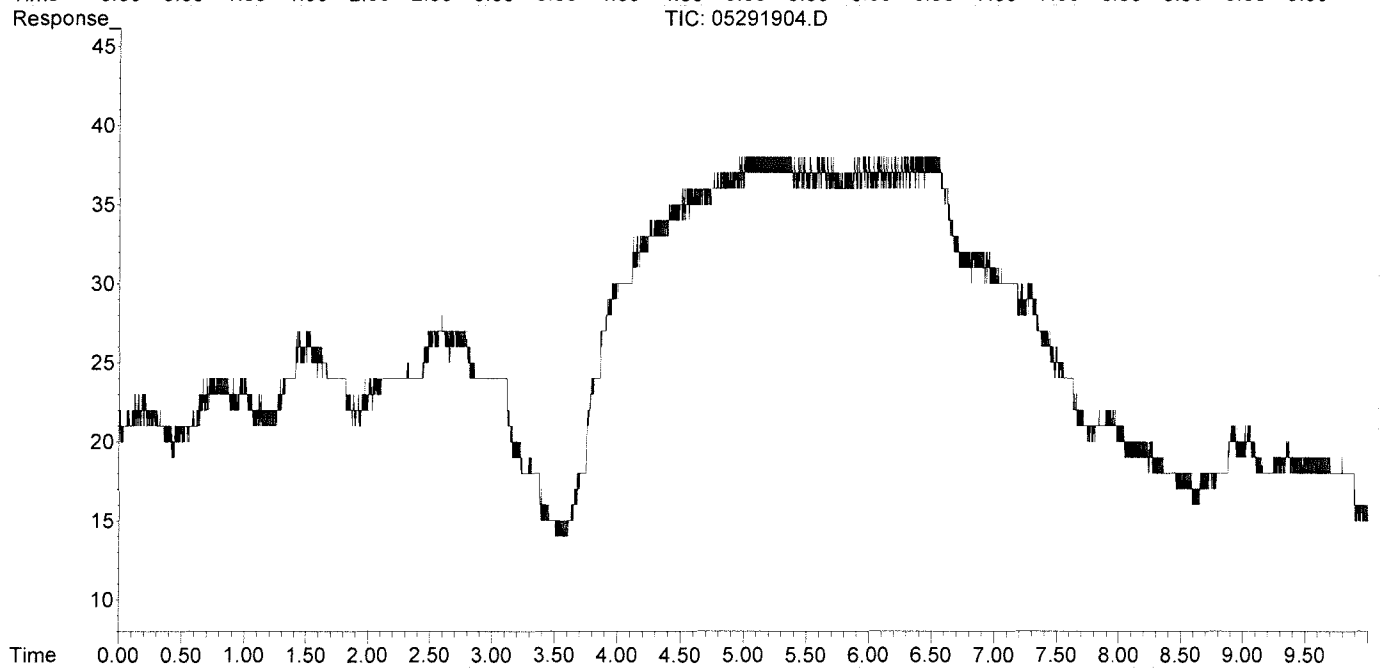
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:28:16
Operator : WH
Sample : lcs tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 11:45:26 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

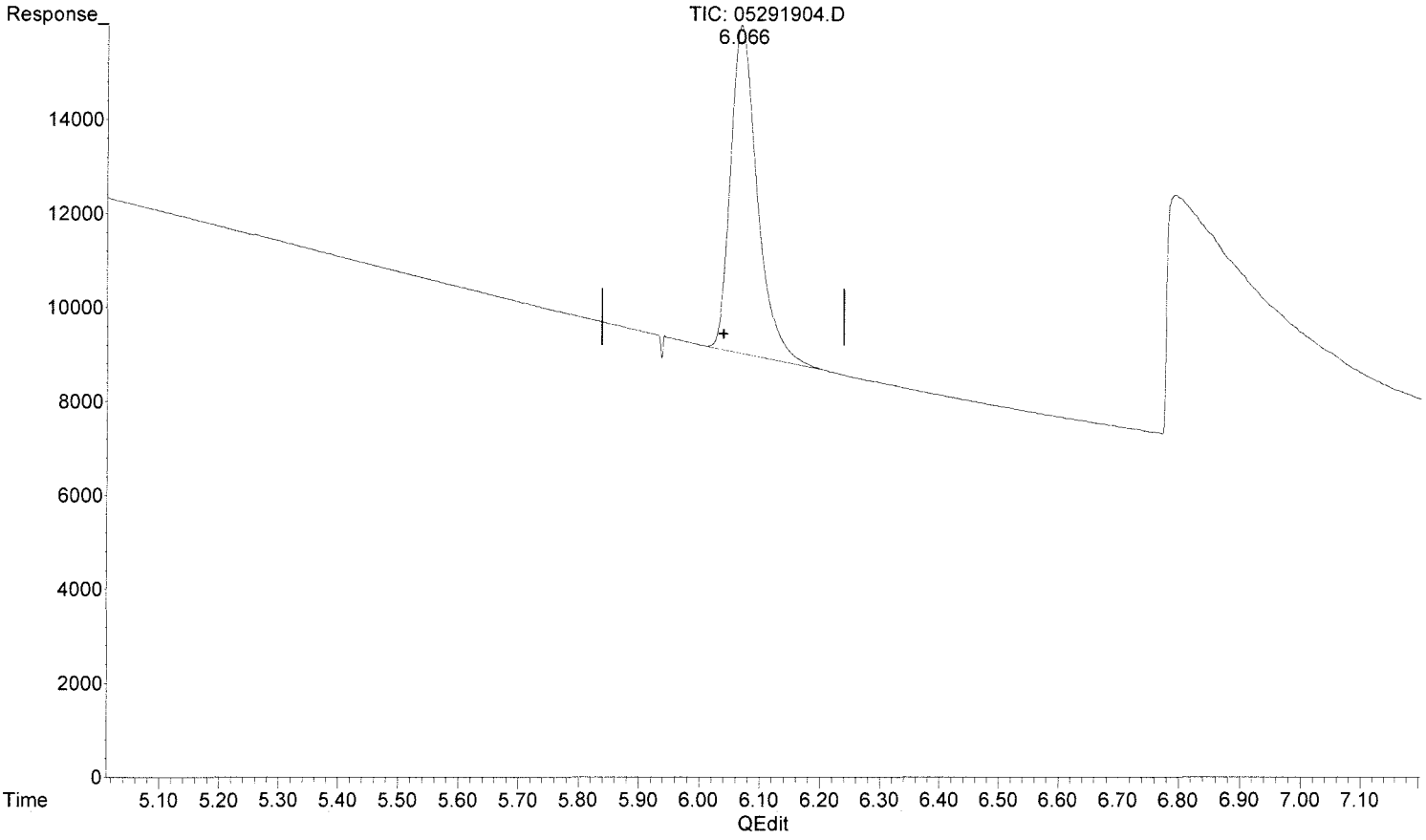




Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:28:16
Operator : WH
Sample : lcs tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 11:45:26 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.066min 919.758 ppm m

response 215894

MR 8/29/19

Lm 8/26/19 Bcc no previous

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:46:24
Operator : WH
Sample : lcsd tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 12:04:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

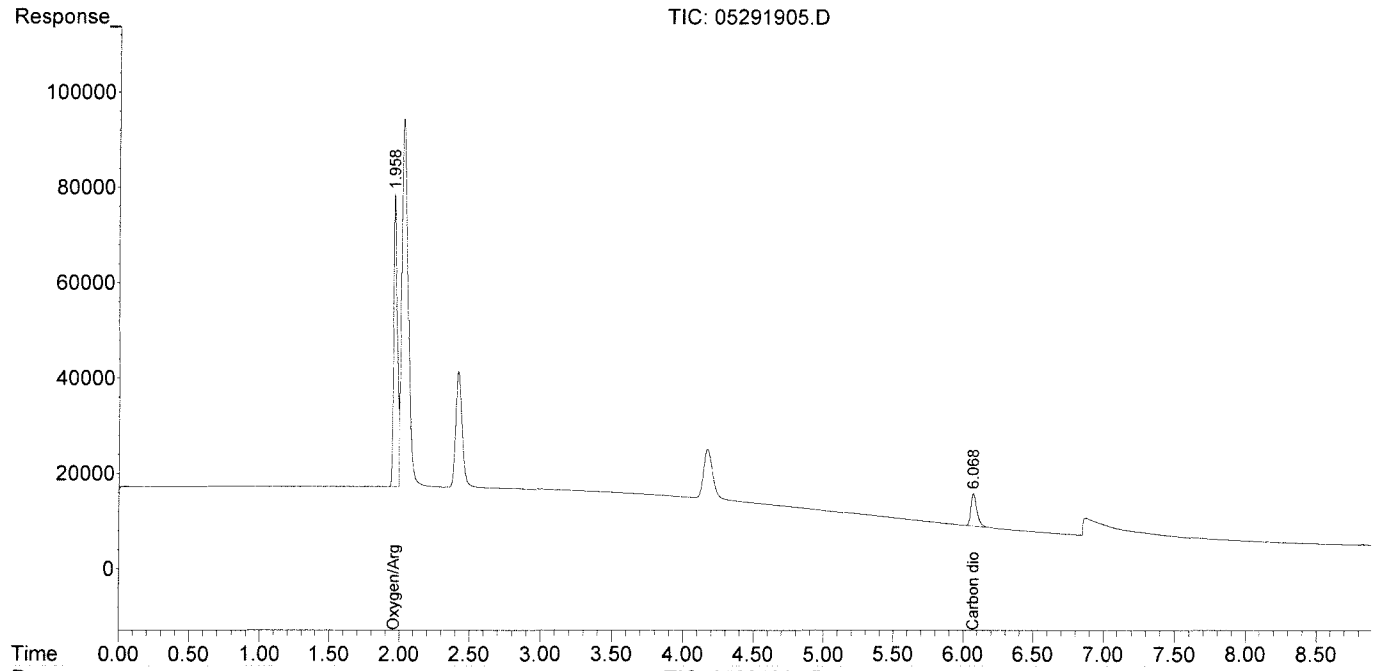
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.959f	1109769	0.233	ppm	
2)	Carbon monoxide	1.959f	1109769	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.068	209211	891.287	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

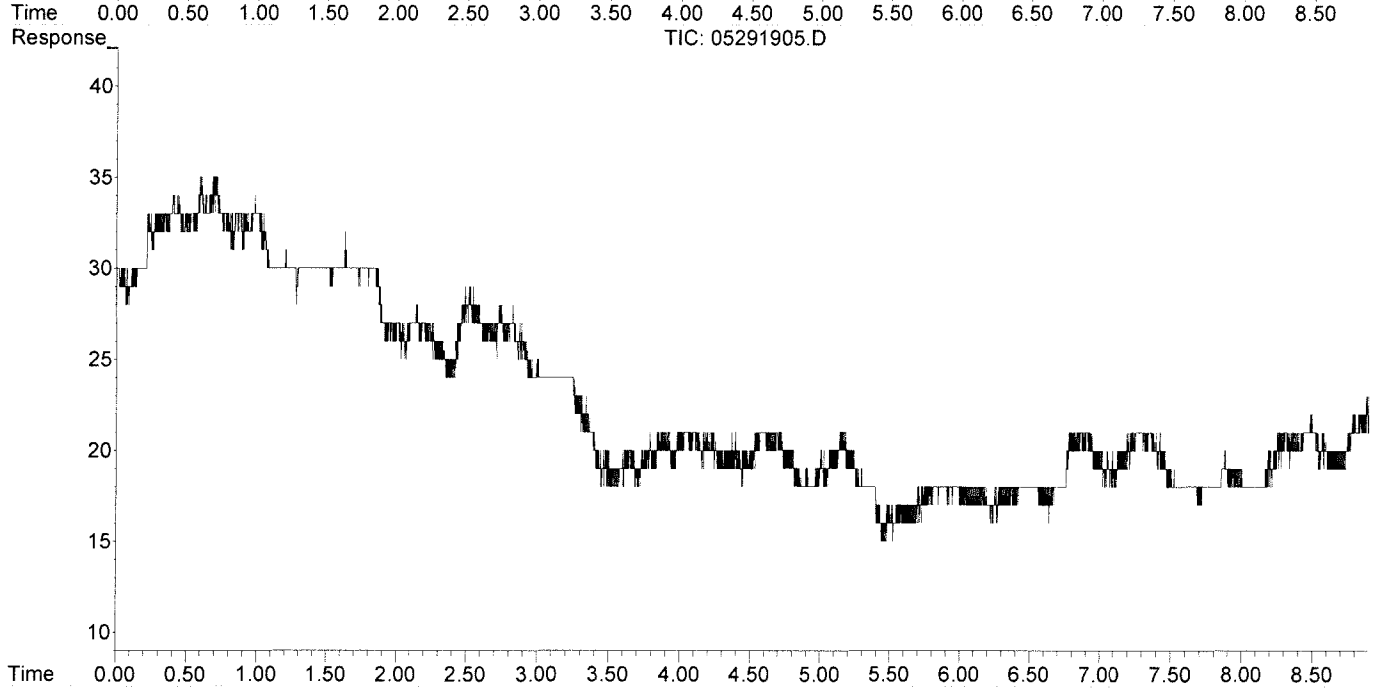
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:46:24
Operator : WH
Sample : lcsd tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 12:04:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

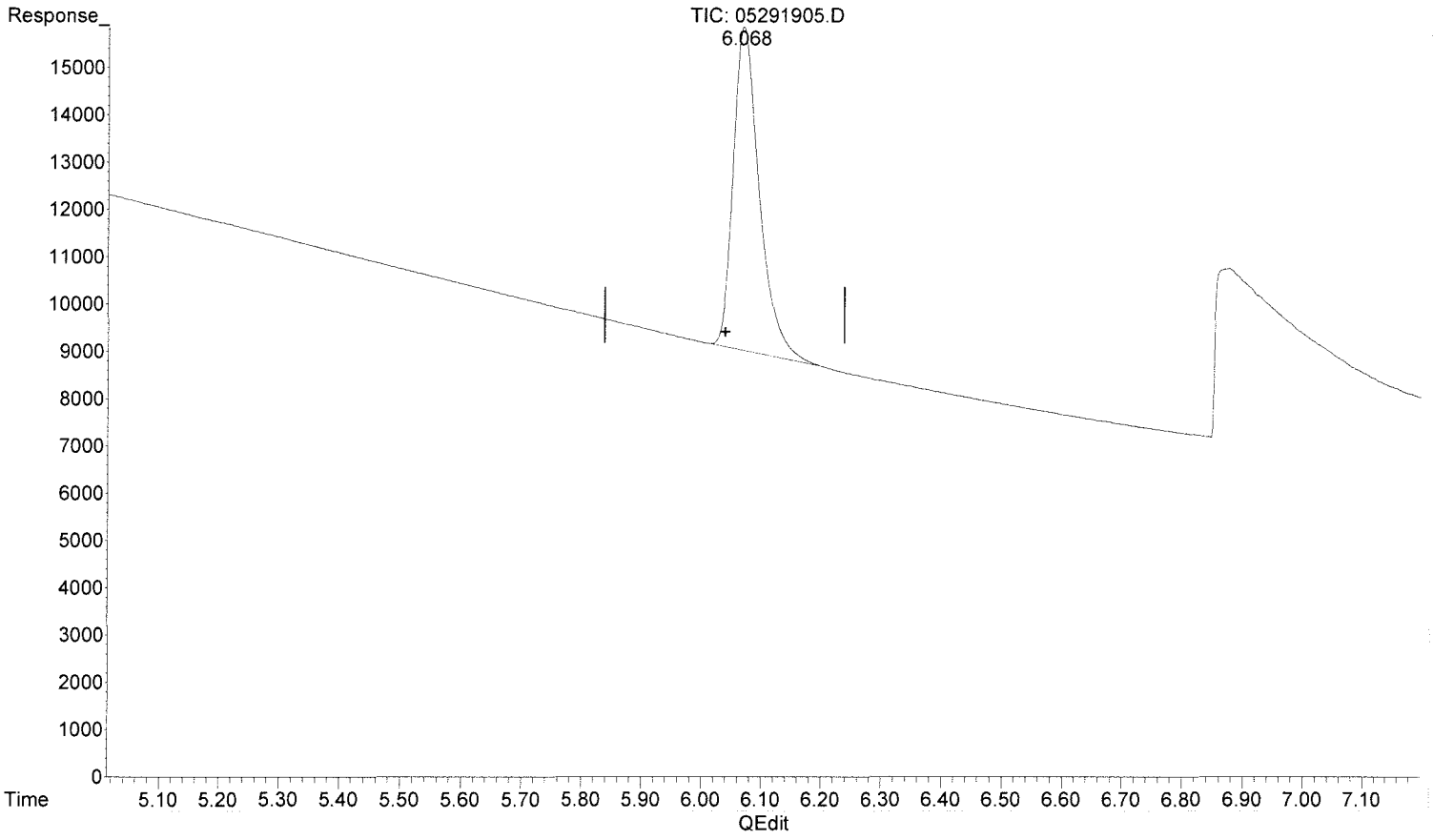




Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:46:24
Operator : WH
Sample : lcsd tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 12:04:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.068min 891.287 ppm m

response 209211

MK 5/24/19

Lw 5/29/19 Bc c w previous

(+) = Expected Retention Time

Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

dit Compounds -- Compound #4 -- Carbon dioxide

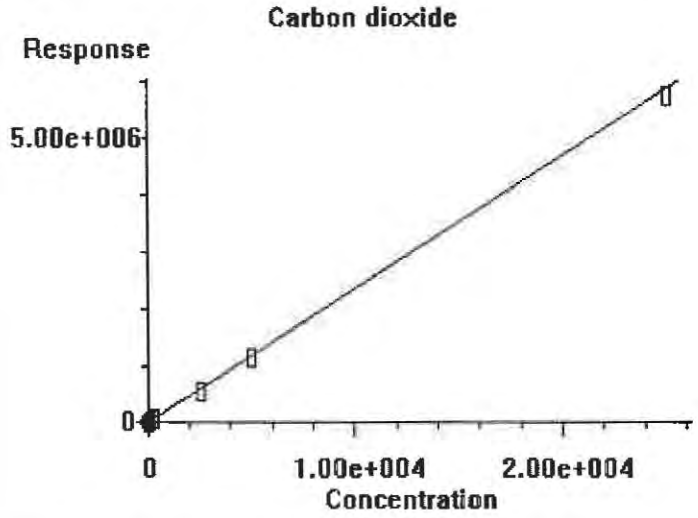
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

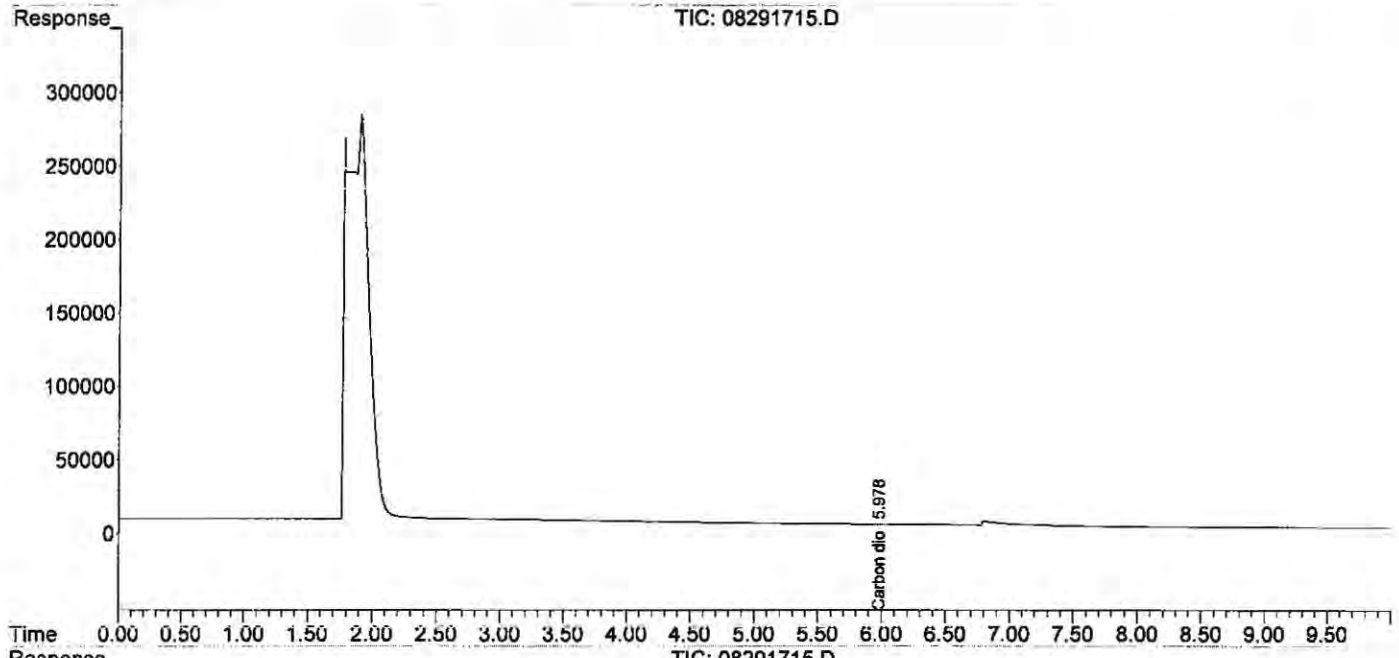
(f)=RT Delta > 1/2 Window (m)=manual int.

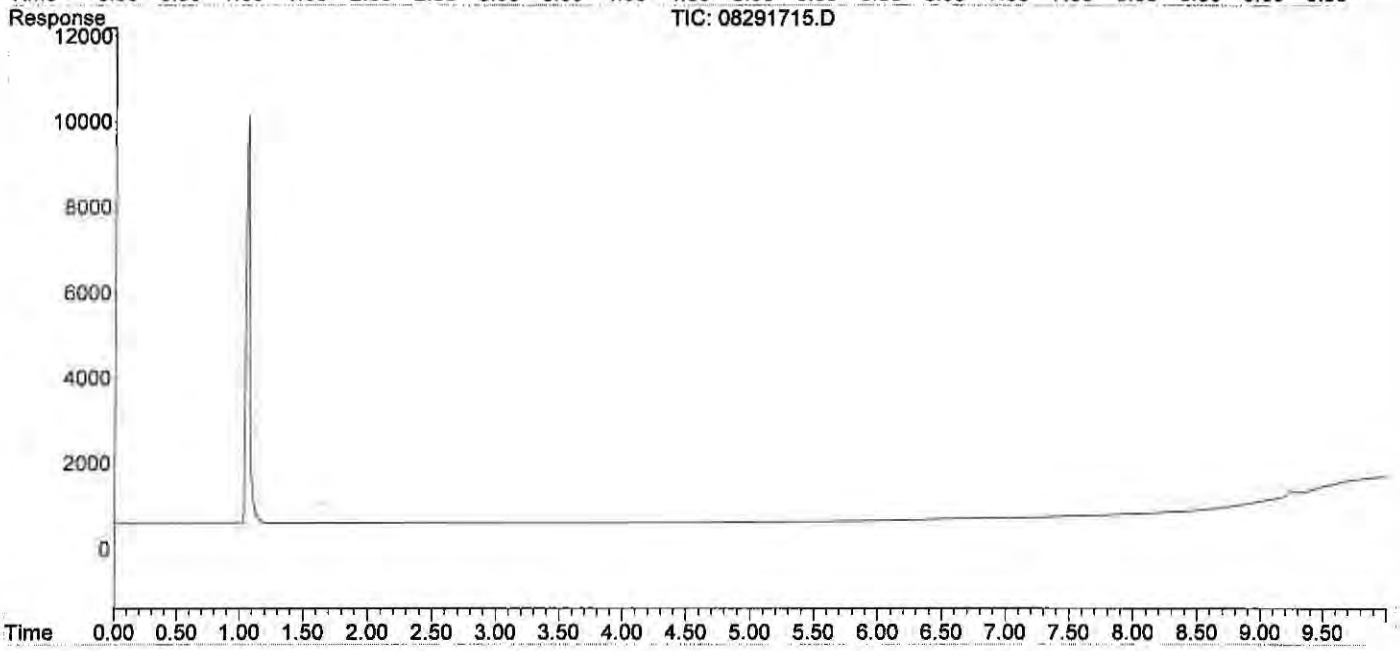
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



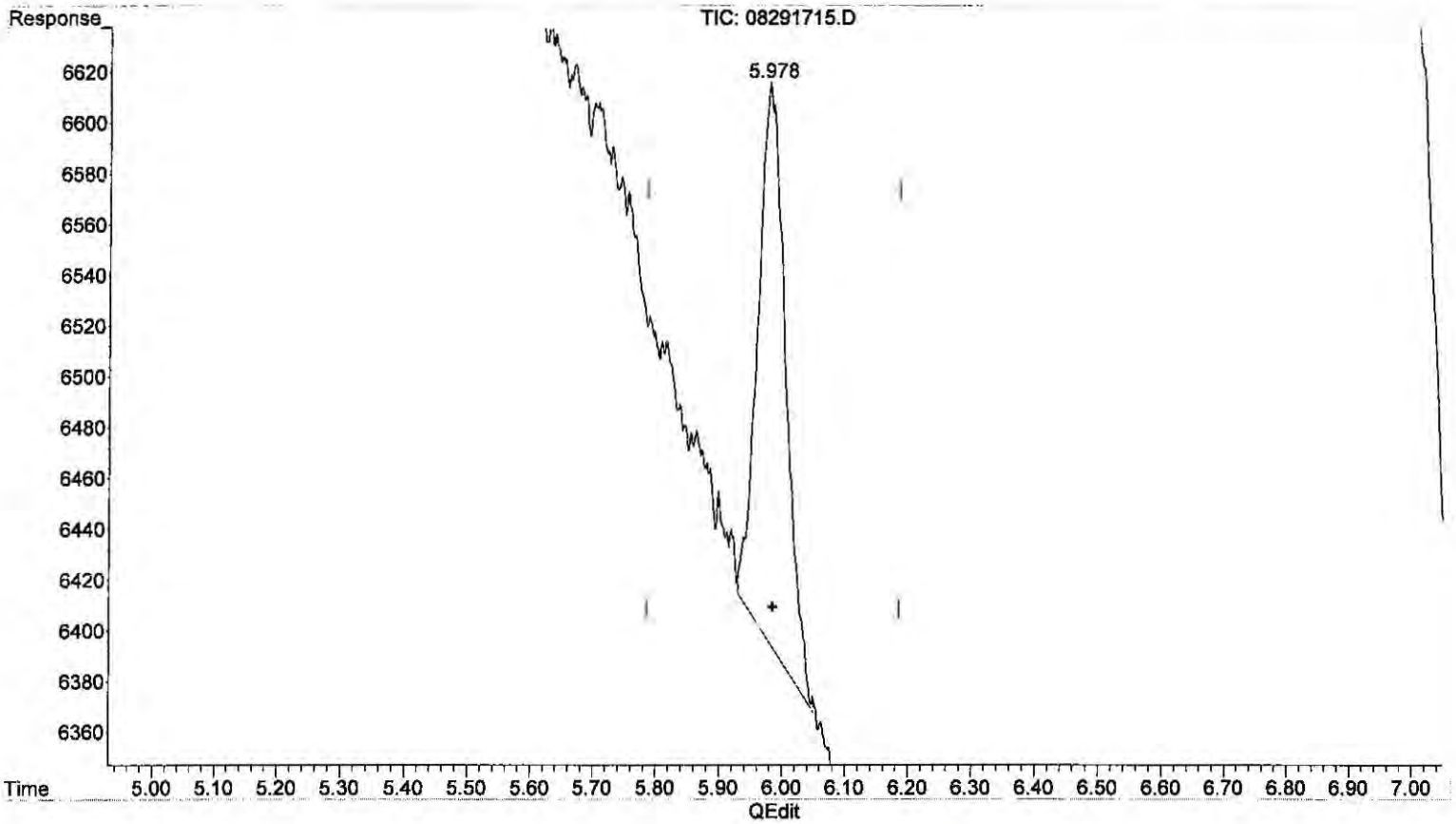


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.978min 27.870 ppm m

response 6794

9/30/17
BW
M.
prelim

9/4/17

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

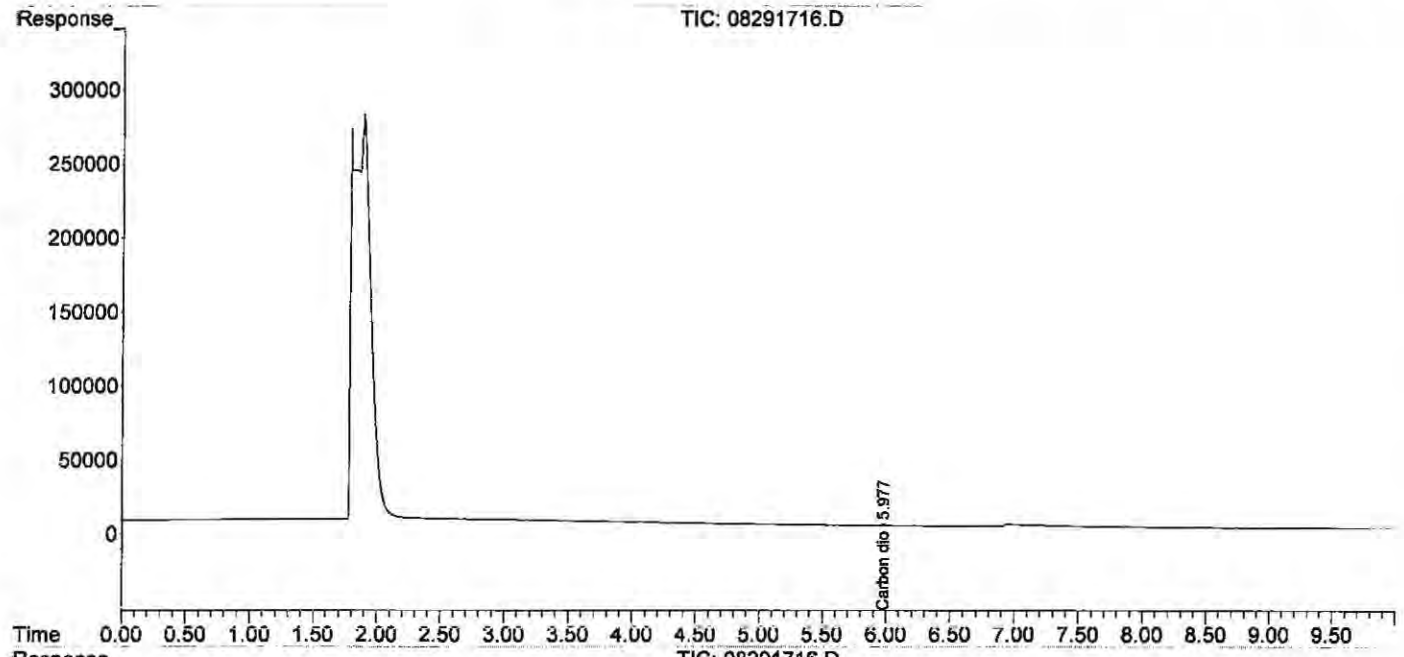
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

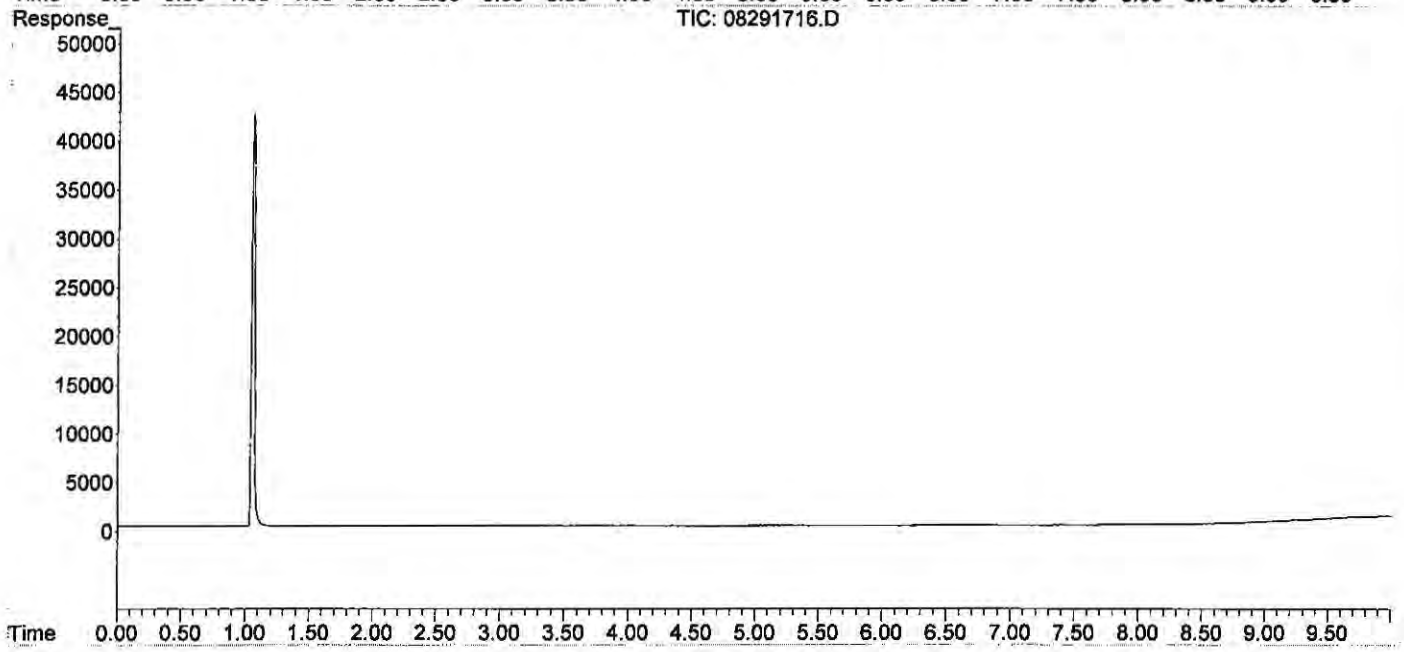
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

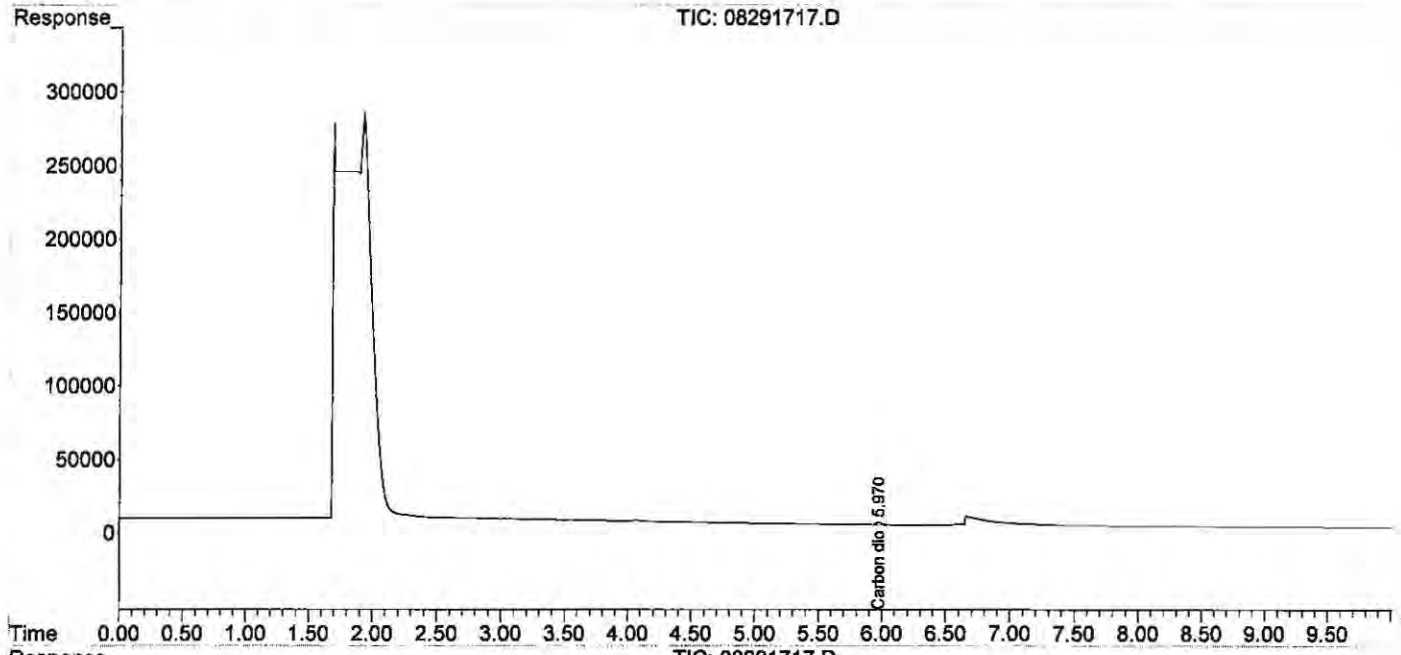
(f)=RT Delta > 1/2 Window (m)=manual int.

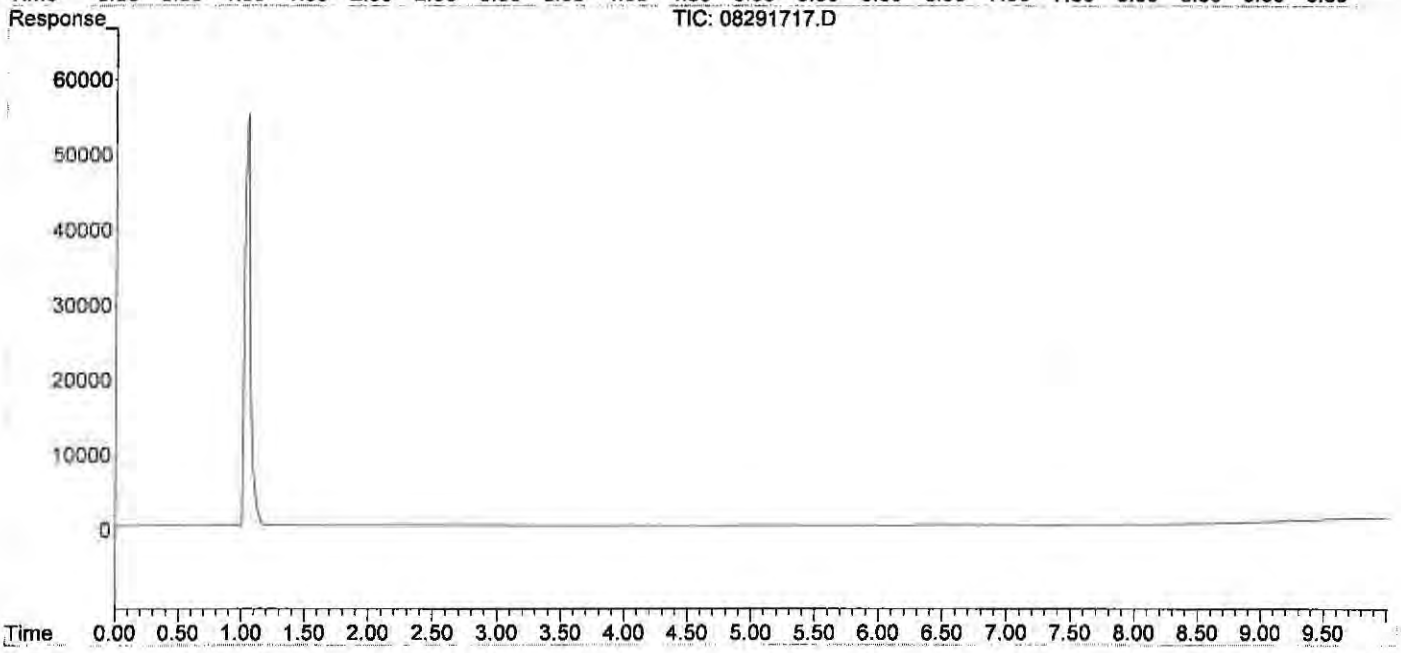
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



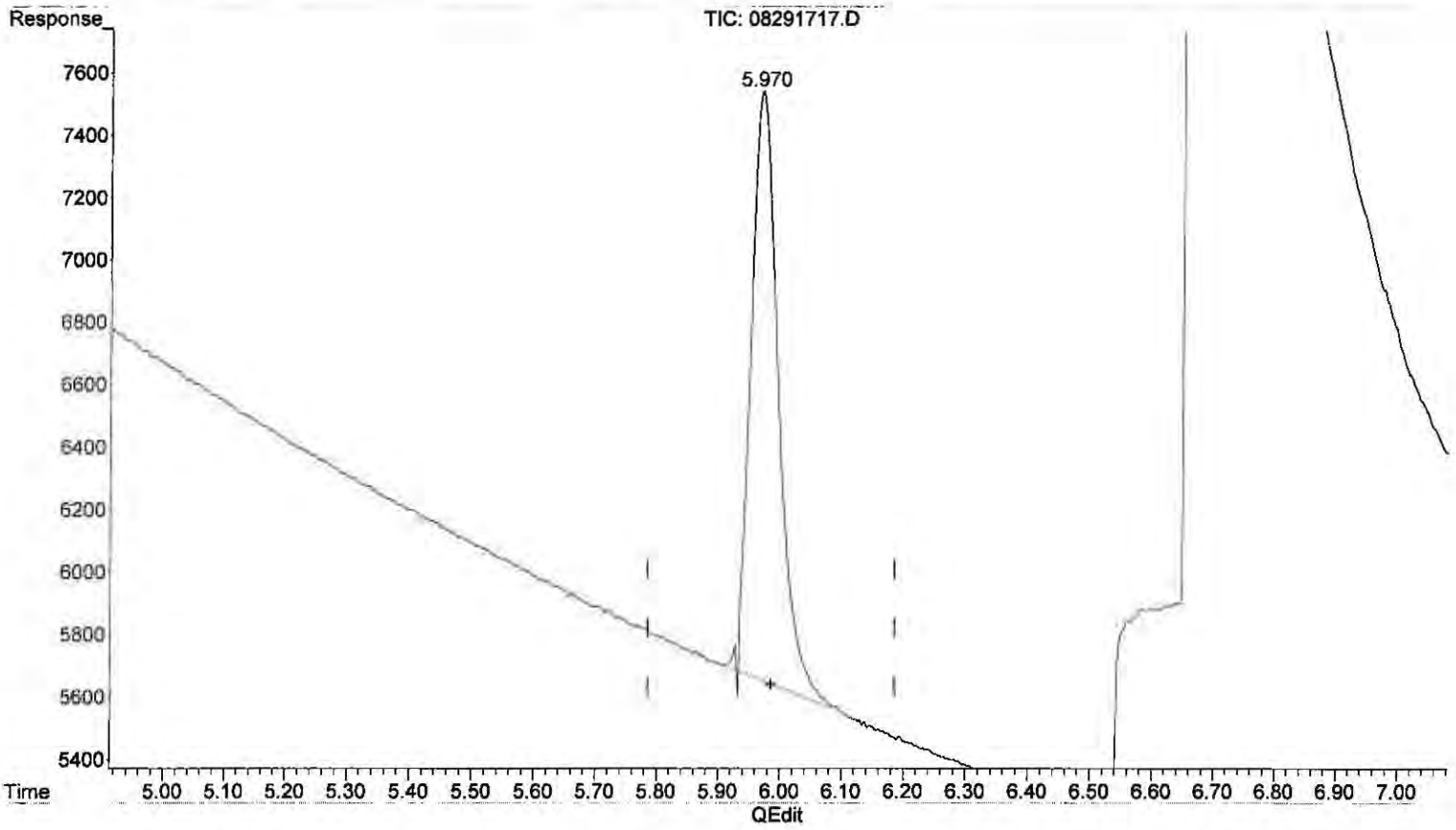


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

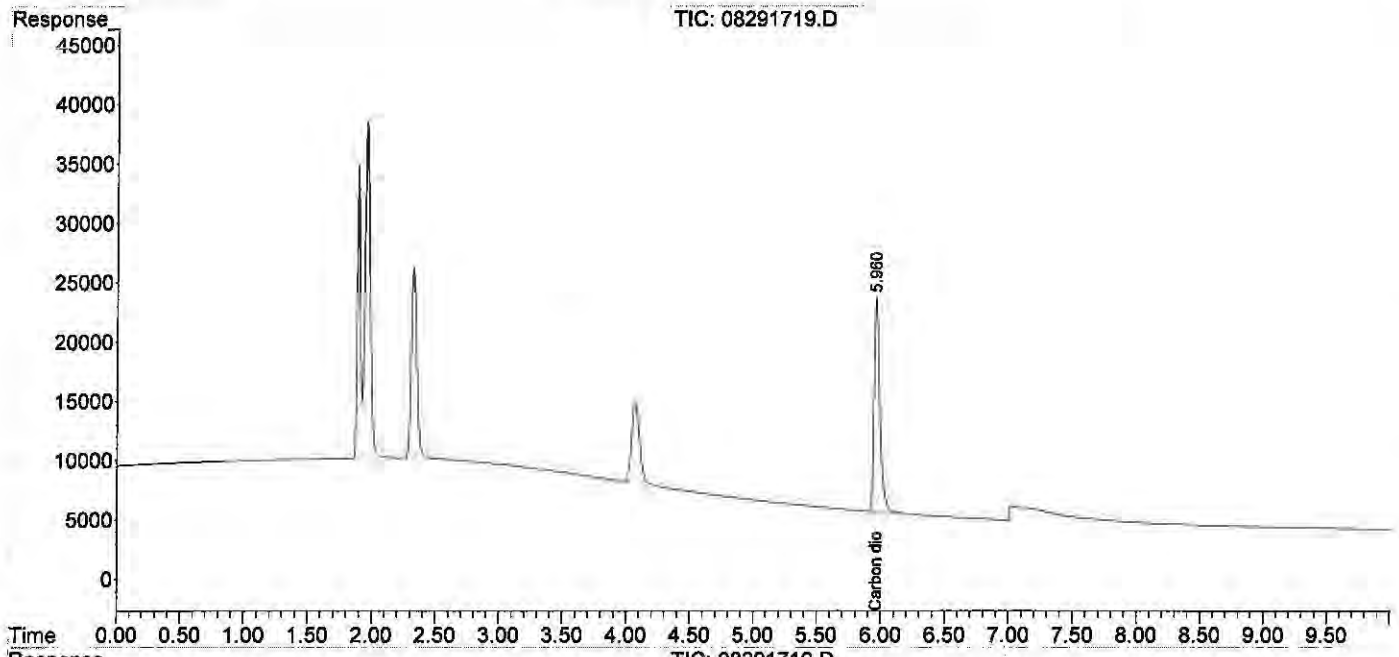
(f)=RT Delta > 1/2 Window (m)=manual int.

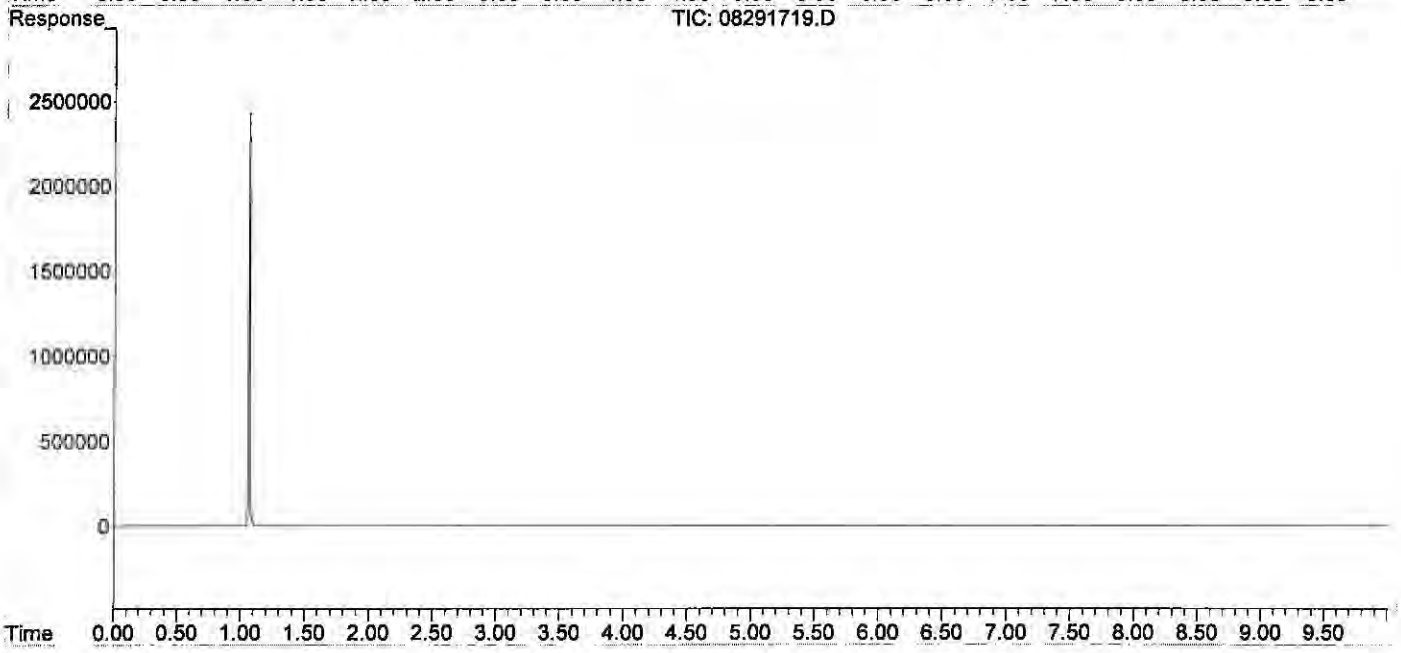
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

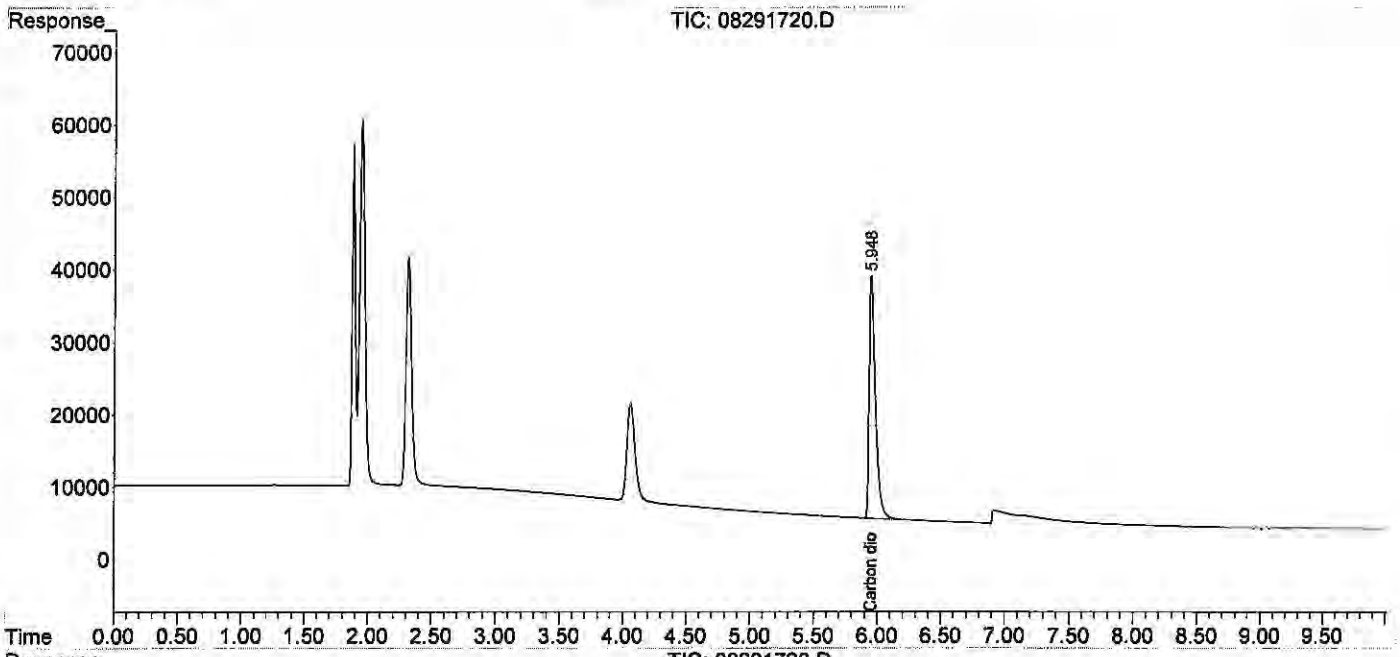
(f)=RT Delta > 1/2 Window (m)=manual int.

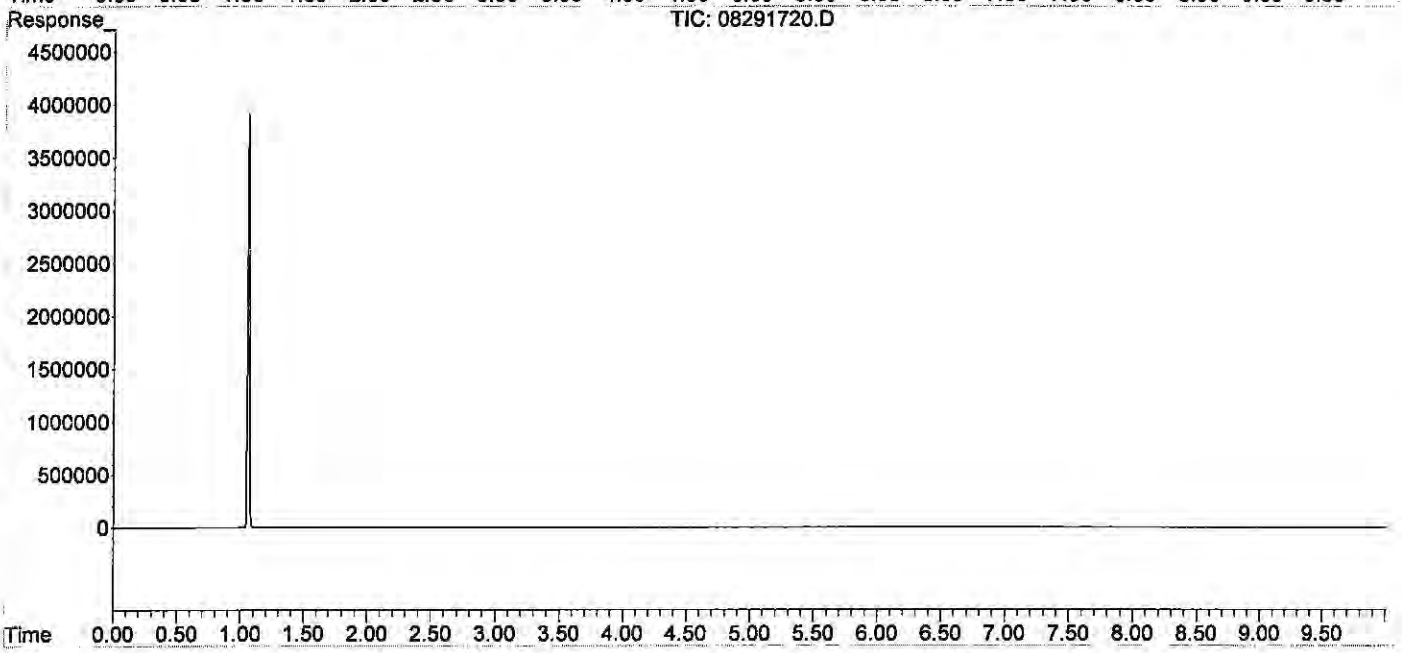
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

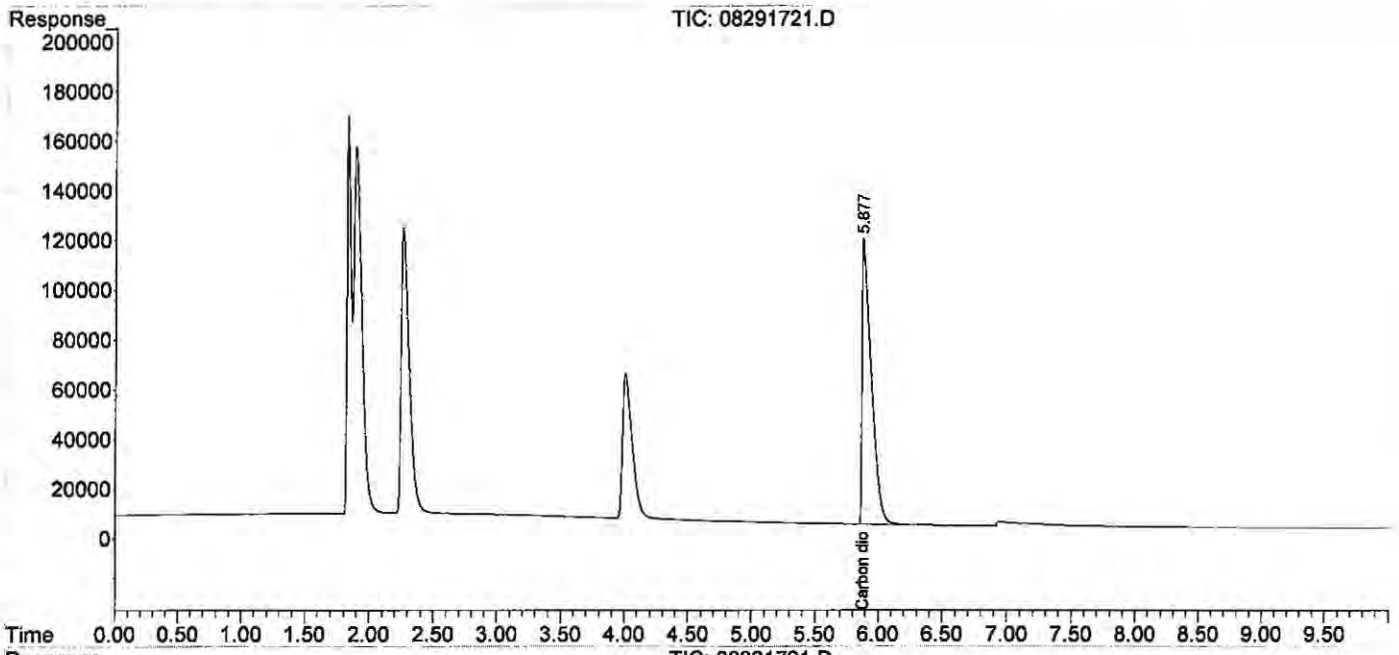
(f)=RT Delta > 1/2 Window (m)=manual int.

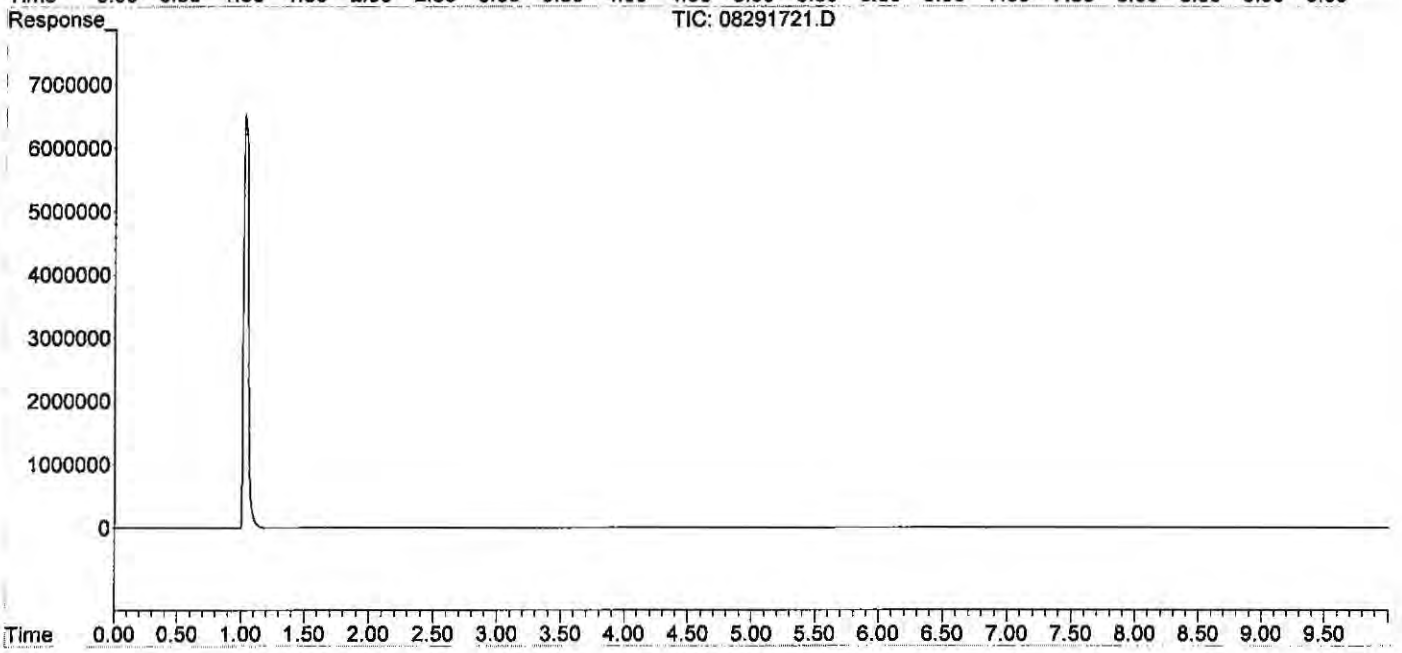
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.886	536422	0.113	ppm	Actual %D
2)	Carbon monoxide	1.886	536422	N.D.	ppm	
3)	Methane (TCD)	4.059f	626500	66244.710	ppm	
4)	Carbon dioxide	5.947	1163775	4957.948	ppm	5000 99.16
6)	Methane (FID)	1.062	37290742	3947.023	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

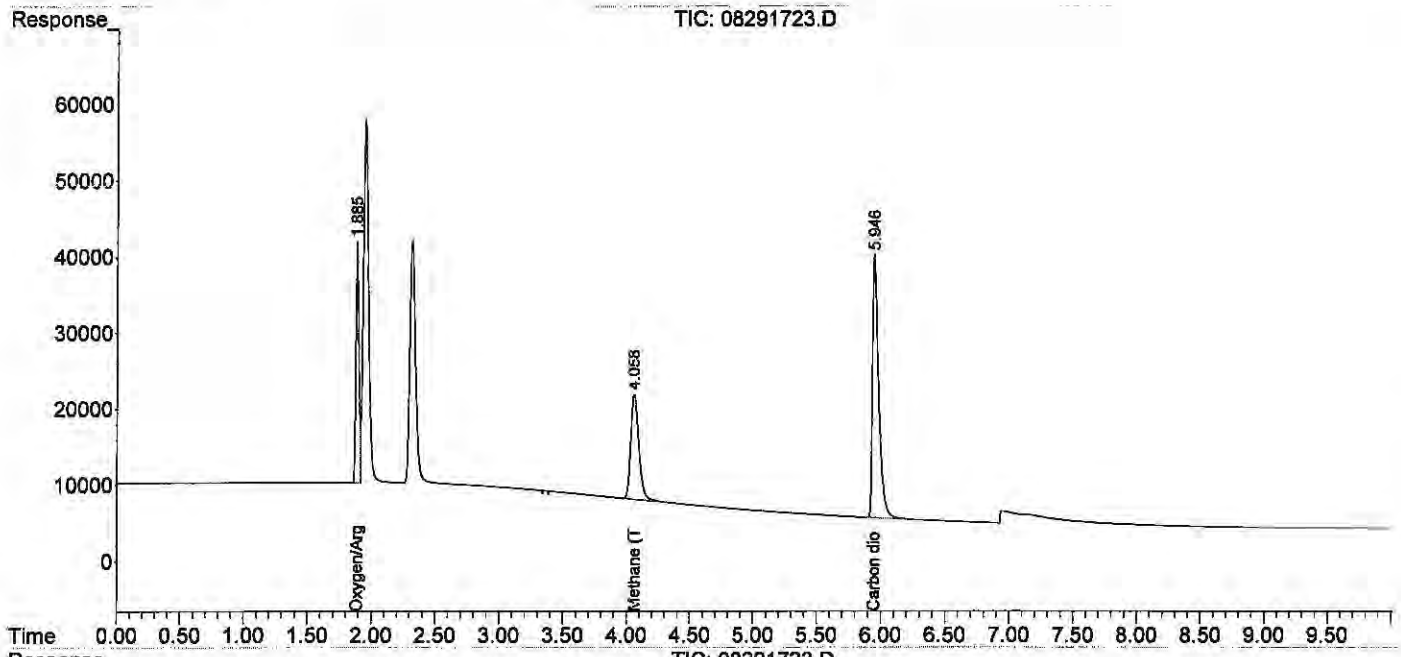
W 9/4/17

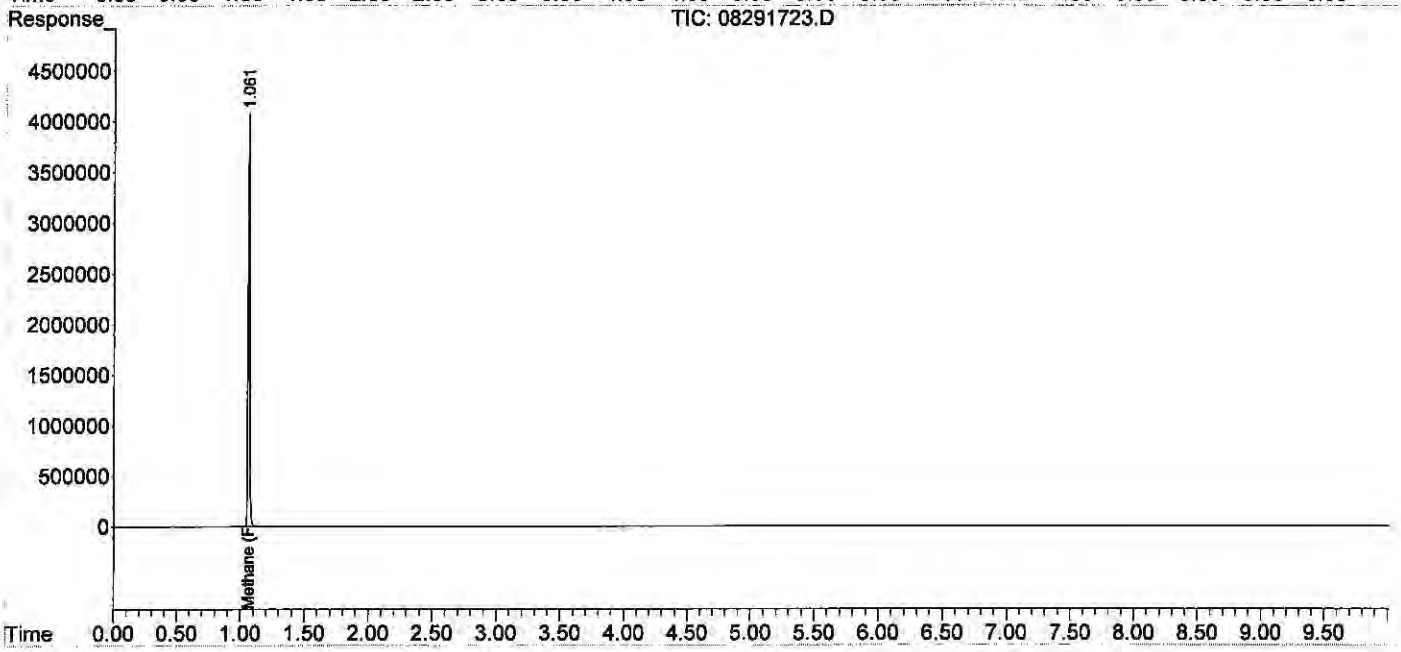
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1902949
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 05/29/19
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-04251903	0.100	4400.220
ACTUAL		5000.00
%Difference		12.0%
mcs 0.1ml	0.100	11.184
rb 0.1ml	0.100	0.000
lcs tcd 0.1ml	0.100	919.758
lcsd tcd 0.1ml	0.100	891.287
P1902949-001 50ul	0.050	13367.70
P1902949-002 50ul	0.050	14000.97
P1902949-003 50ul	0.050	15342.92

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	111.840
lcs tcd 0.1ml	9197.580
lcsd tcd 0.1ml	8912.870
P1902949-001 50ul	267353.98
P1902949-002 50ul	280019.46
P1902949-003 50ul	306858.40

std s32-04251903	4563.367
ACTUAL	5000.00
%Difference	8.7%

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:17:35
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 10:32:31 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

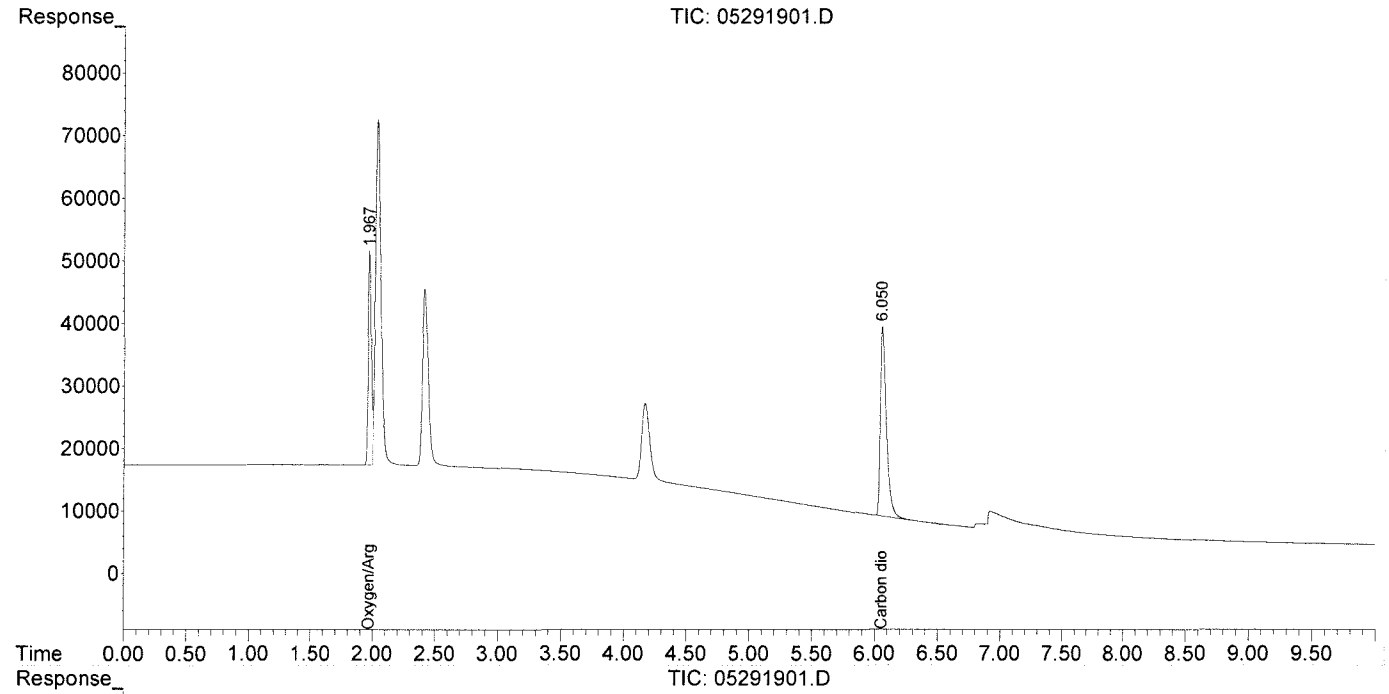
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.968f	597274	0.125	ppm
2)	Carbon monoxide	1.968f	597274	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.051	1032860	4400.220	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

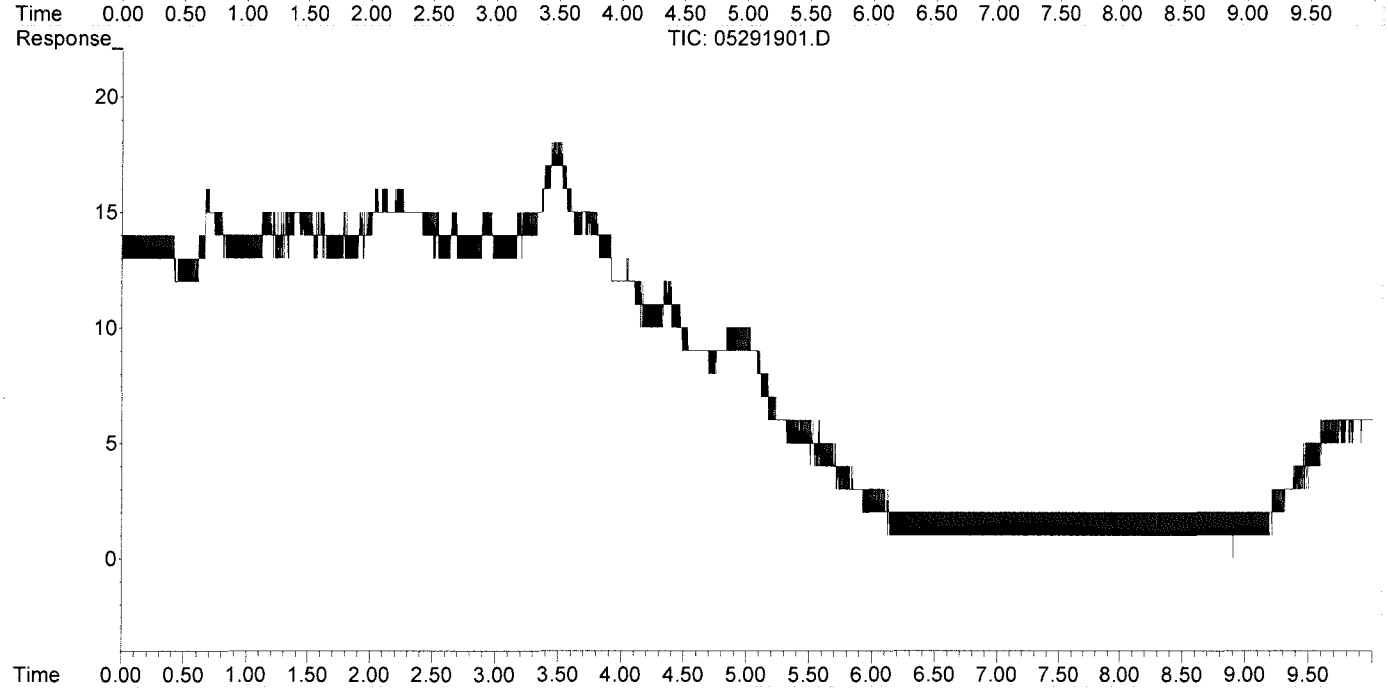
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:17:35
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 10:32:31 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 15:12:45
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:35:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

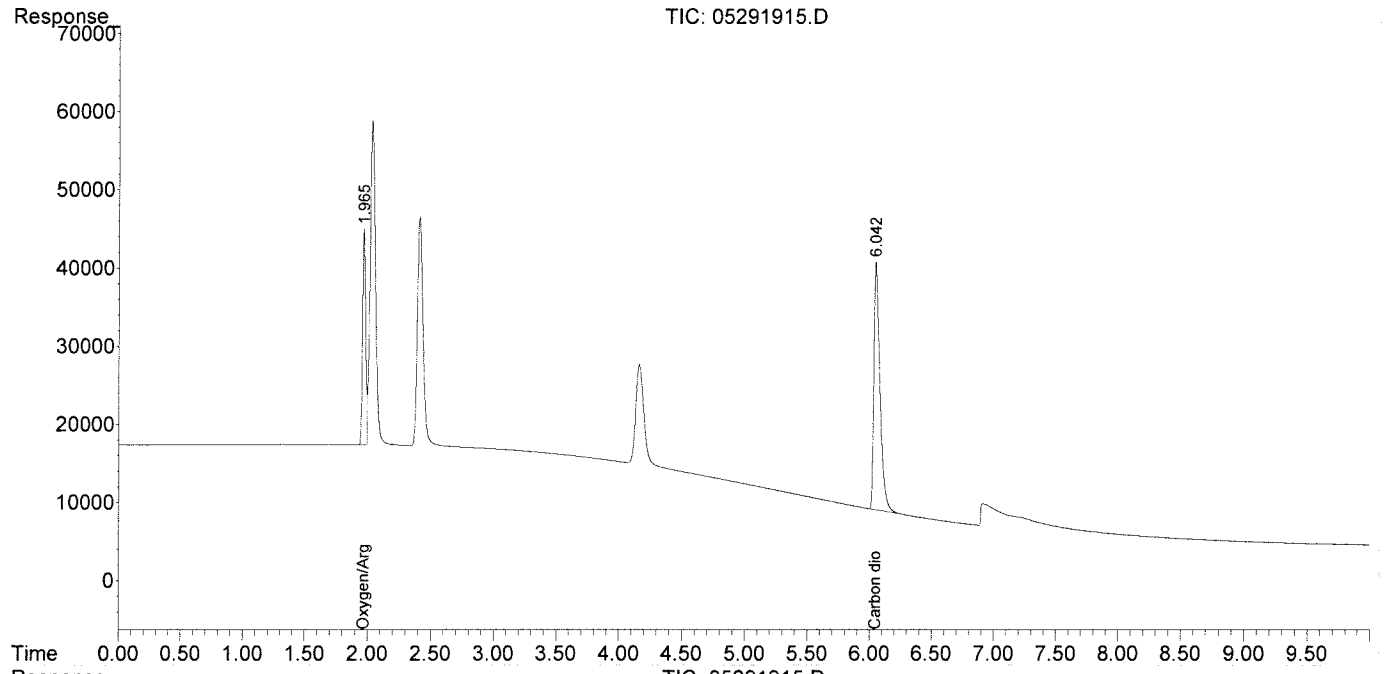
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.965f	488432	0.103	ppm	
2)	Carbon monoxide	1.965f	488432	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.042	1071155	4563.367	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

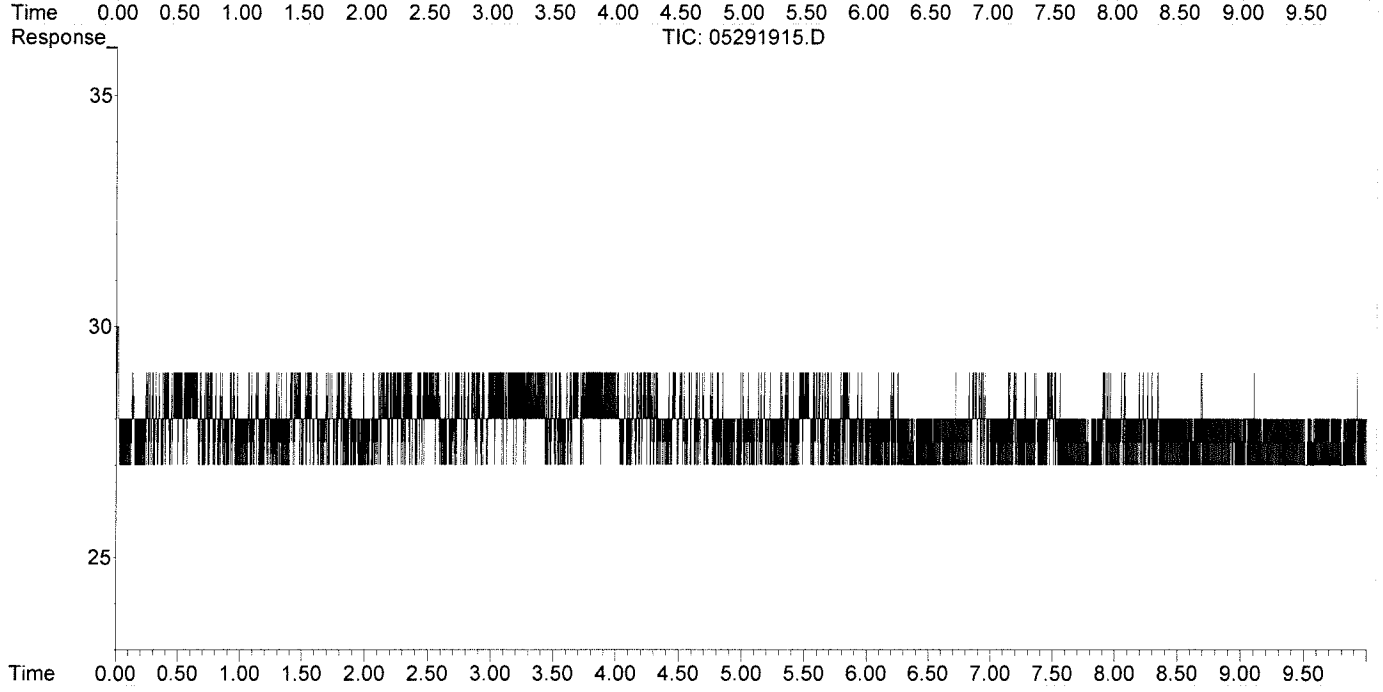
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 15:12:45
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:35:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



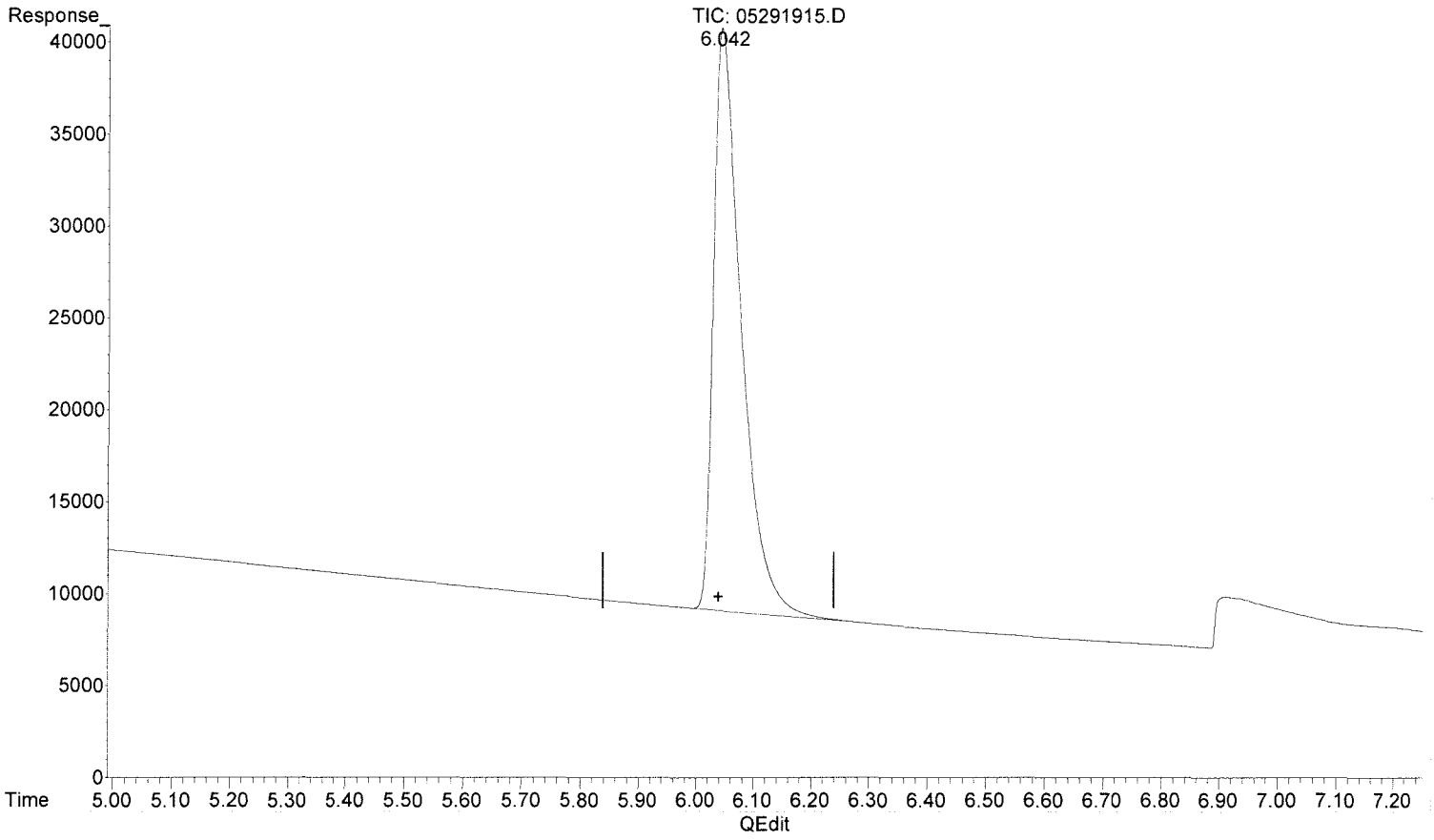


00956408

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 15:12:45
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:35:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.042min 4563.367 ppm m

response 1071155

MK 5/29/19

Lvl 1 1291.5 BLC no flow

(+) = Expected Retention Time

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2019_05\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-May-19, 10:17:35	05291901.D	std s32-04251903		WH	RSKBOTH.M	pass
2	29-May-19, 10:43:41	05291902.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	29-May-19, 10:59:04	05291903.D	mcs 0.1ml		WH	RSKBOTH.M	pass
4	29-May-19, 11:28:16	05291904.D	lcs tcd 0.1ml		WH	RSKBOTH.M	pass
5	29-May-19, 11:46:24	05291905.D	lcsd tcd 0.1ml		WH	RSKBOTH.M	pass
6	29-May-19, 12:09:16	05291906.D	P1902951-001 0.1		WH	RSKBOTH.M	need dilution
7	29-May-19, 12:21:58	05291907.D	P1902951-002 0.1		WH	RSKBOTH.M	need dilution
8	29-May-19, 12:41:52	05291908.D	P1902951-003 0.1ml		WH	RSKBOTH.M	
9	29-May-19, 13:17:18	05291909.D	P1902951-004 50ul		WH	RSKBOTH.M	
10	29-May-19, 13:32:53	05291910.D	P1902951-001 50ul		WH	RSKBOTH.M	
11	29-May-19, 13:51:51	05291911.D	P1902951-002 50ul		WH	RSKBOTH.M	
12	29-May-19, 14:06:25	05291912.D	P1902949-001 50ul		WH	RSKBOTH.M	
13	29-May-19, 14:29:19	05291913.D	P1902949-002 50ul		WH	RSKBOTH.M	
14	29-May-19, 14:47:19	05291914.D	P1902949-003 50ul		WH	RSKBOTH.M	
15	29-May-19, 15:12:45	05291915.D	std s32-04251903		WH	RSKBOTH.M	pass

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:55:09
Operator : WH
Sample : P1902949-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:19:59 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

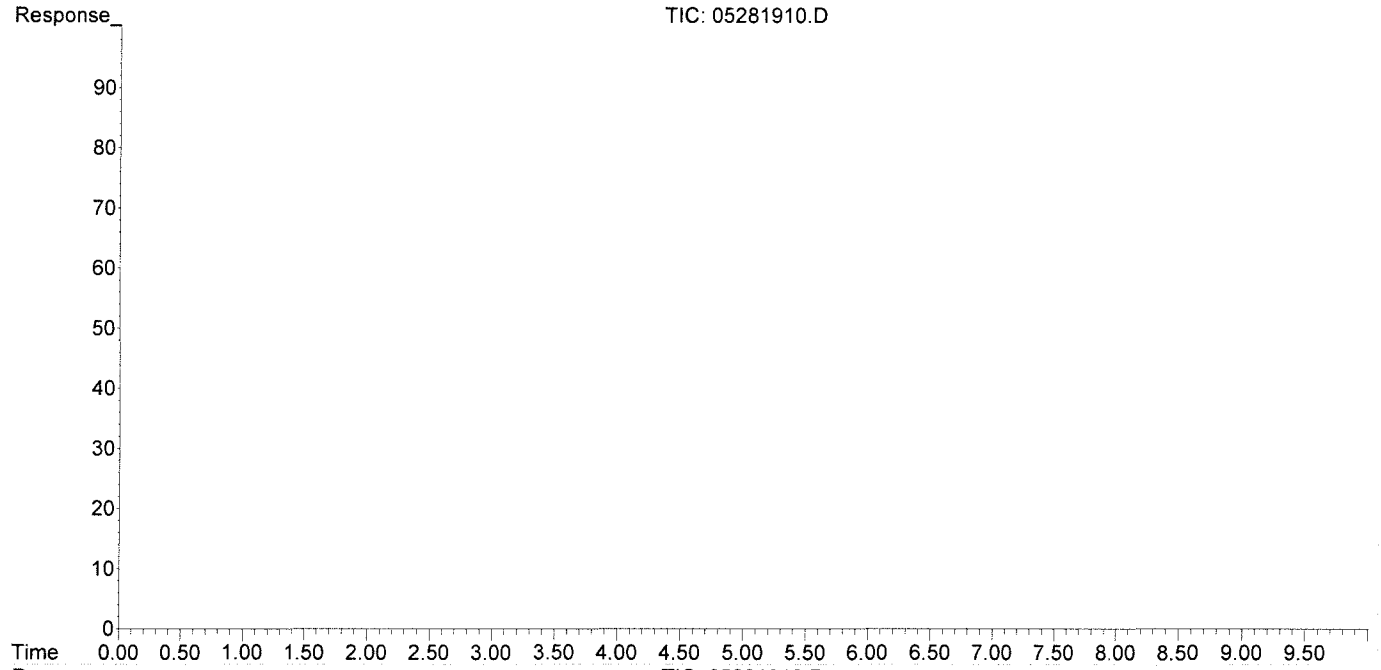
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

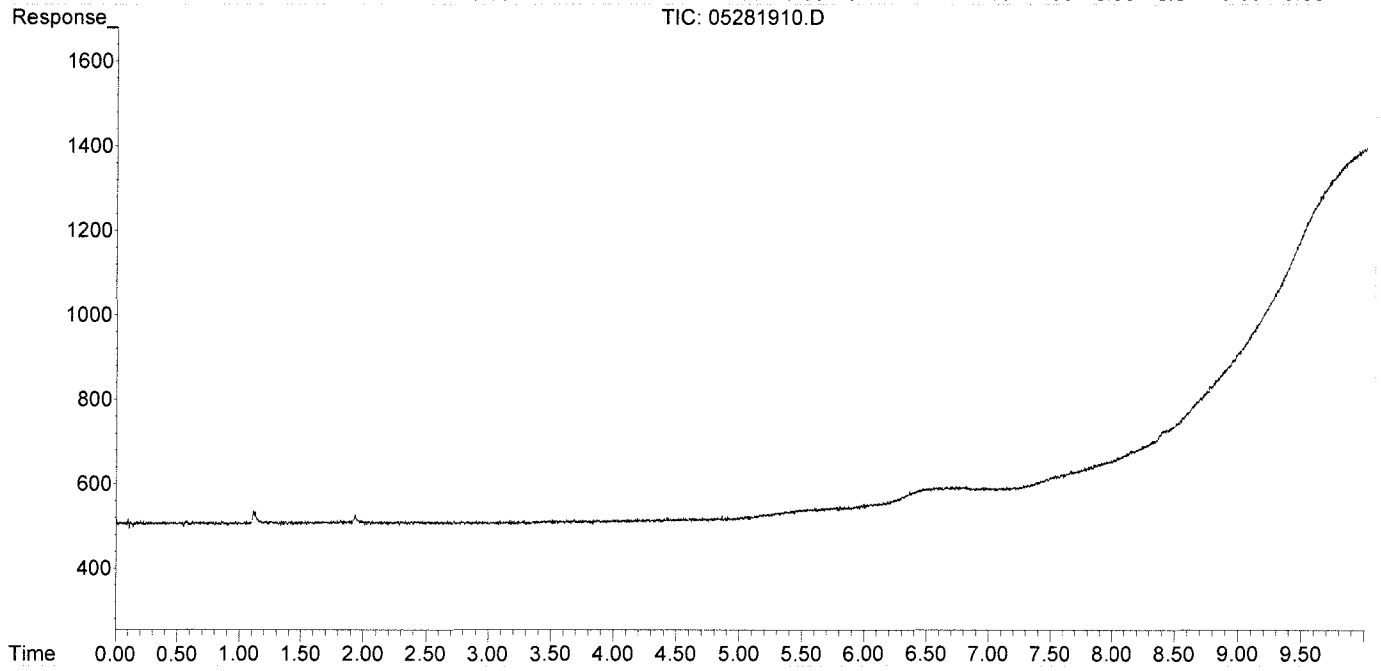
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:55:09
Operator : WH
Sample : P1902949-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:19:59 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 14:09:08
Operator : WH
Sample : P1902949-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:20:22 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

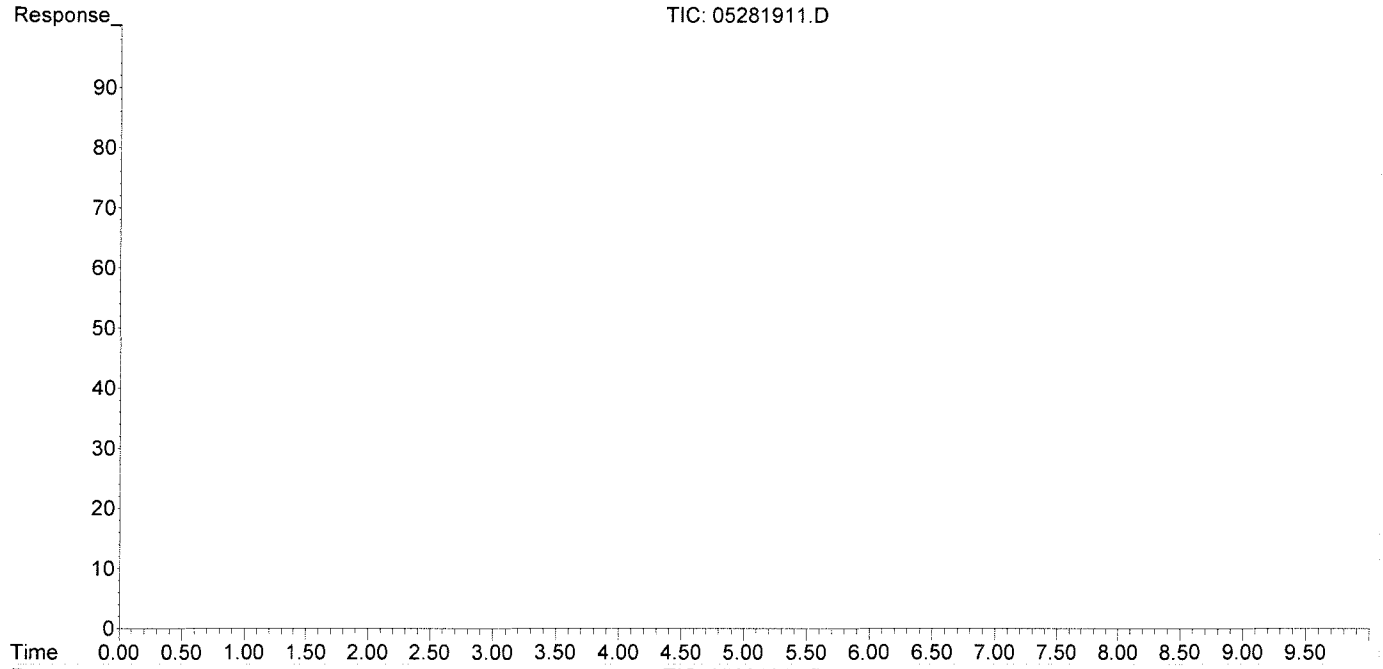
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

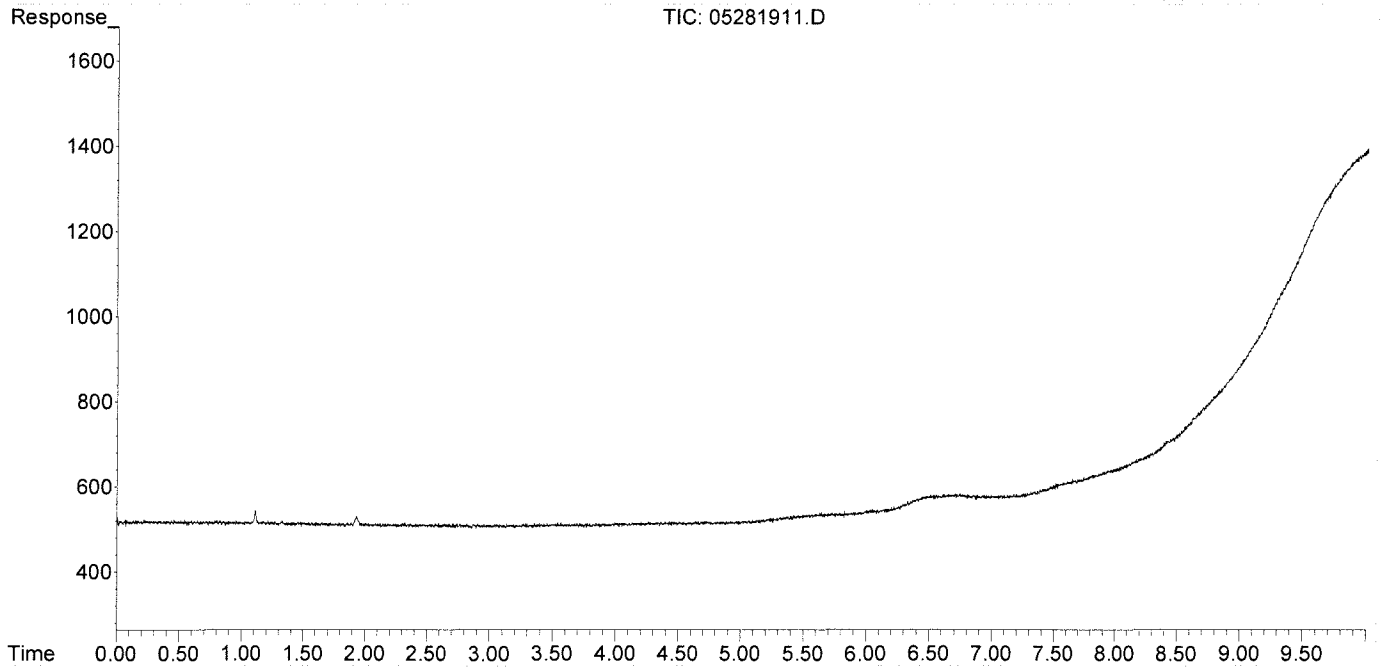
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 14:09:08
Operator : WH
Sample : P1902949-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:20:22 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 14:22:03
Operator : WH
Sample : P1902949-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:20:46 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

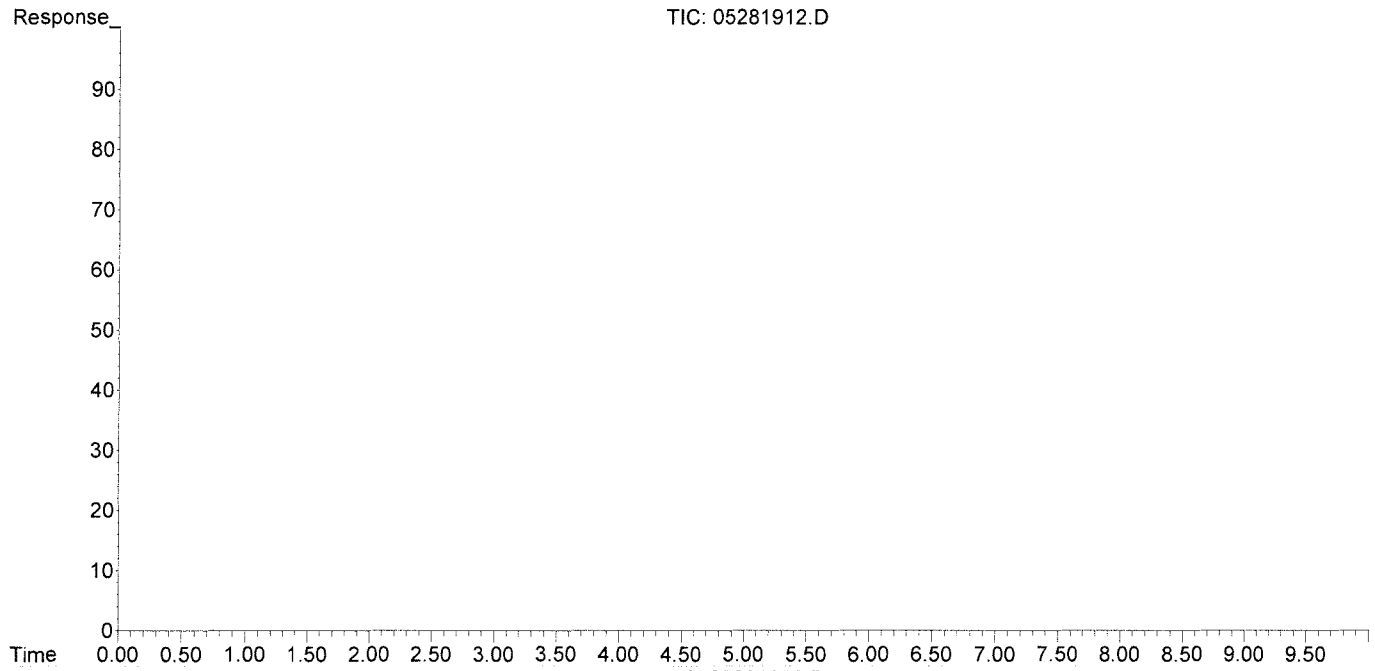
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.109	488	0.054	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	1.920	600	0.035	ppm	m
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

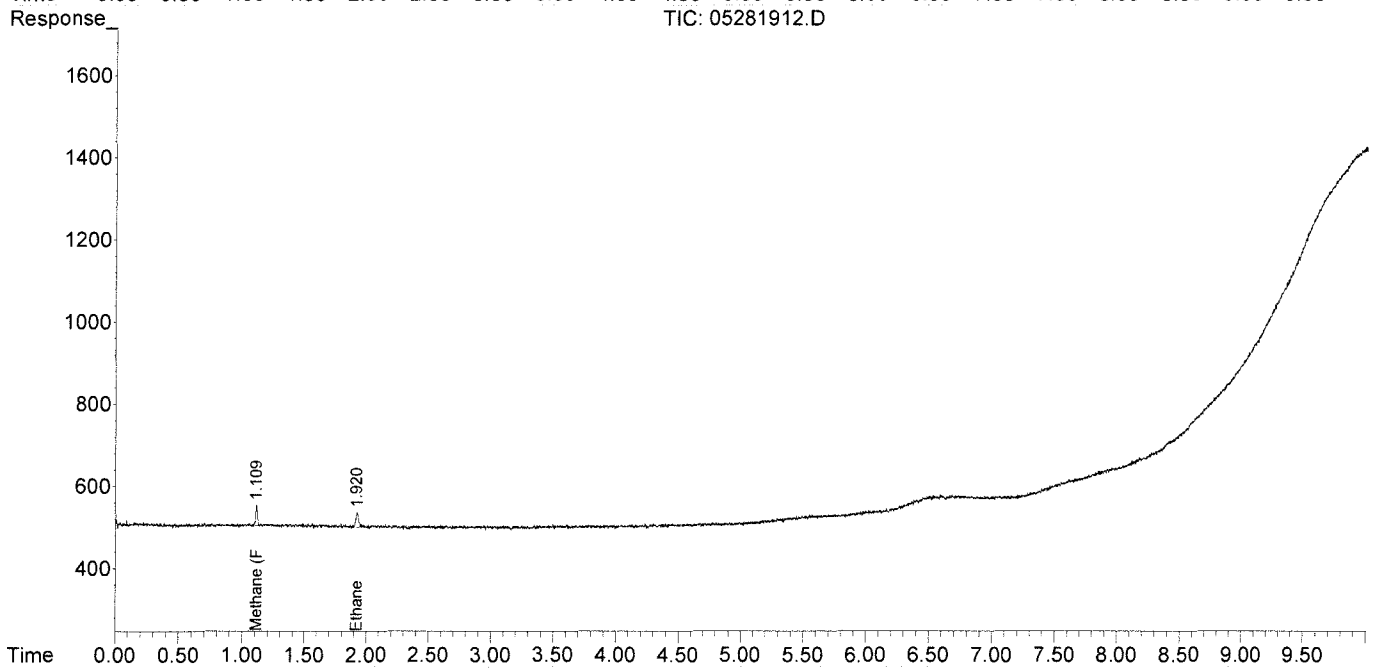
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 14:22:03
Operator : WH
Sample : P1902949-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:20:46 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

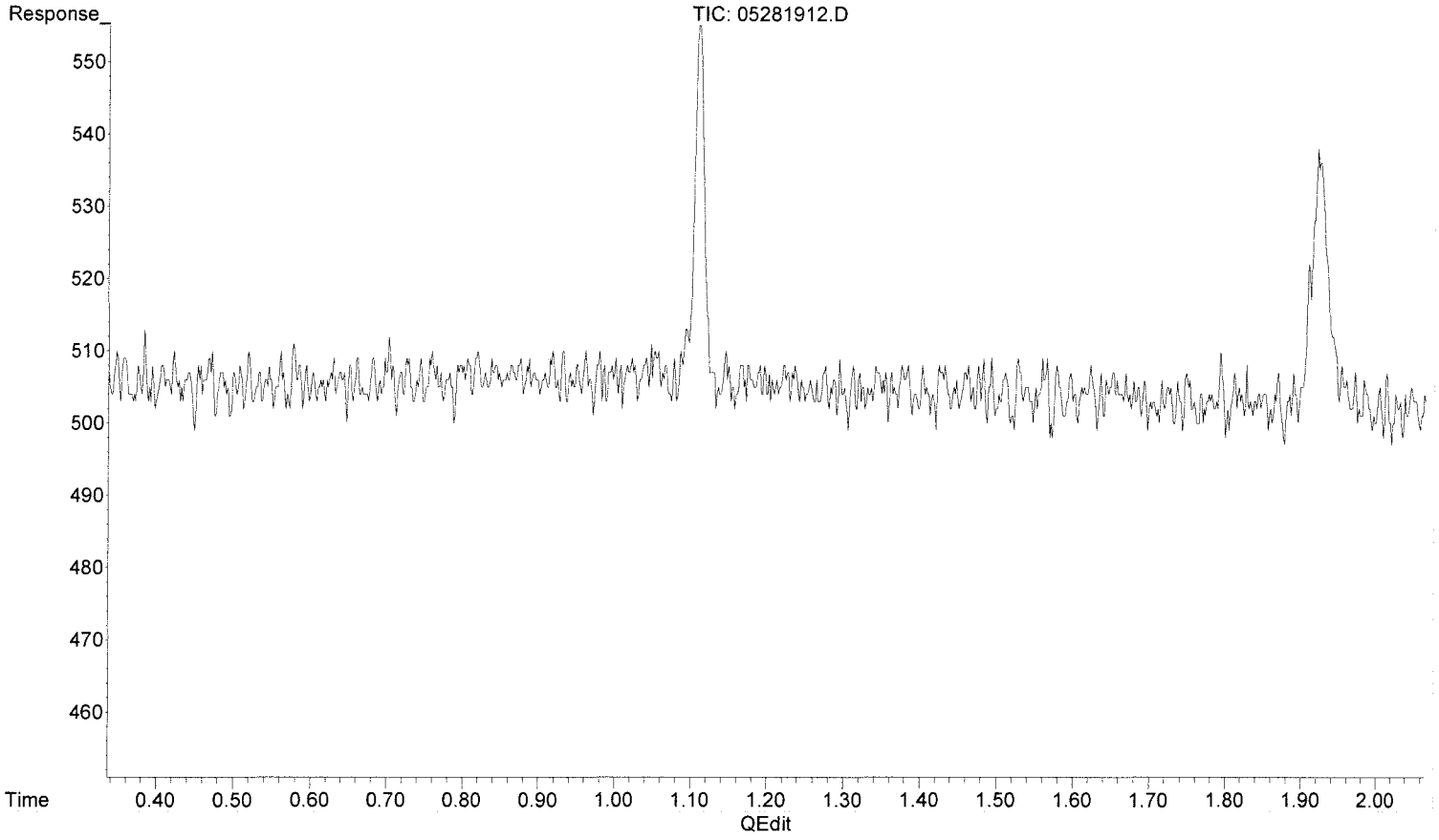




Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 14:22:03
Operator : WH
Sample : P1902949-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:20:46 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.115min 0.000 ppm

response 0

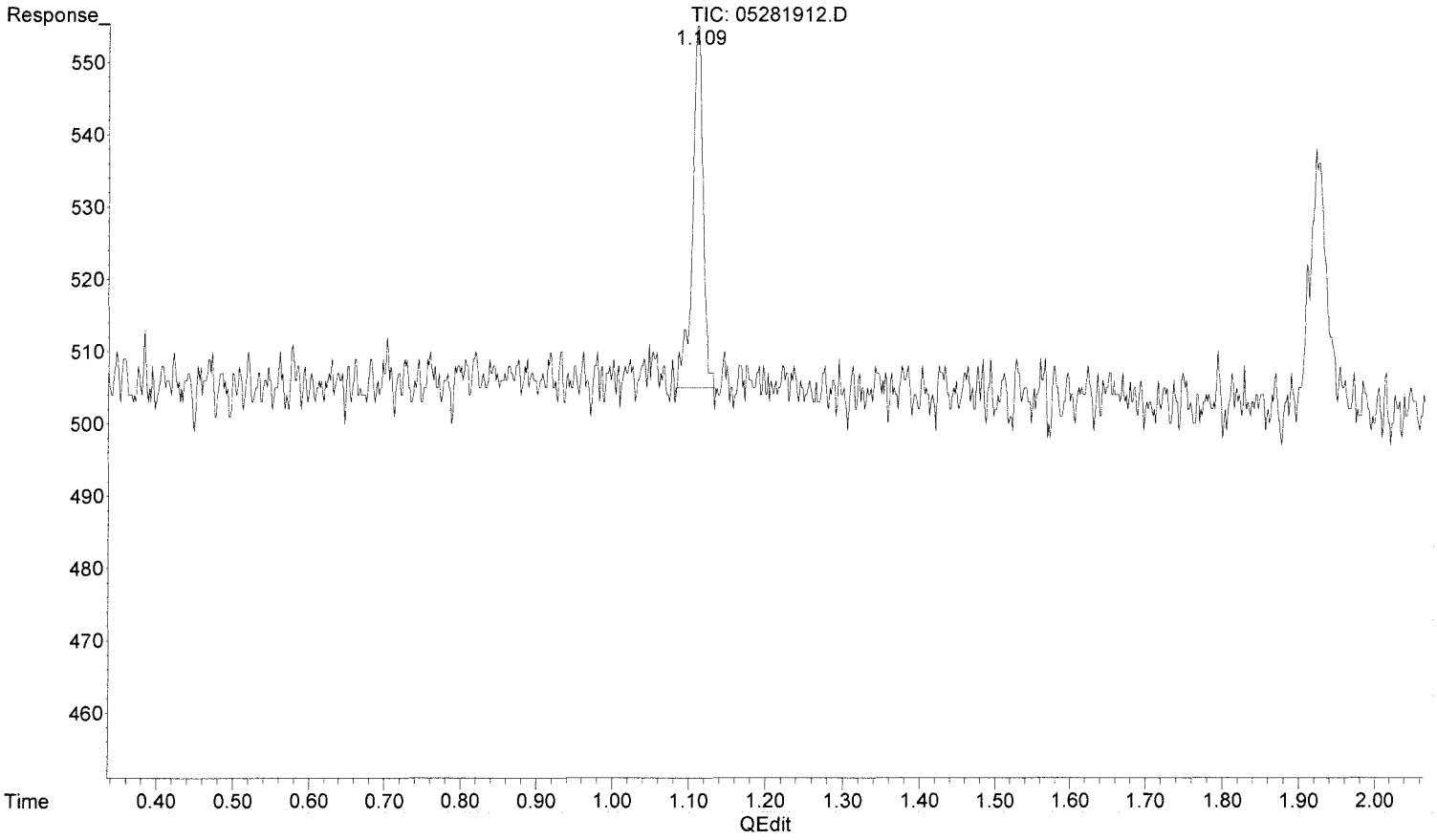
(+) = Expected Retention Time

00956418

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 14:22:03
Operator : WH
Sample : P1902949-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:20:46 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.109min 0.054 ppm m

response 488

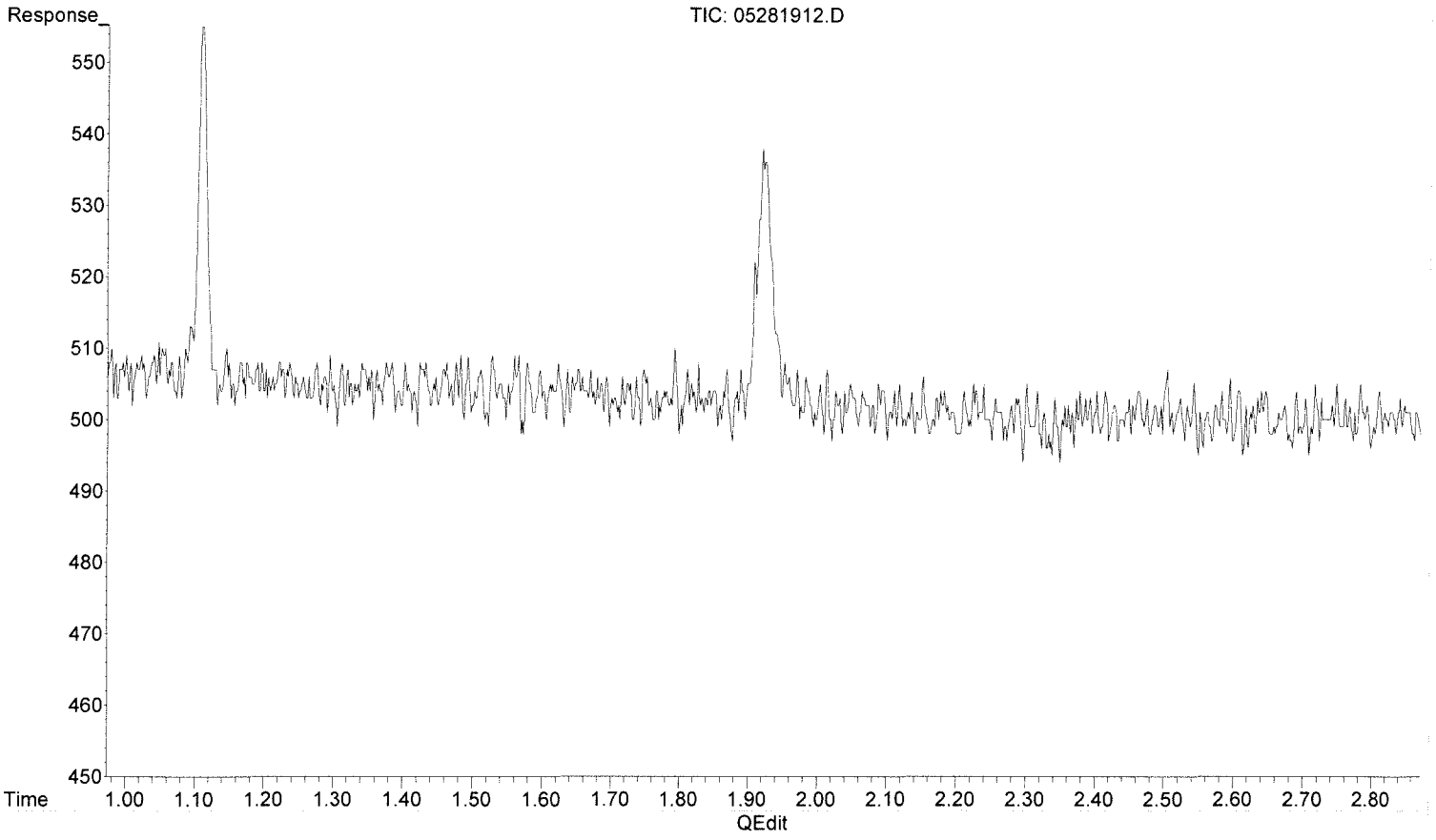
MR 5/29/19

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 14:22:03
Operator : WH
Sample : P1902949-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:20:46 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(8) Ethane

1.923min 0.000 ppm

response 0

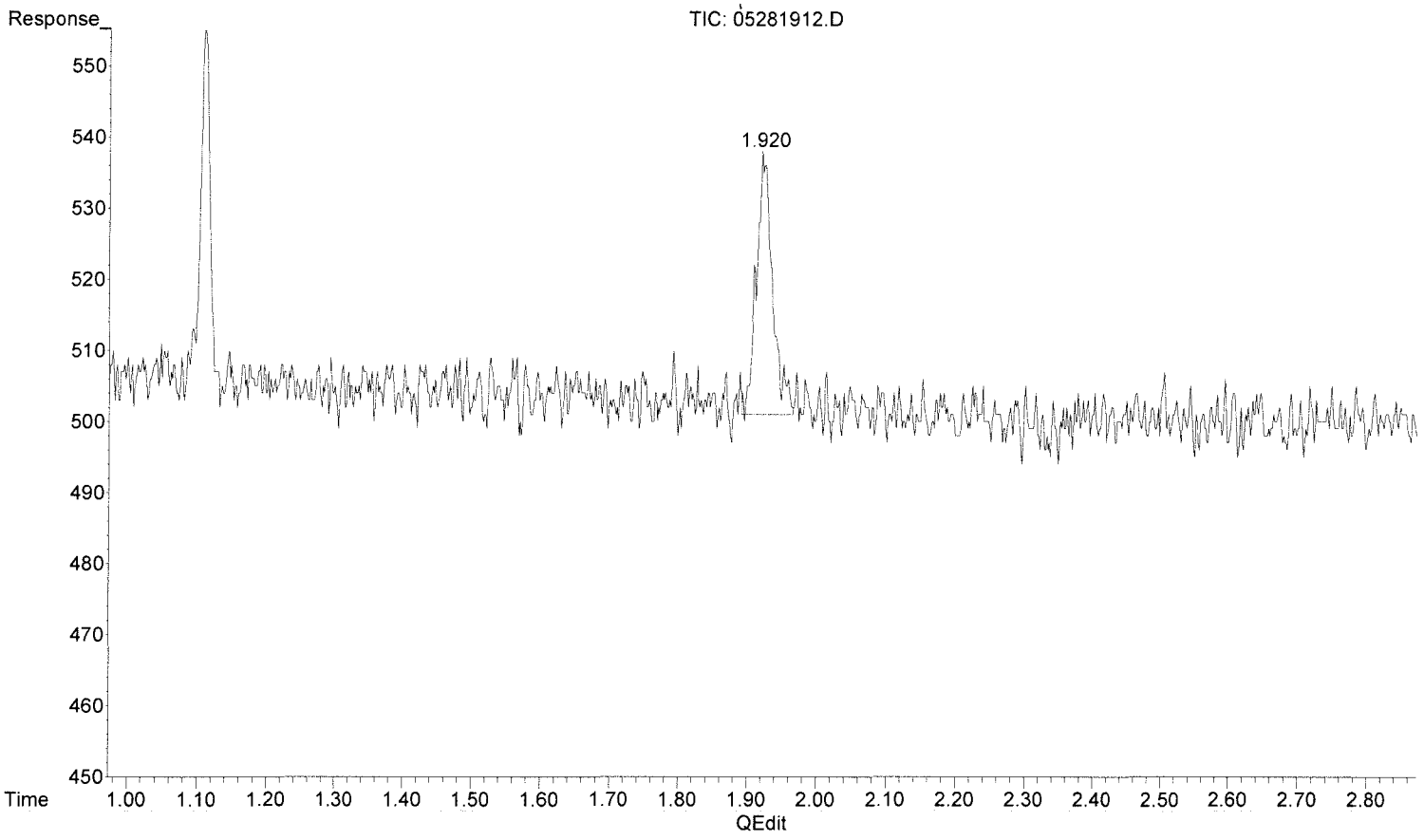
(+) = Expected Retention Time

00956420

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 14:22:03
Operator : WH
Sample : P1902949-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 17:20:46 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(8) Ethane

1.920min 0.035 ppm m

response 600

MF 5/29/19

5/29/19 MF

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:21:43
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:49:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

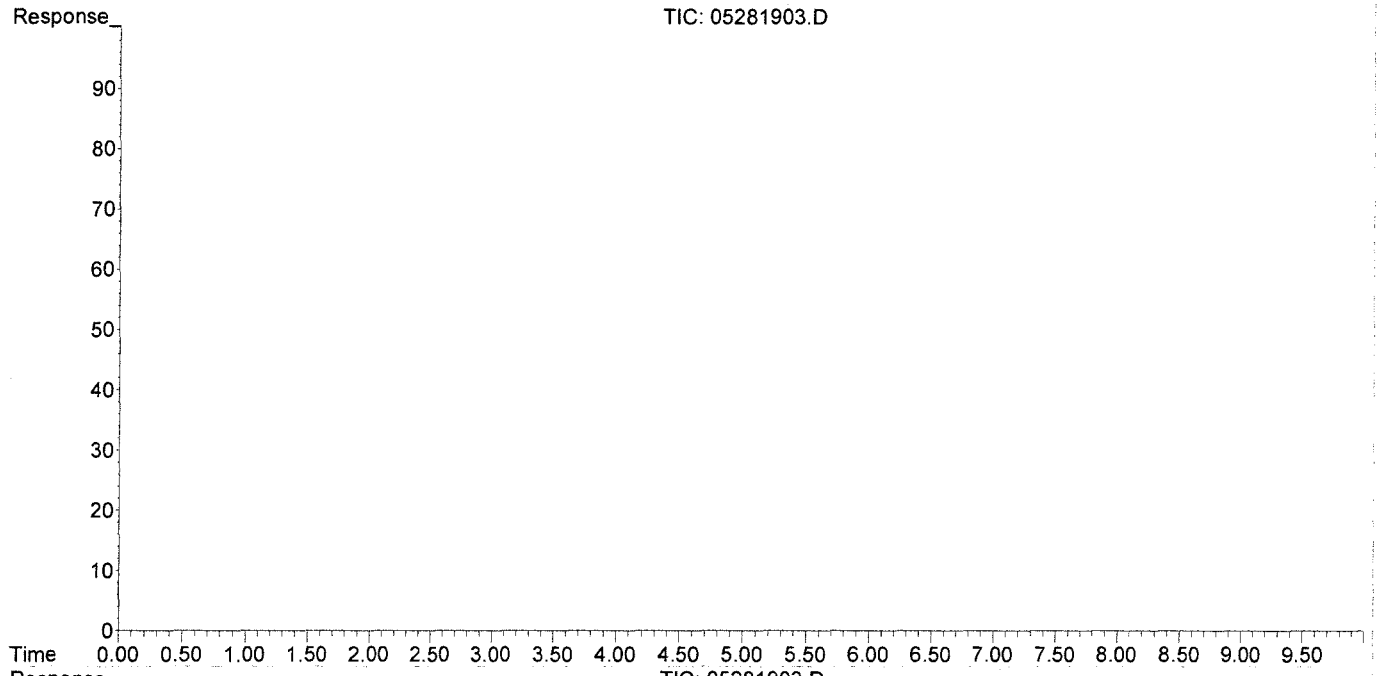
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.104	725	0.080	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

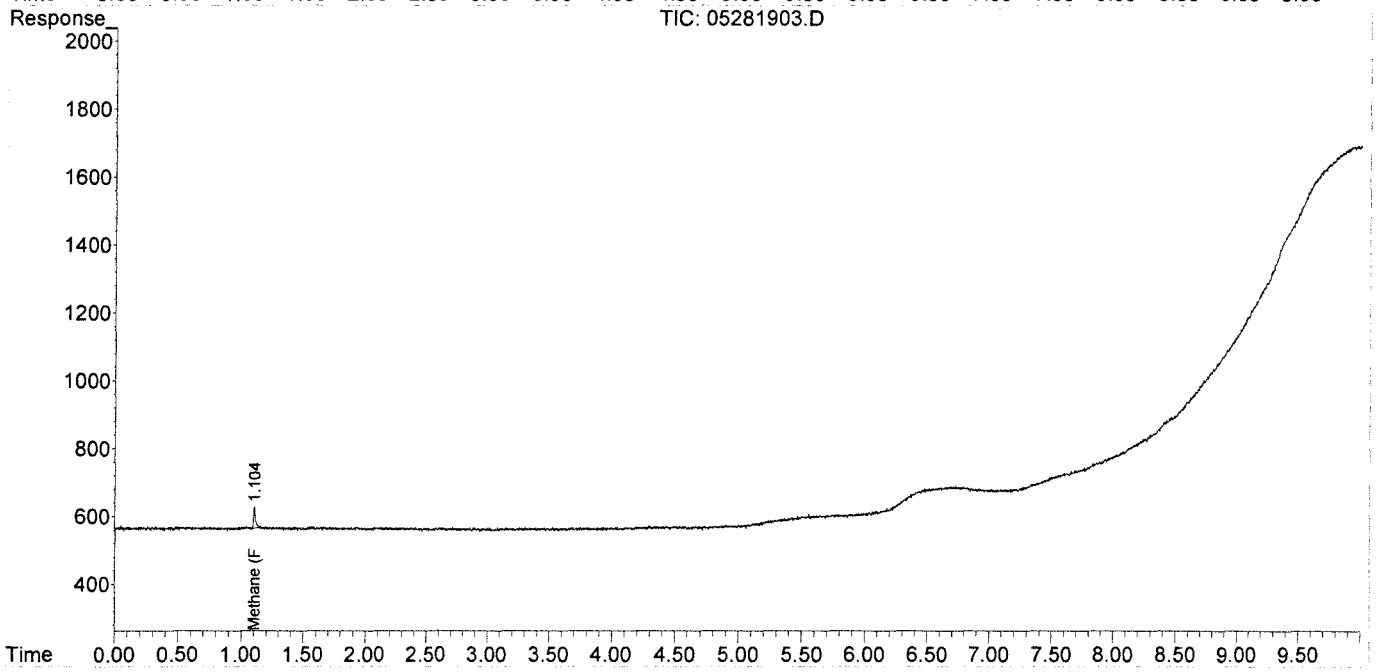
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:21:43
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:49:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

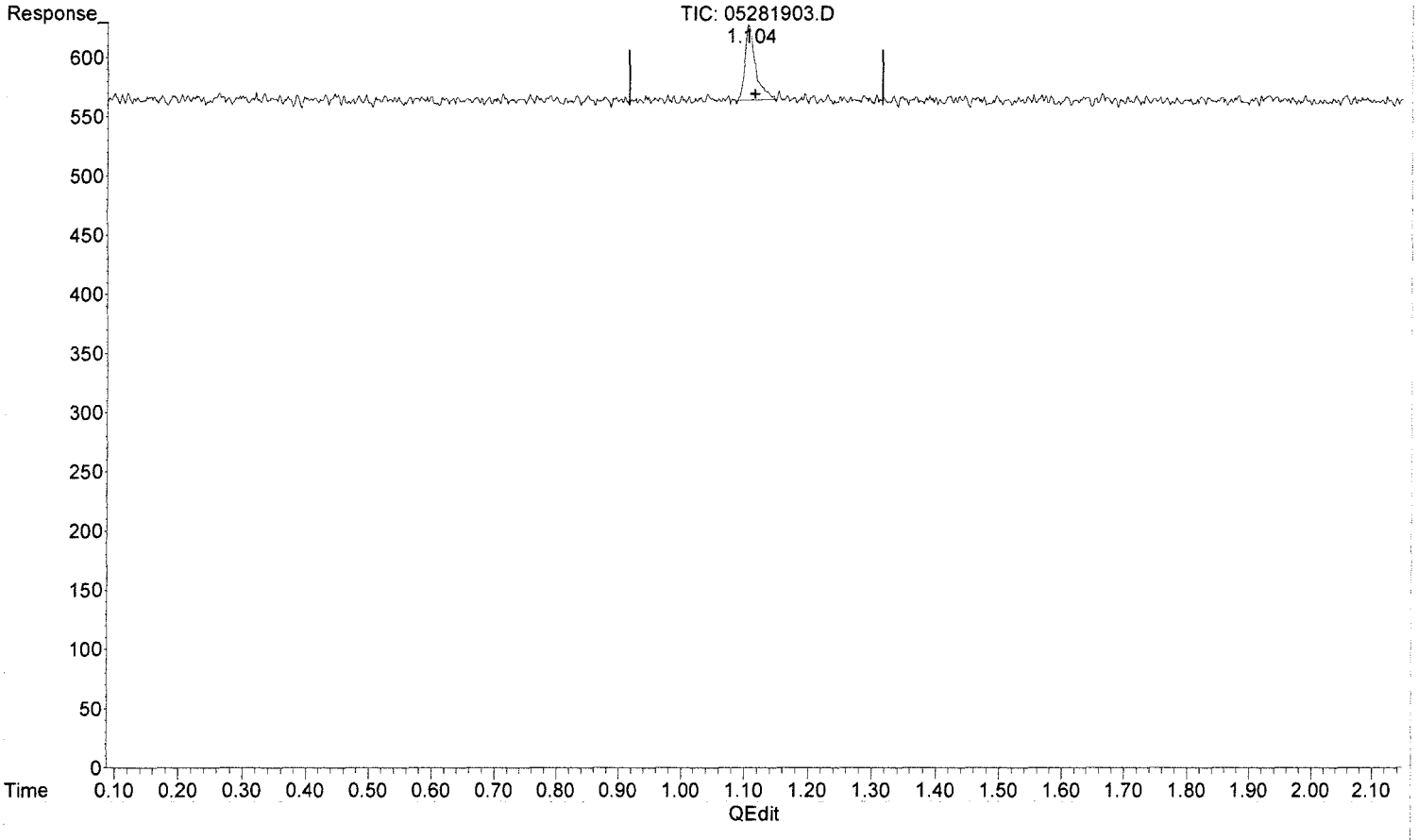




Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:21:43
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:49:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.104min 0.080 ppm m

response 725

ME 5/28/19

5/28/19 mf no flow issues

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:19:30
Operator : WH
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 13:37:58 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

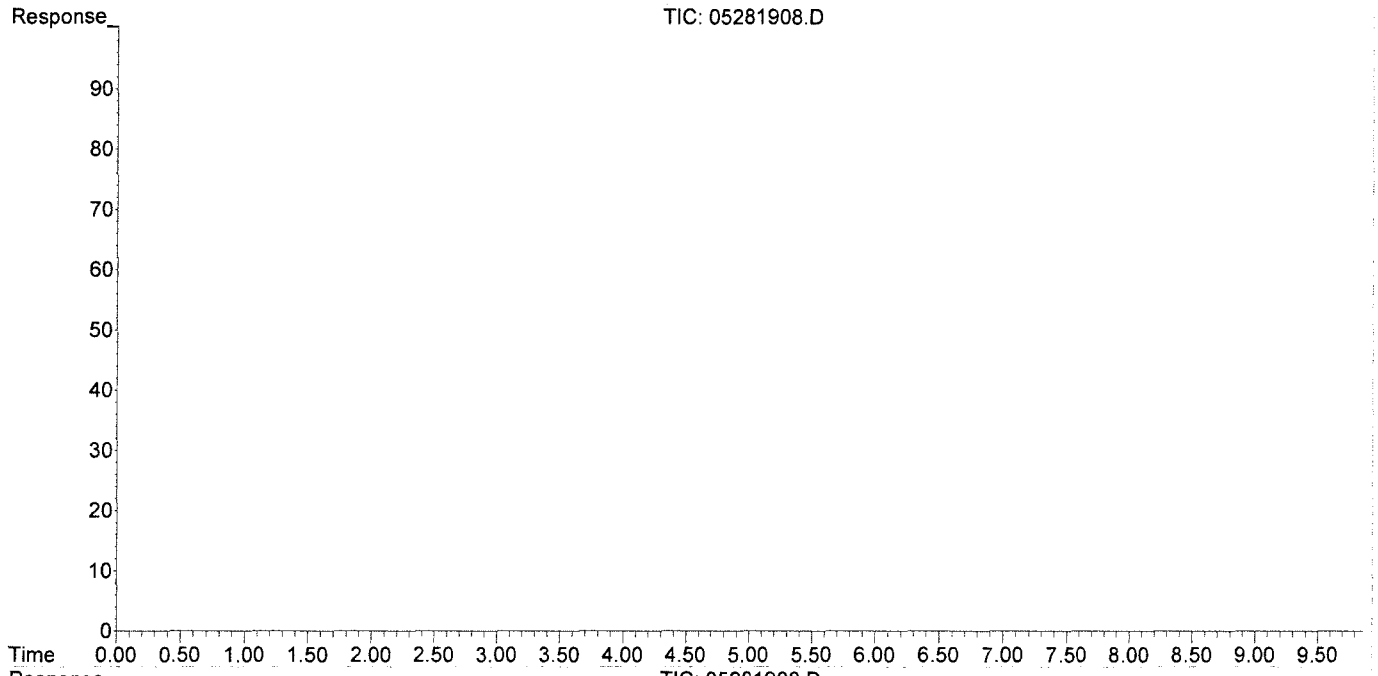
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	11888	1.311	ppm
7)	Ethylene	1.671	19086	1.141	ppm
8)	Ethane	1.934	21088	1.244	ppm
9)	Propylene	4.312	26900	1.148	ppm
10)	Propane	4.435	32060	1.289	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.650	43149	1.621	ppm
13)	n-Butane	6.650	43149	1.621	ppm

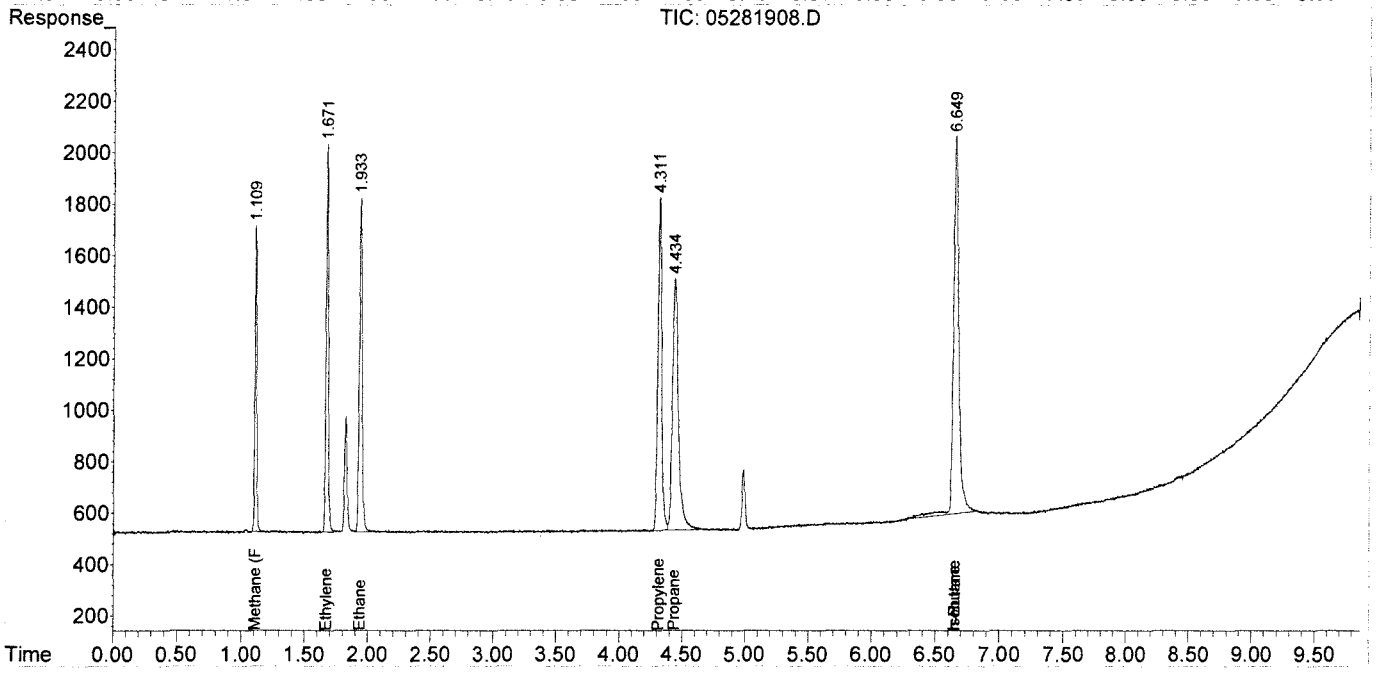
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:19:30
Operator : WH
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 13:37:58 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:36:35
Operator : WH
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 13:53:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

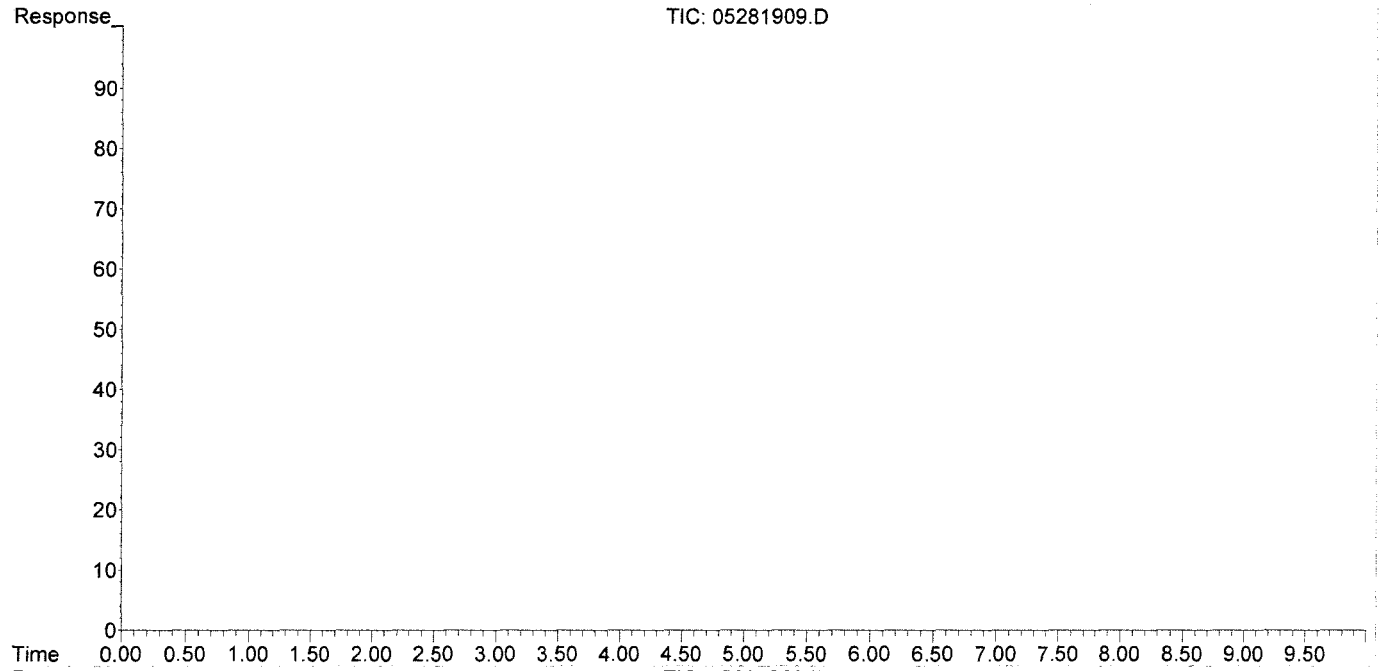
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.111	11951	1.318	ppm
7)	Ethylene	1.673	19489	1.165	ppm
8)	Ethane	1.935	21688	1.279	ppm
9)	Propylene	4.311	27528	1.175	ppm
10)	Propane	4.434	32790	1.318	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.648	43062	1.618	ppm
13)	n-Butane	6.648	43062	1.618	ppm

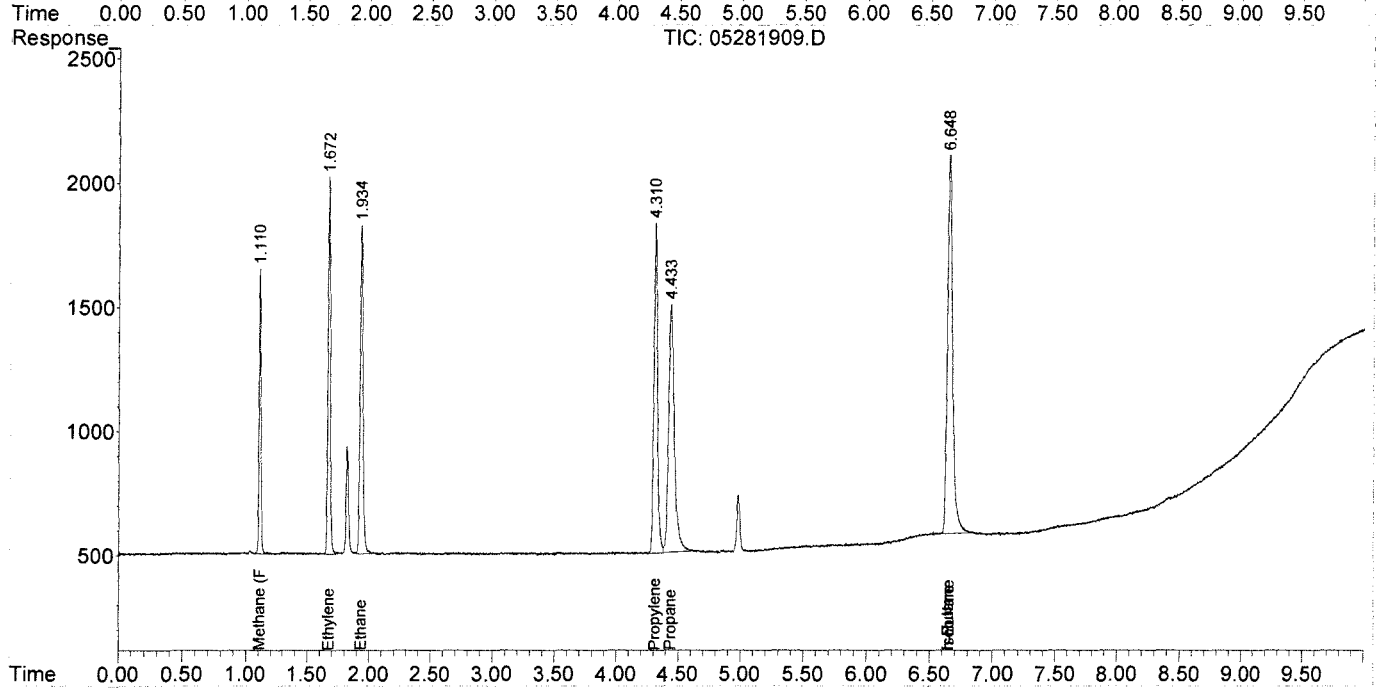
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:36:35
Operator : WH
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 13:53:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

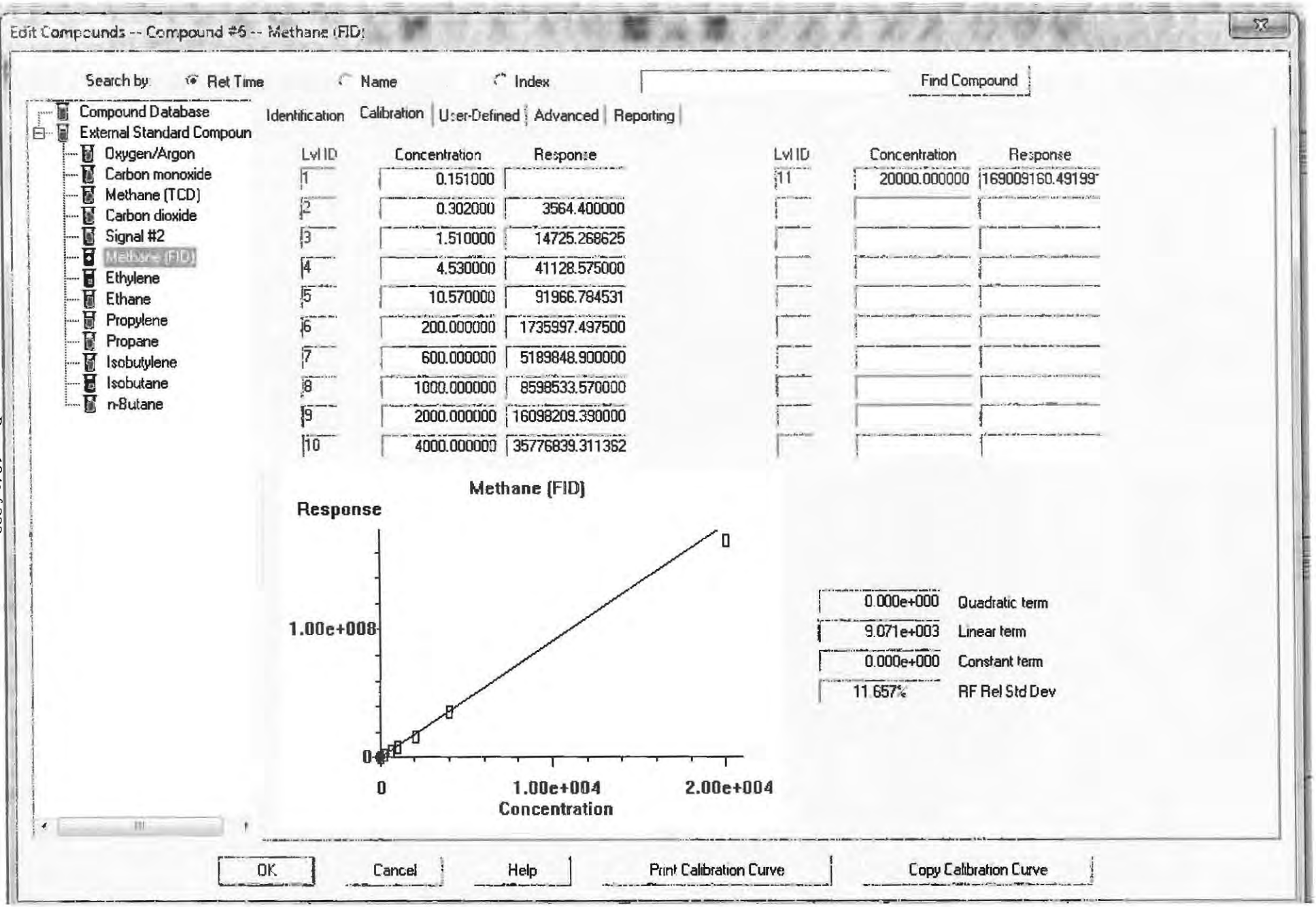
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017



Edit Compounds -- Compound #7 -- Ethylene

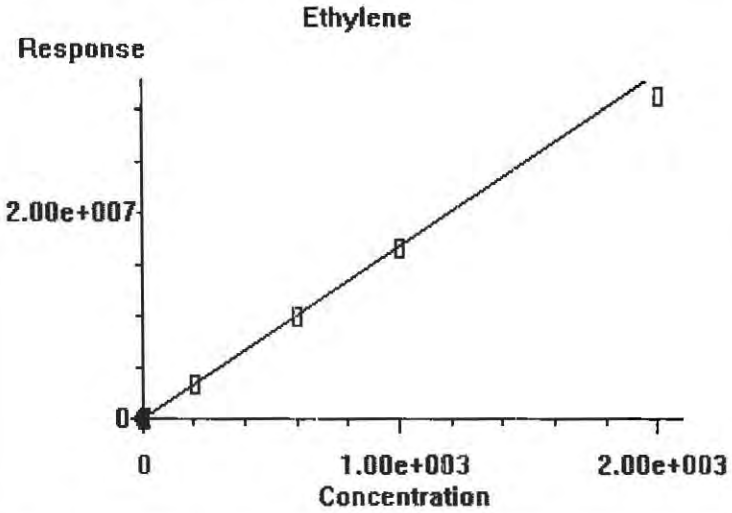
Search by: Ret Time | Name | Index | Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

Search by: Ret Time | Name | Index — Find Compound

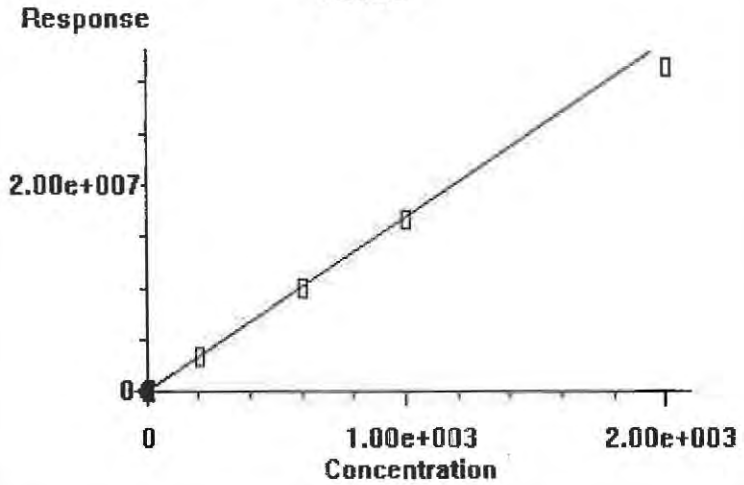
- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	

Ethane



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

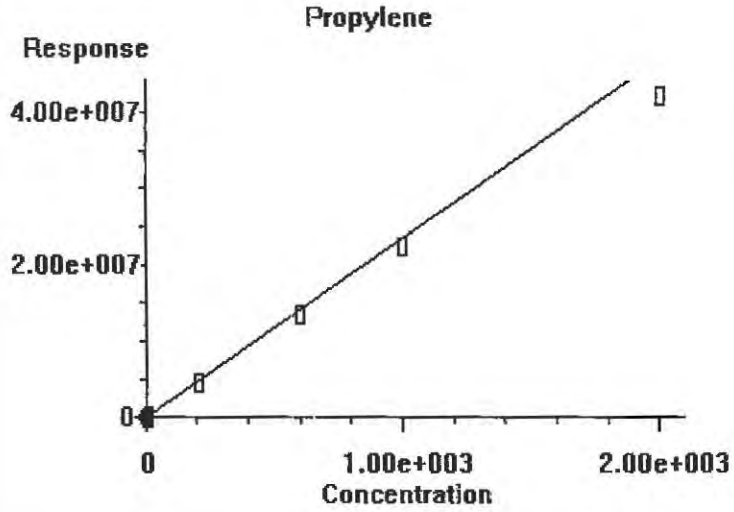
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

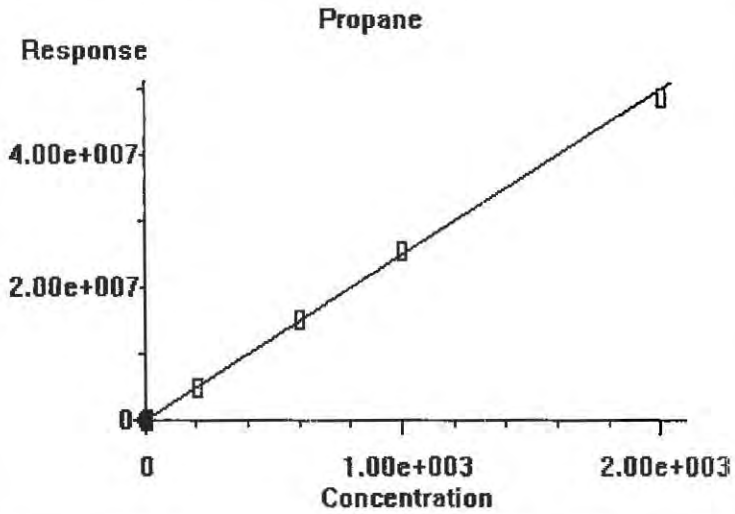
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663316
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

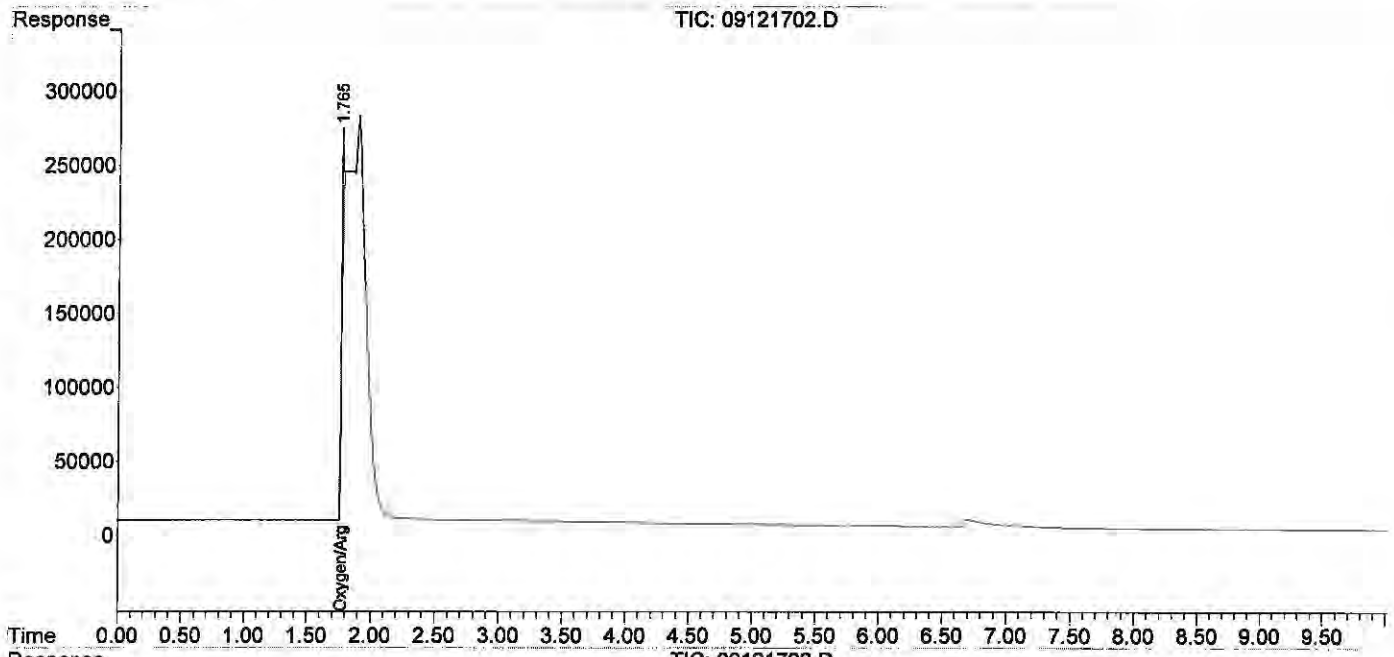
9/13/17

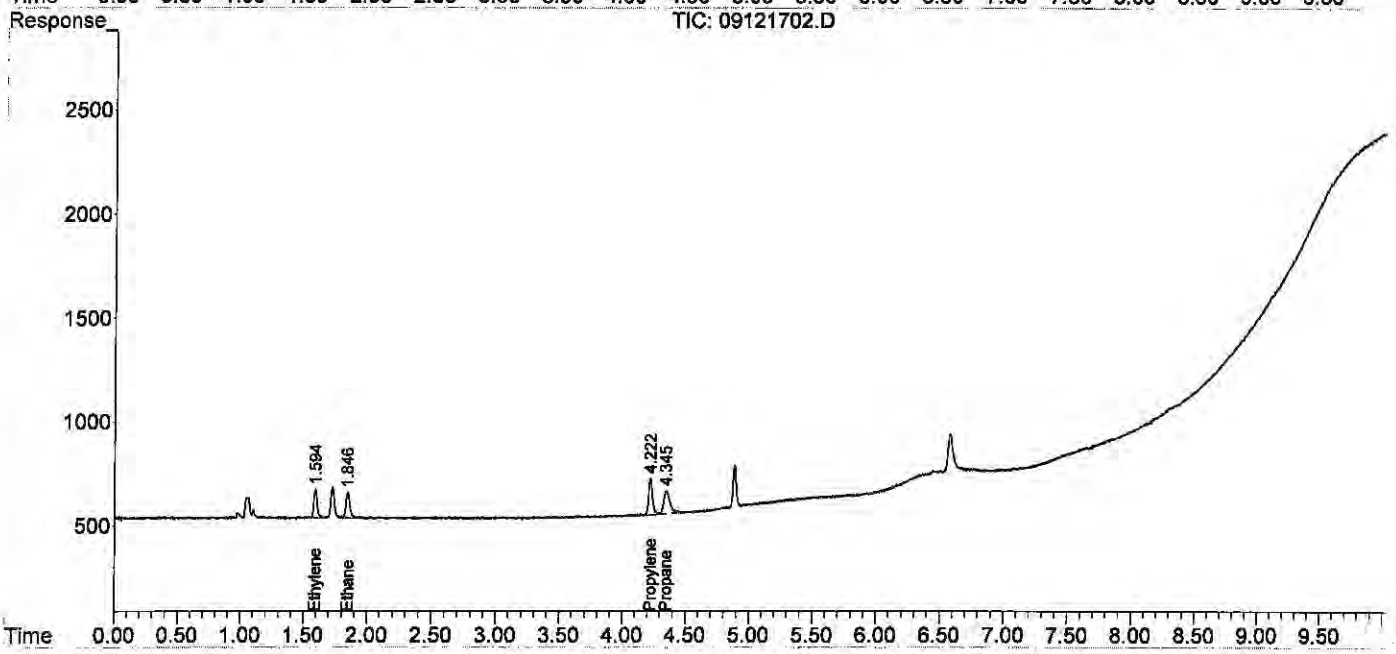
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

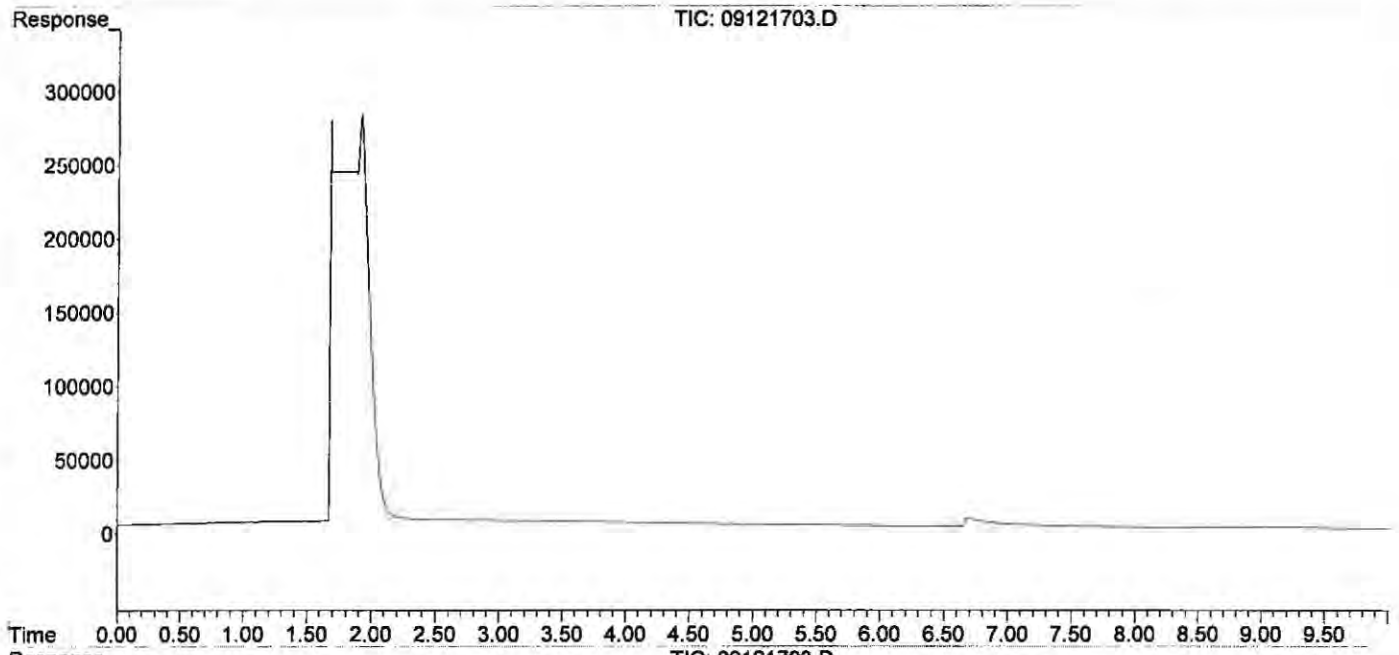
(f)=RT Delta > 1/2 Window (m)=manual int.

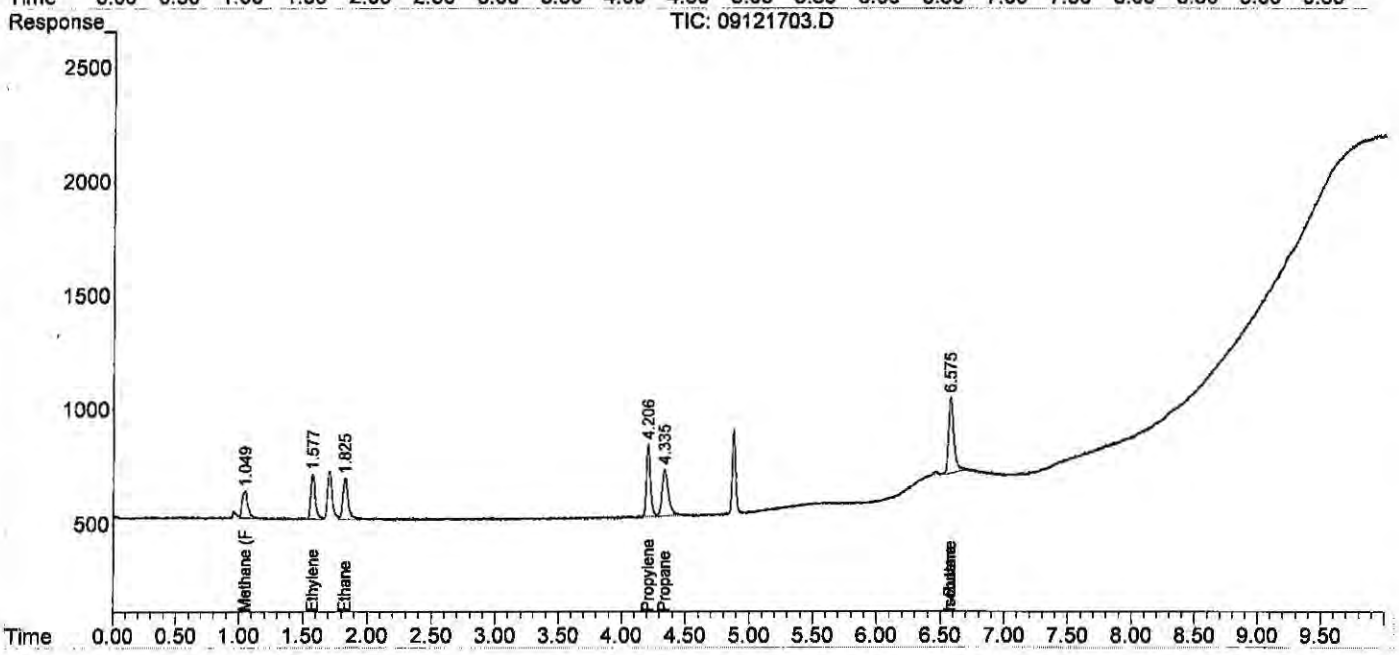
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



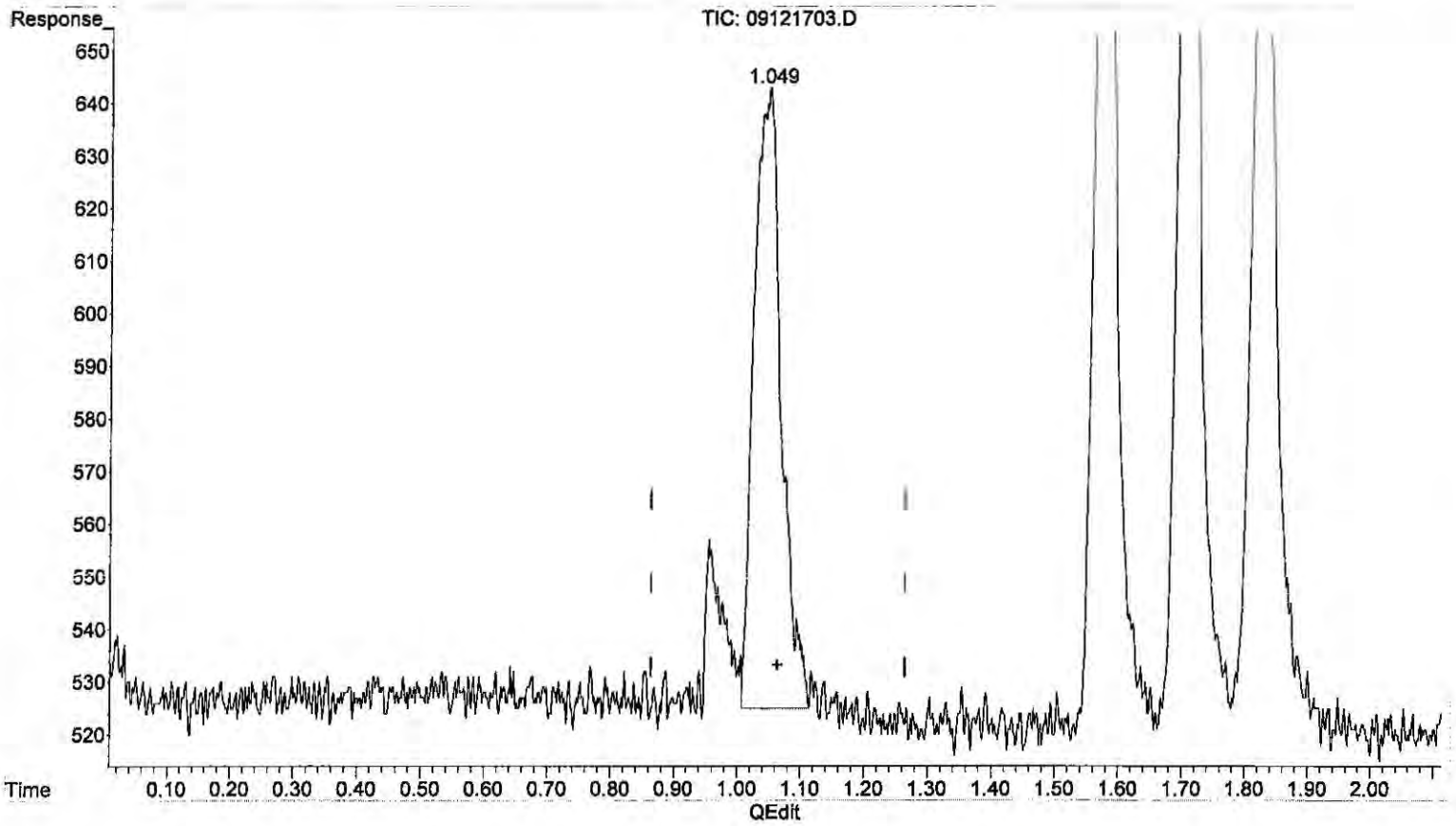


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

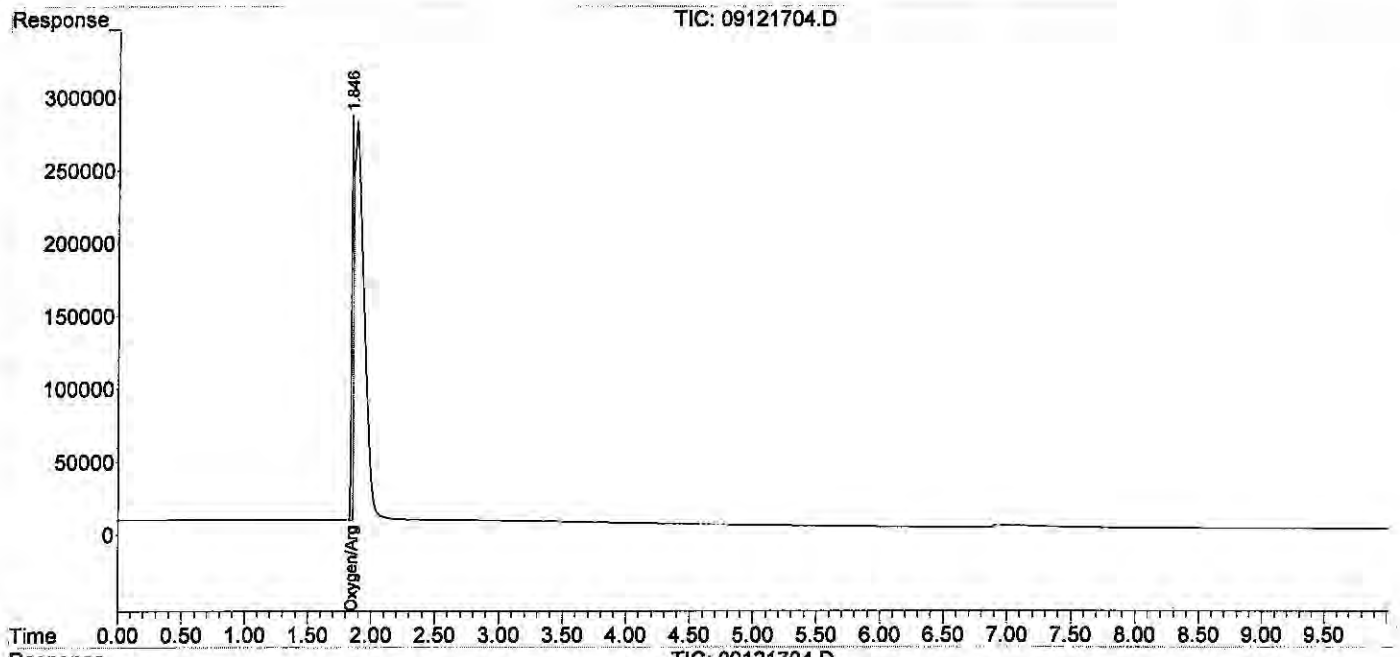
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

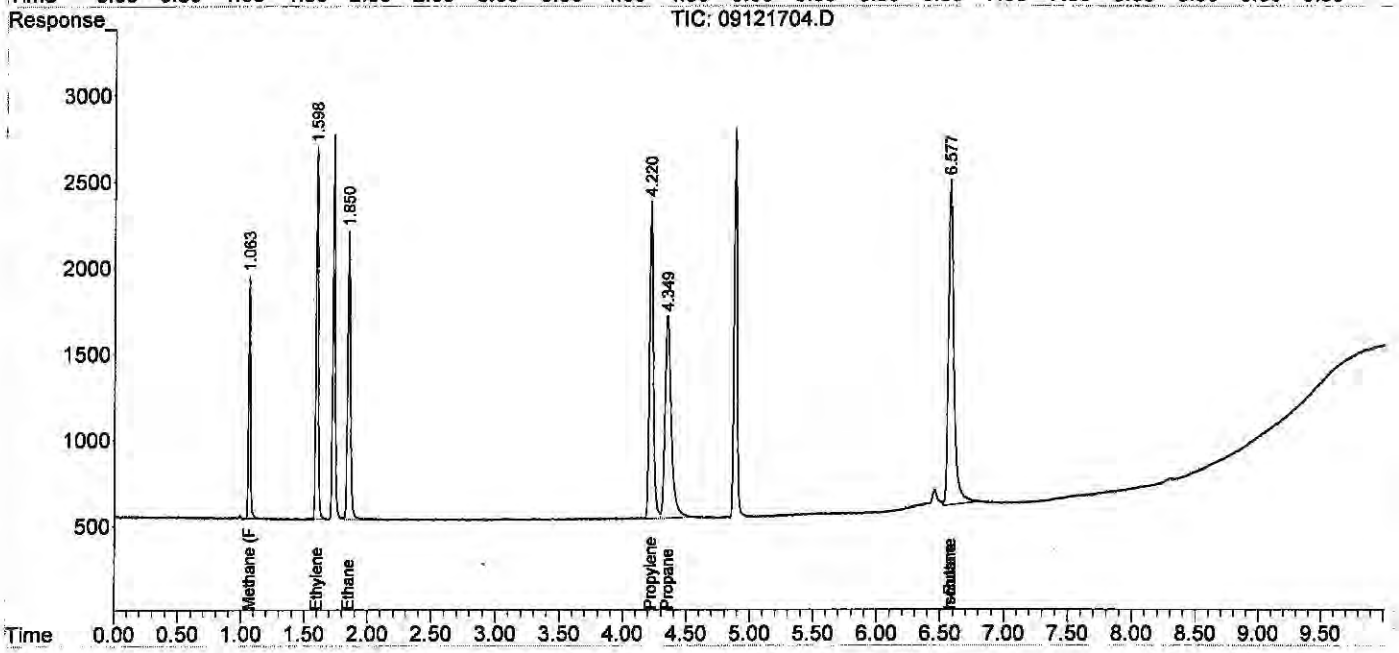
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

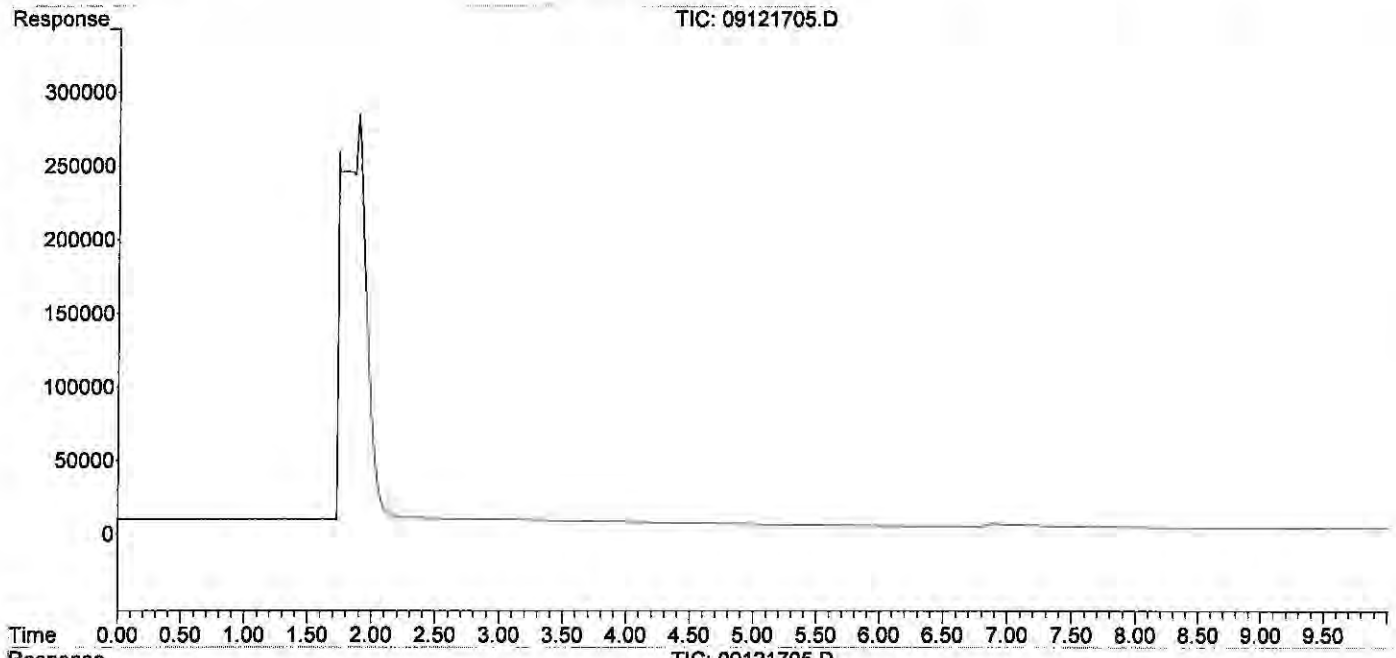
(f)=RT Delta > 1/2 Window (m)=manual int.

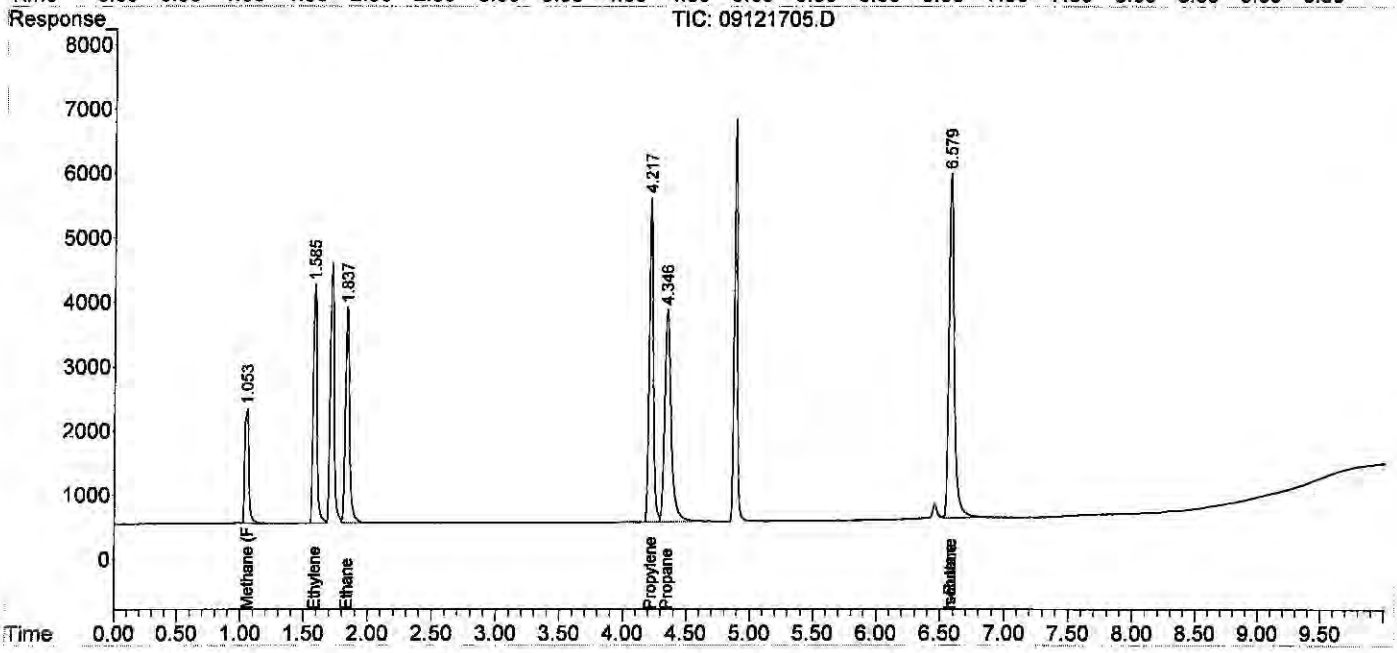
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

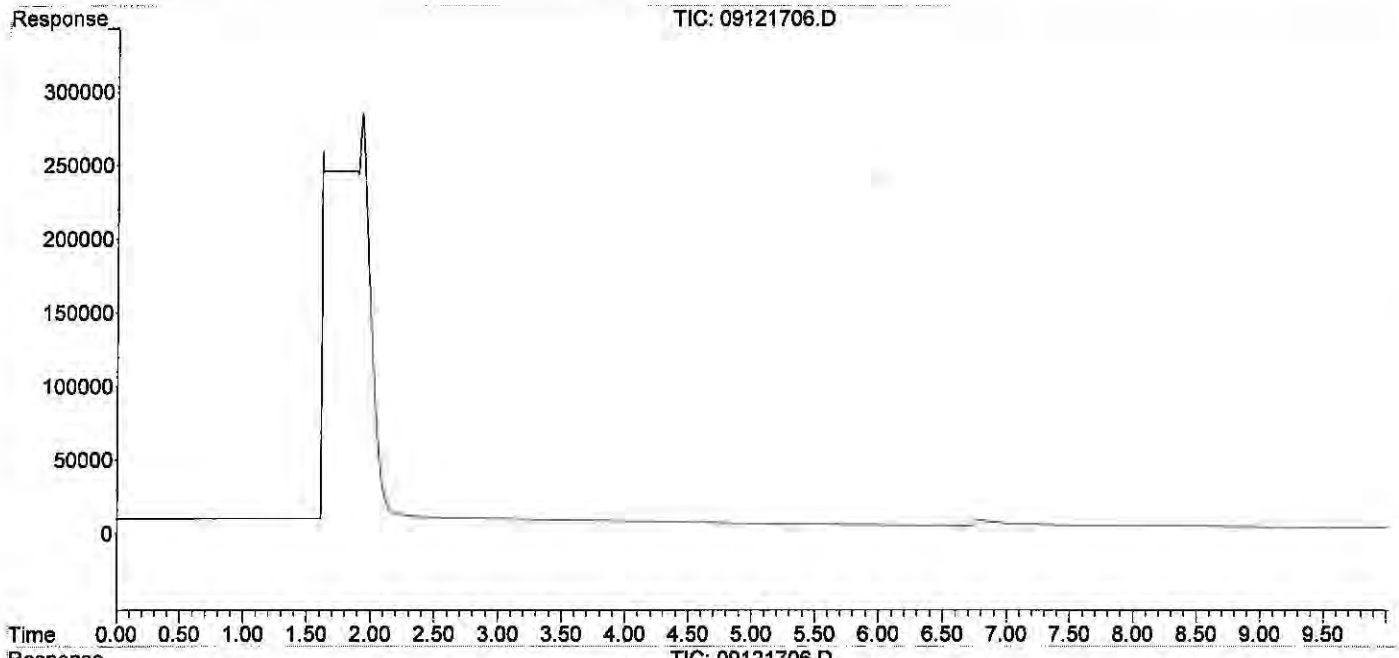
(f)=RT Delta > 1/2 Window (m)=manual int.

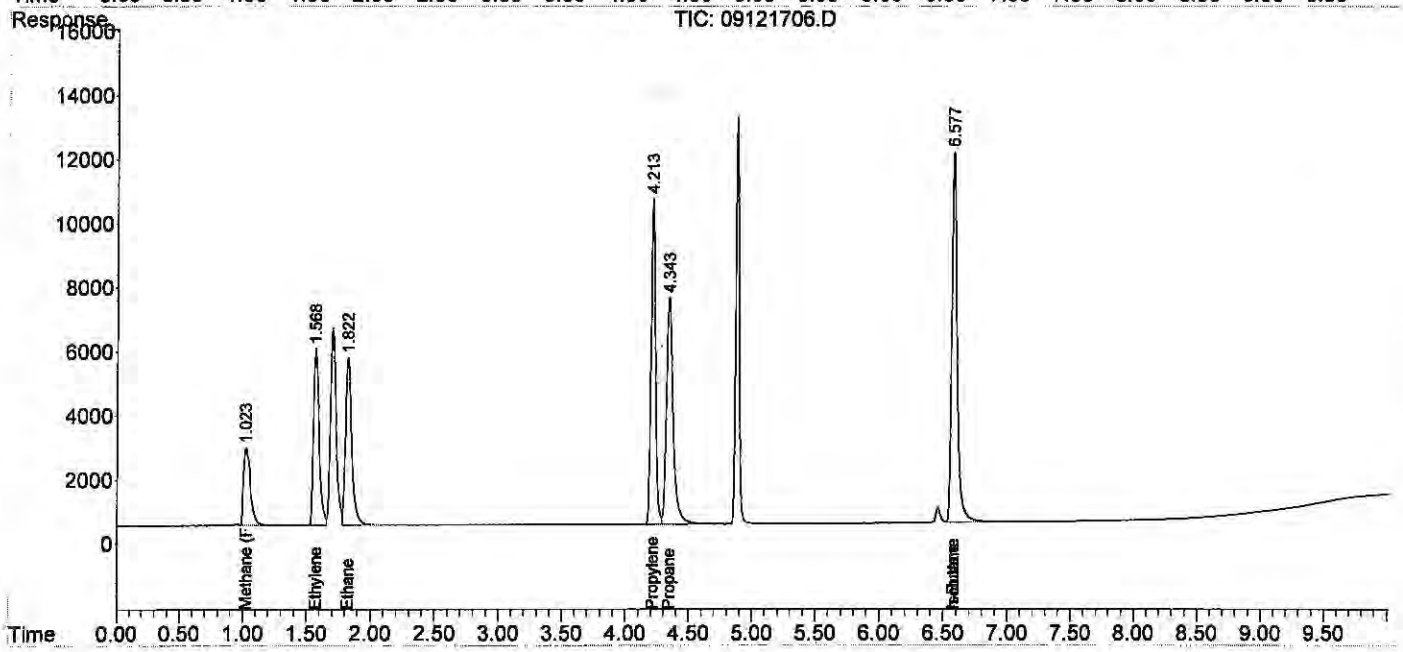
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

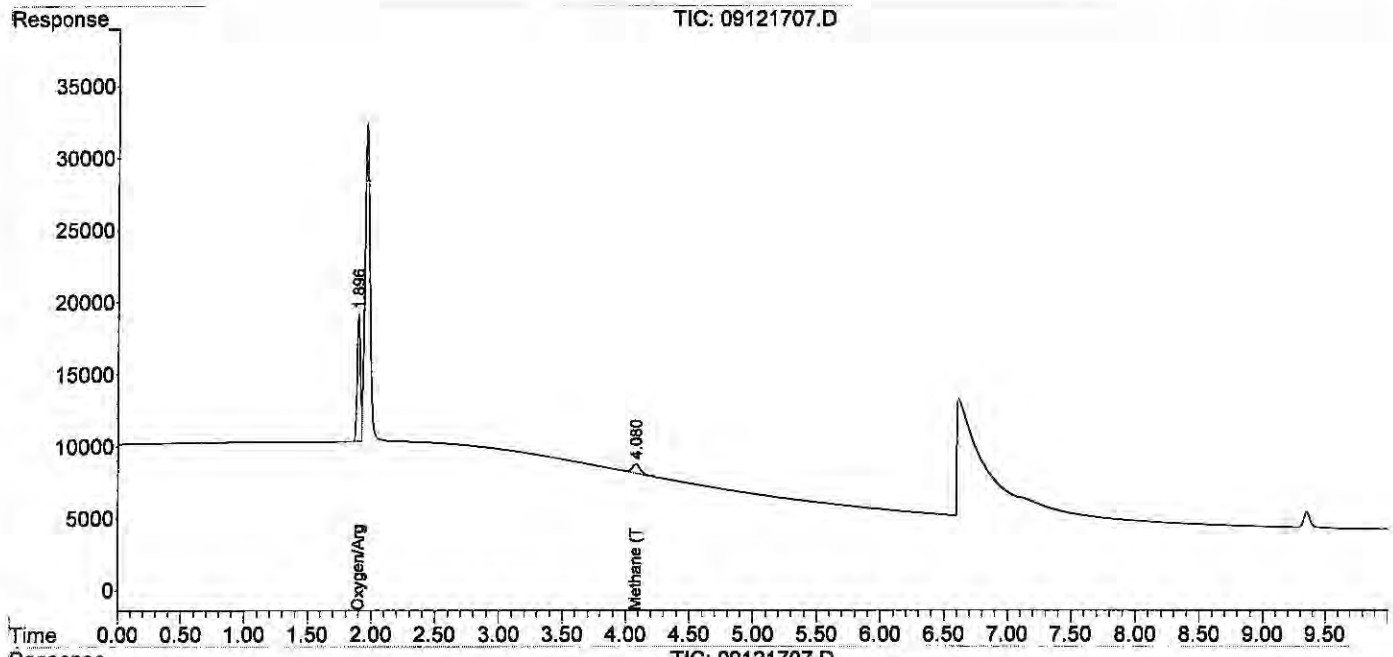
(f)=RT Delta > 1/2 Window (m)=manual int.

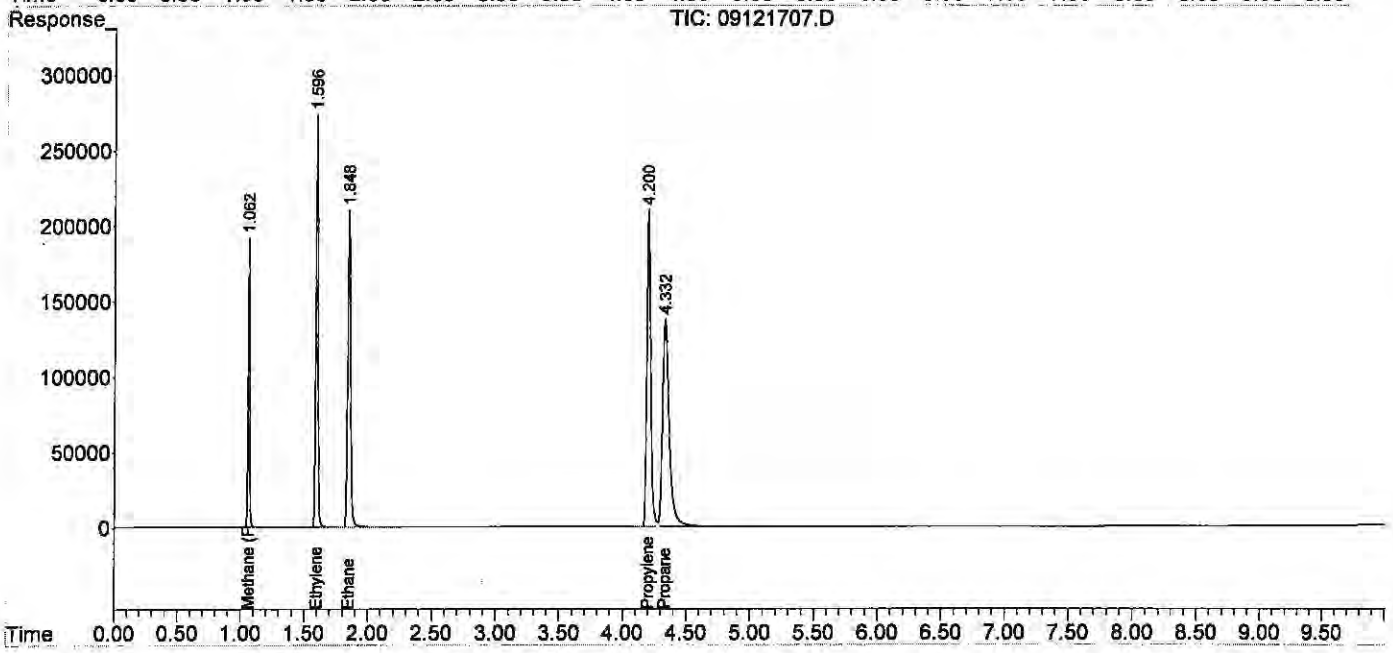
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

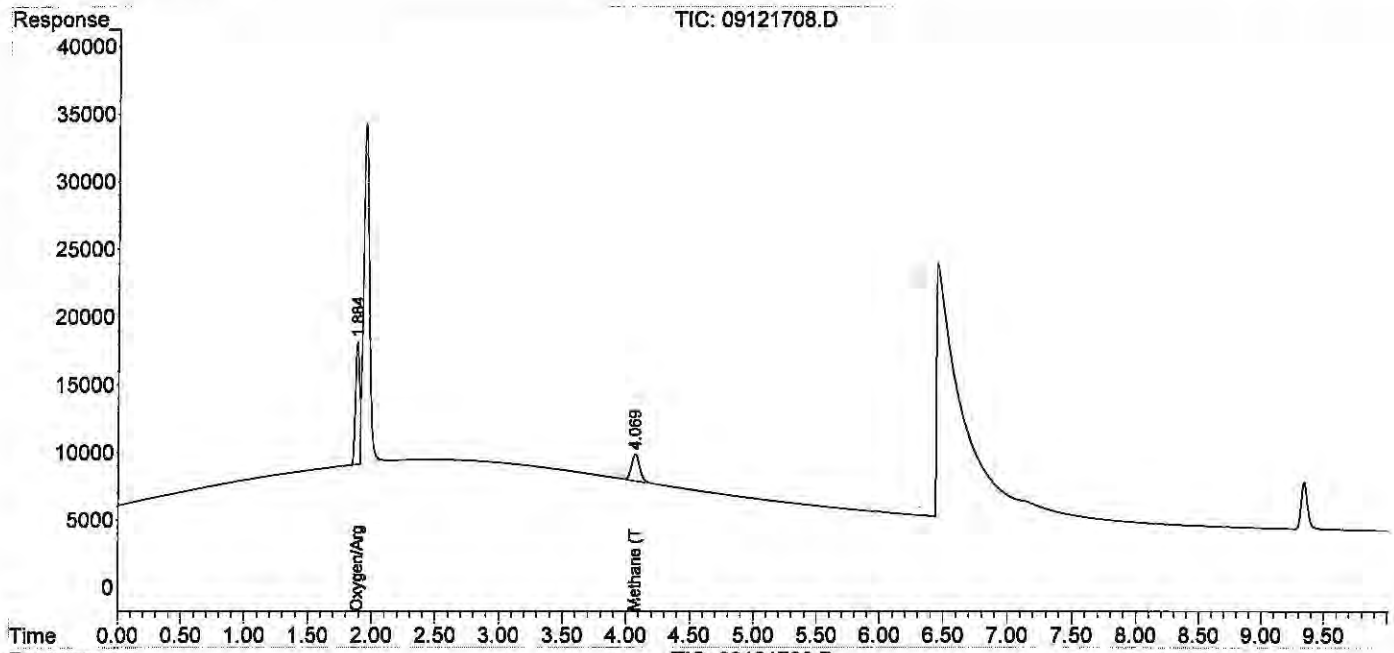
(f)=RT Delta > 1/2 Window (m)=manual int.

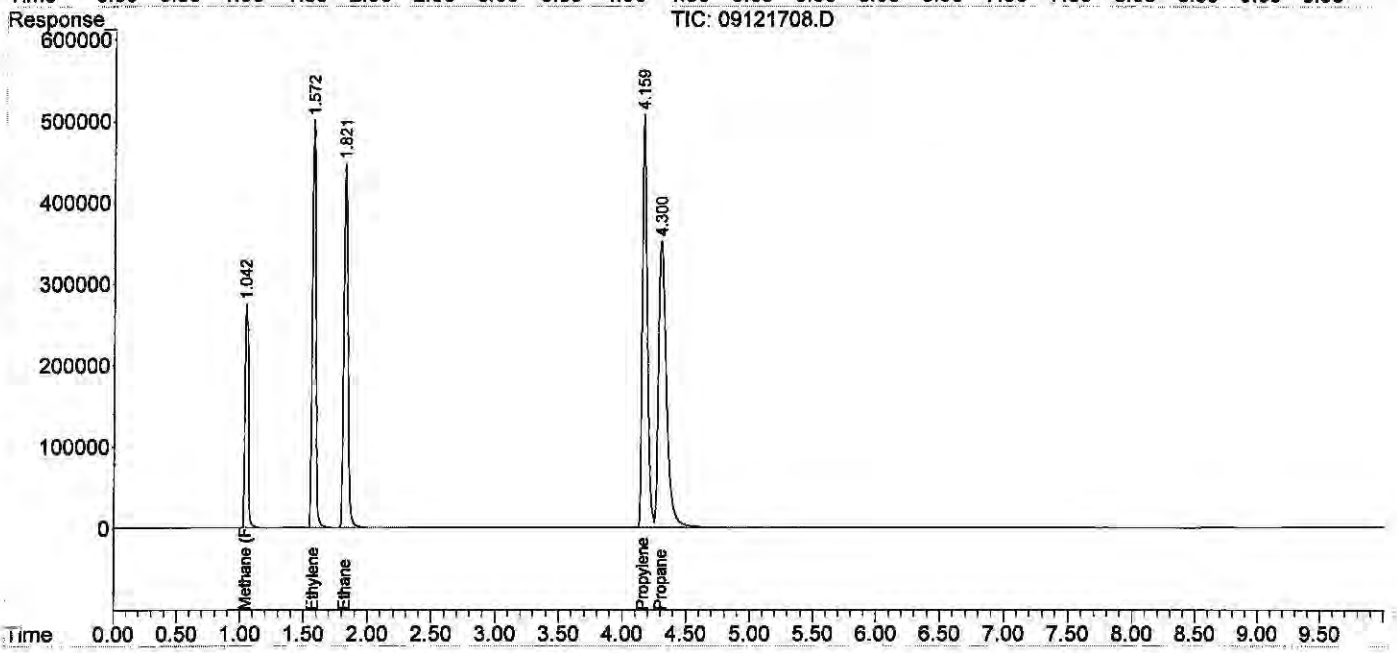
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

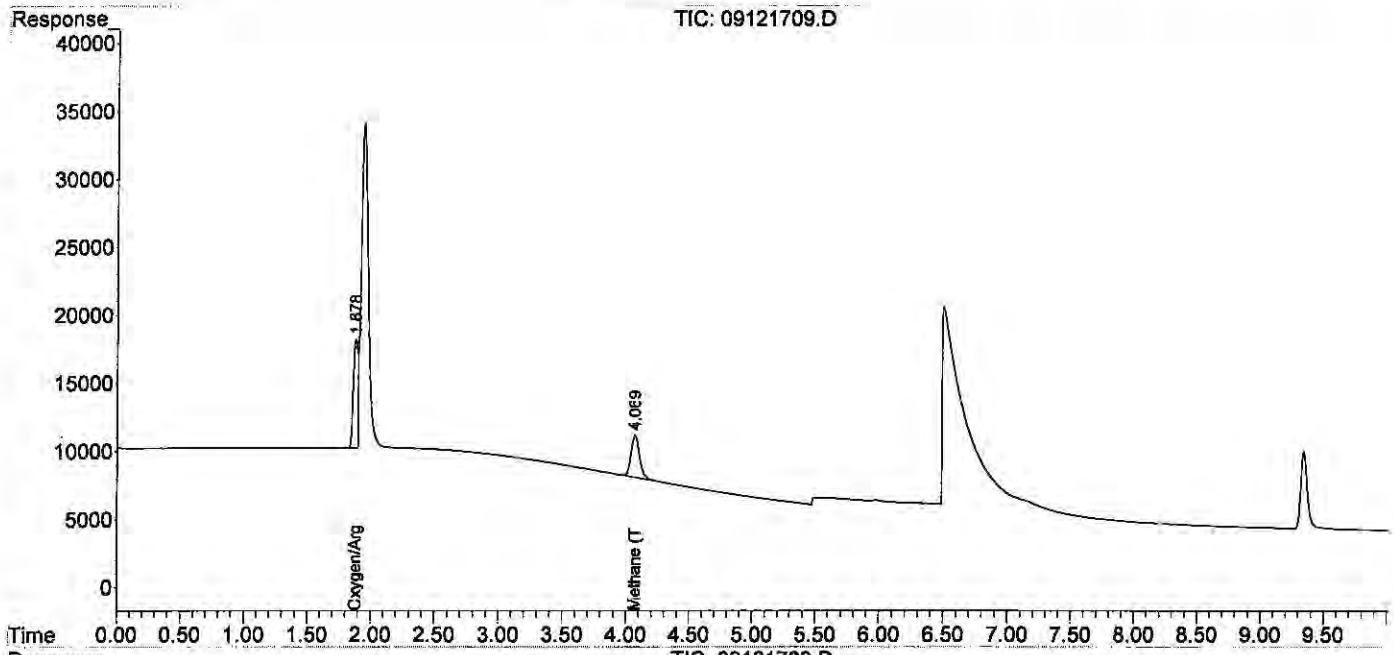
(f)=RT Delta > 1/2 Window (m)=manual int.

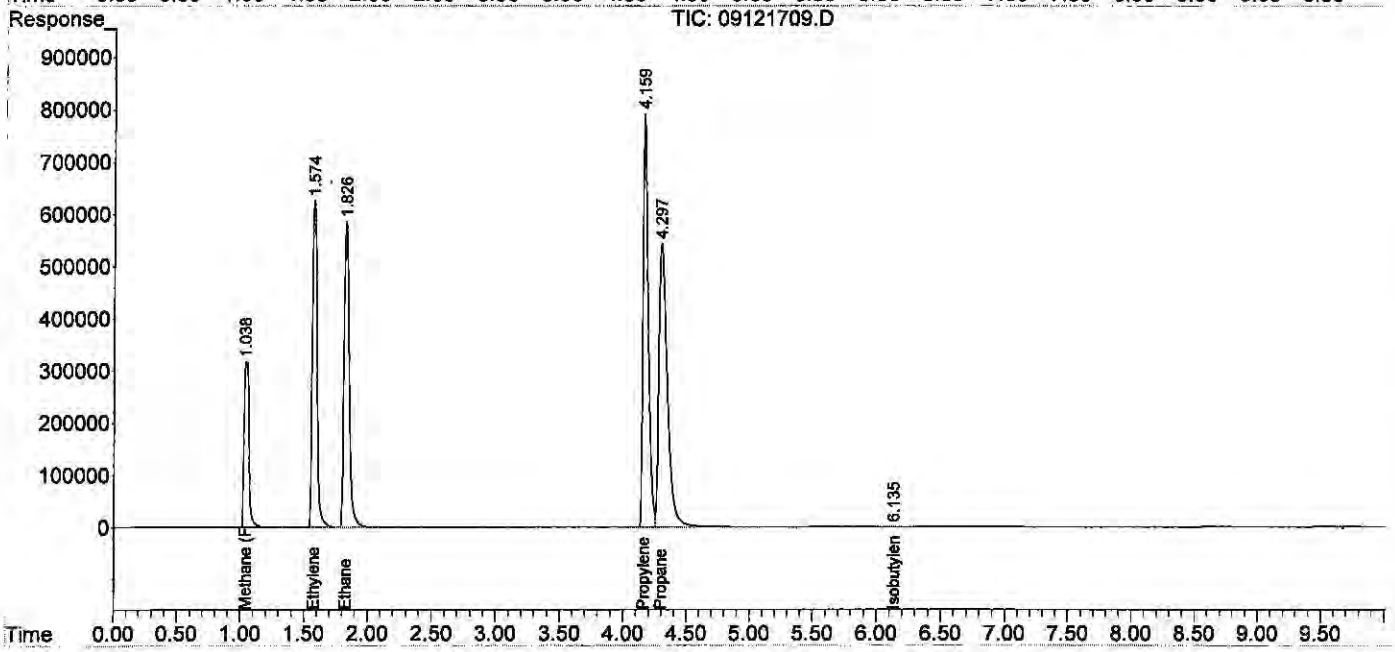
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

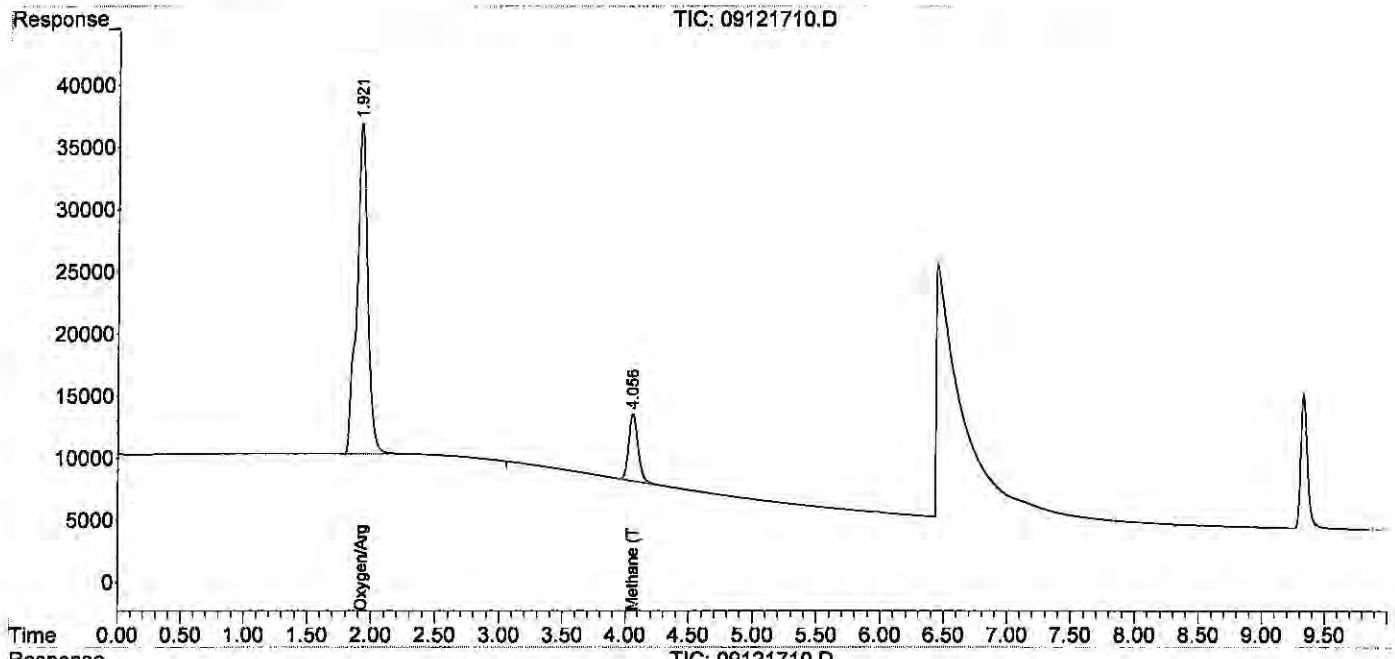
(f)=RT Delta > 1/2 Window (m)=manual int.

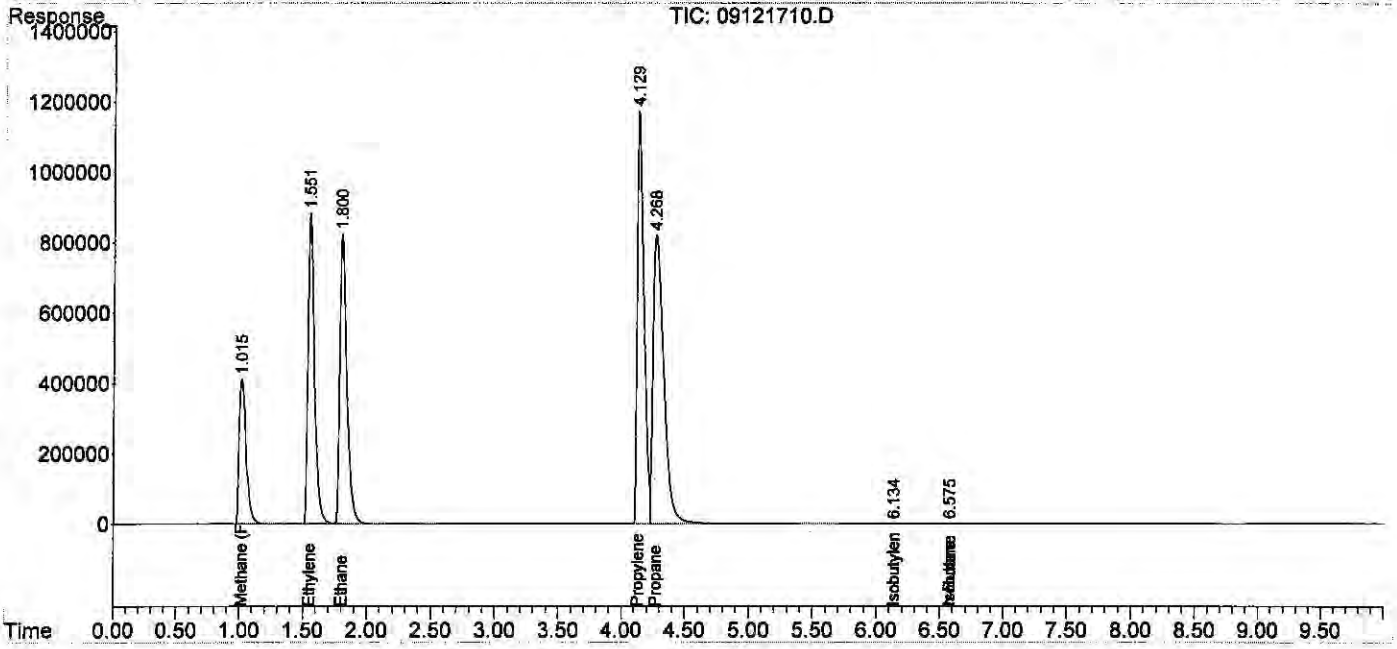
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



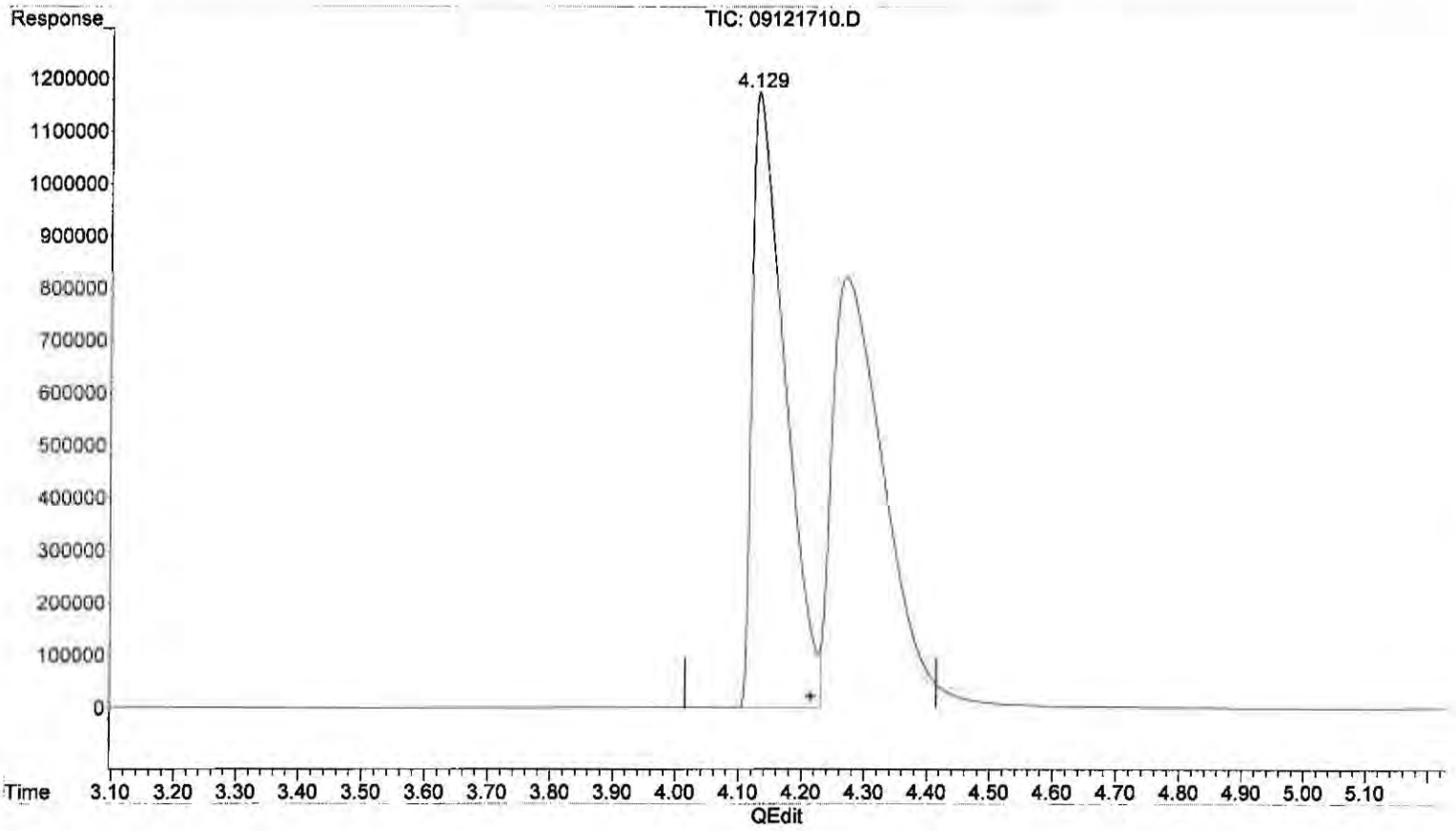


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene
4.129min 1775.341 ppm m
response 42124690

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

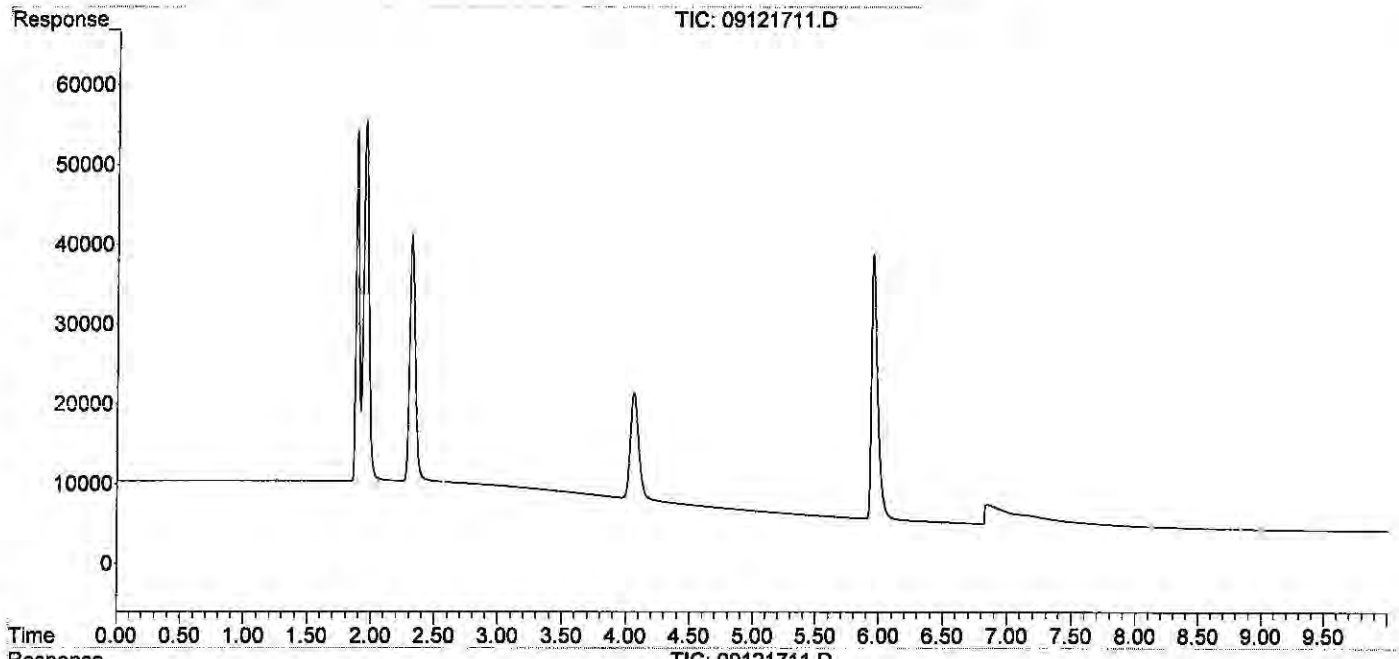
(f)=RT Delta > 1/2 Window (m)=manual int.

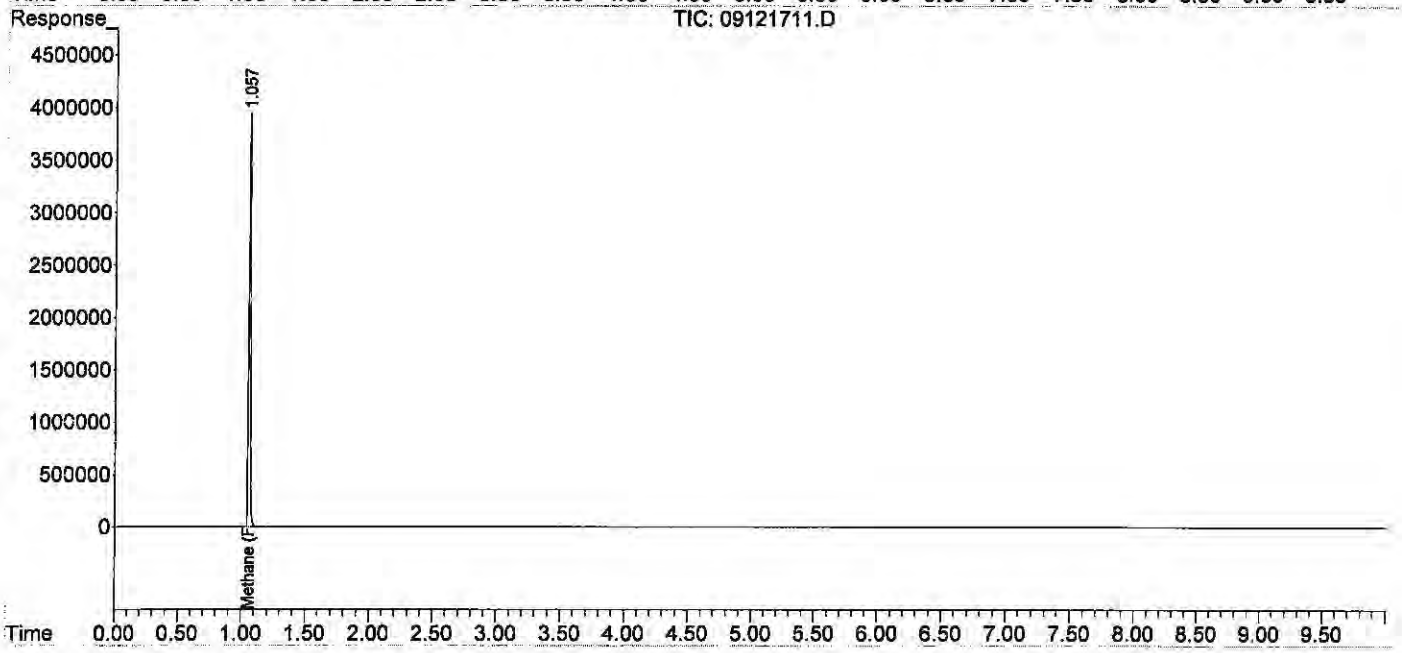
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

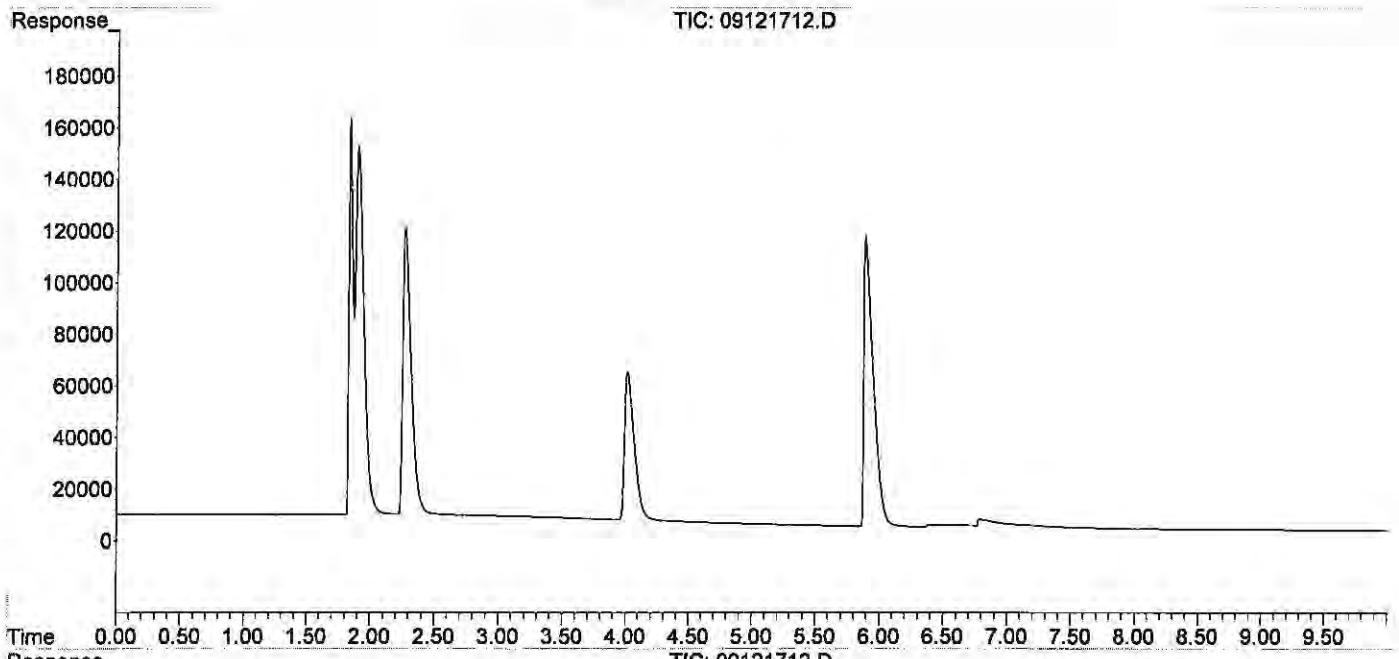
(f)=RT Delta > 1/2 Window (m)=manual int.

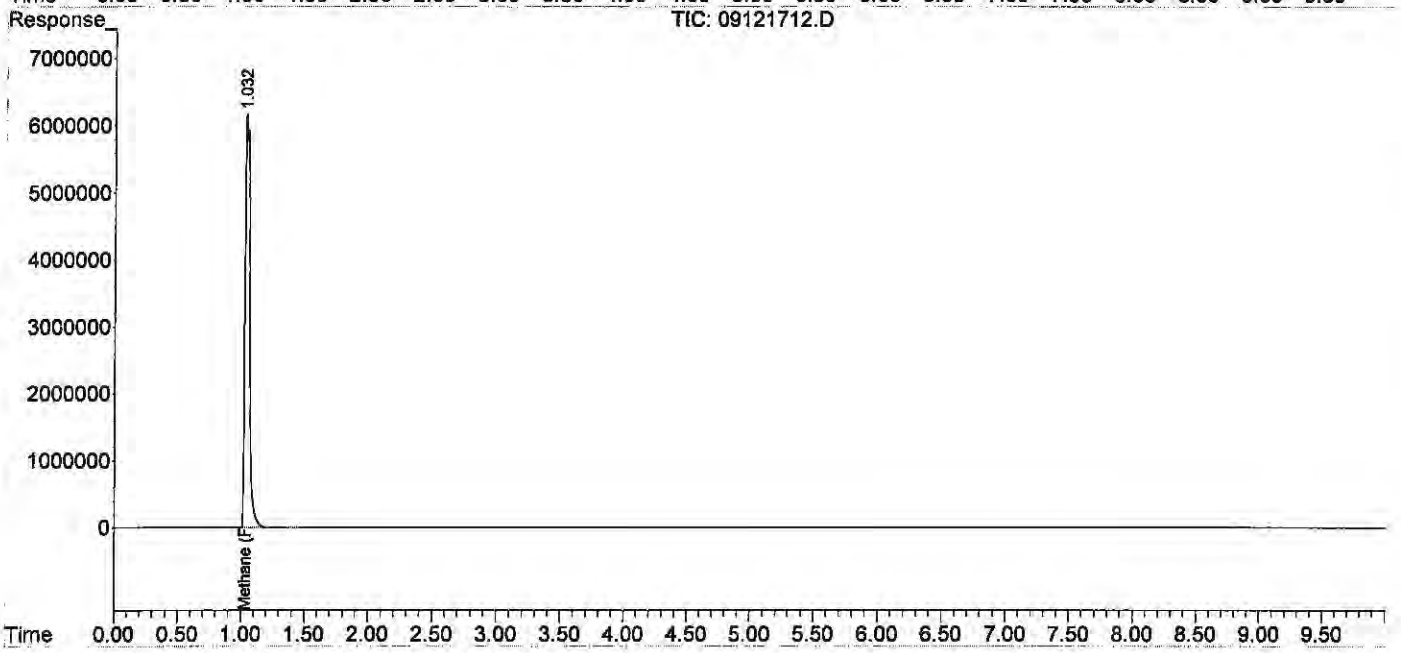
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units			
Target Compounds								
1)	Oxygen/Argon	1.843	2922459	3.687	ppm			
2)	Carbon monoxide	1.843	2922459	N.D.	ppm			
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual	%D	
4)	Carbon dioxide	0.000	0	N.D.	ppm			
6)	Methane (FID)	1.063	13748	1.516	ppm	1.50	1.50	101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50	1.50	96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50	1.50	96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50	1.50	102.5
10)	Propane	4.350	37738	1.517	ppm	1.51	1.51	100.5
11)	Isobutylene	0.000	0	N.D.	ppm			
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2		
13)	n-Butane	6.579f	48019	1.804	ppm			

(f)=RT Delta > 1/2 Window (m)=manual int.

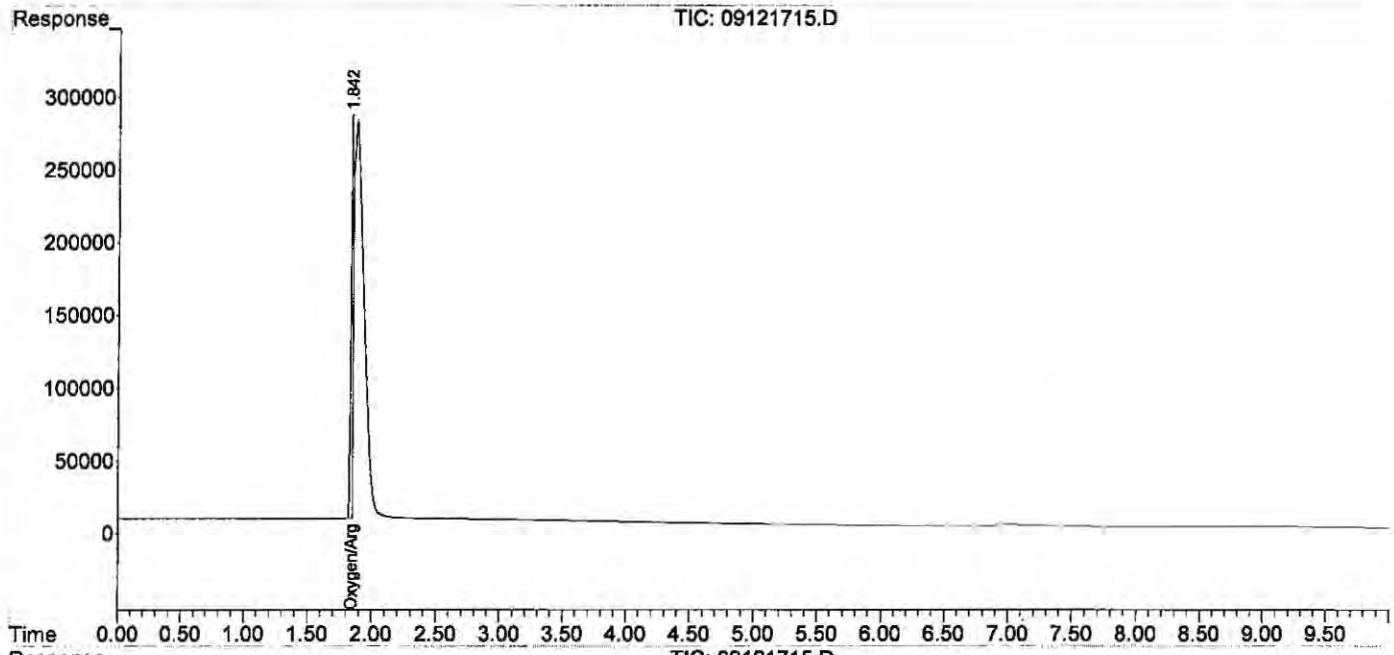
9/14/2017

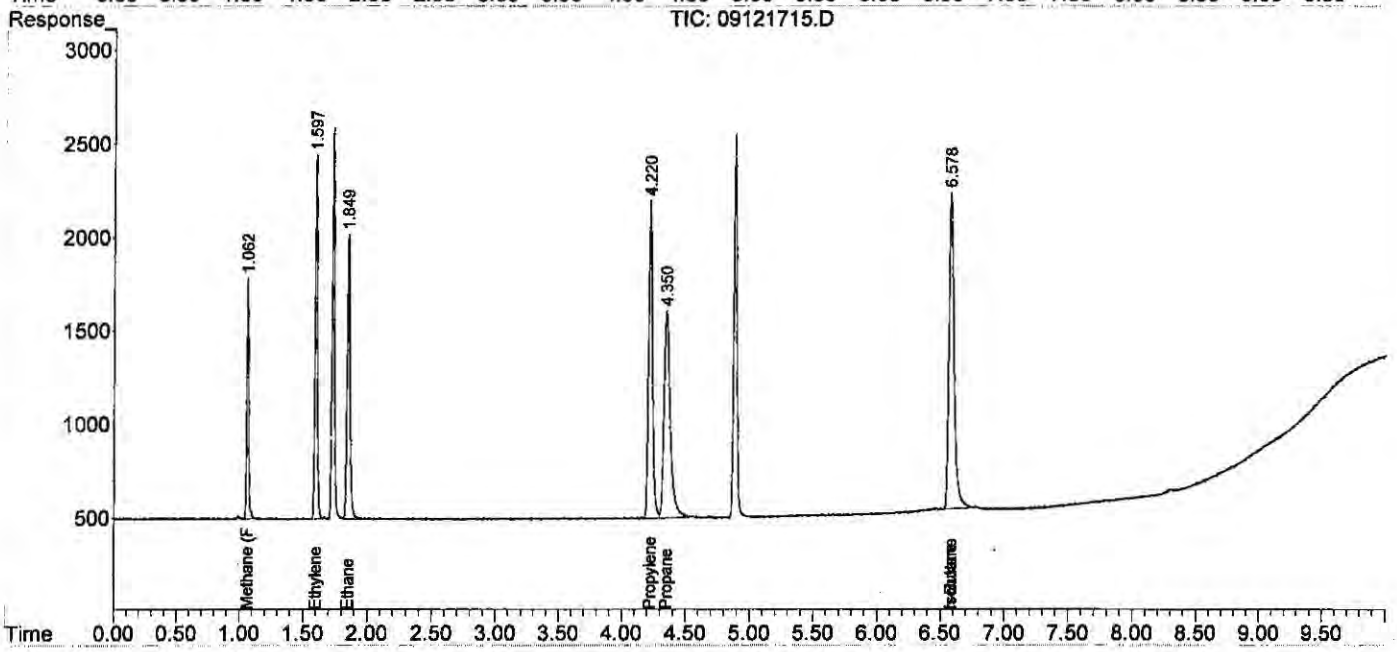
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1902949
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 05/28/19
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-05221901	0.100	93.832	100.036	99.060
ACTUAL		101.50	100.90	101.40
%Difference		7.6%	0.9%	2.3%
mcs 0.1ml	0.100	0.080	0.000	0.000
rb 0.1ml	0.100	0.000	0.000	0.000
lcs fid 0.1ml	0.100	1.311	1.141	1.244
lcsd fid 0.1ml	0.100	1.318	1.165	1.279
P1902949-001 0.1ml	0.100	0.000	0.000	0.000
P1902949-002 0.1ml	0.100	0.000	0.000	0.000
P1902949-003 0.1ml	0.100	0.054	0.000	0.035

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	0.800	0.000	0.000
lcs fid 0.1ml	13.110	11.410	12.440
lcsd fid 0.1ml	13.180	11.650	12.790
P1902949-001 0.1ml	0.000	0.000	0.000
P1902949-002 0.1ml	0.000	0.000	0.000
P1902949-003 0.1ml	0.540	0.000	0.350

std s32-05221901	89.426	95.448	94.840
ACTUAL	101.50	100.90	101.40
%Difference	11.9%	5.4%	6.5%

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 10:19:27
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:02:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

pw 5/28/19

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

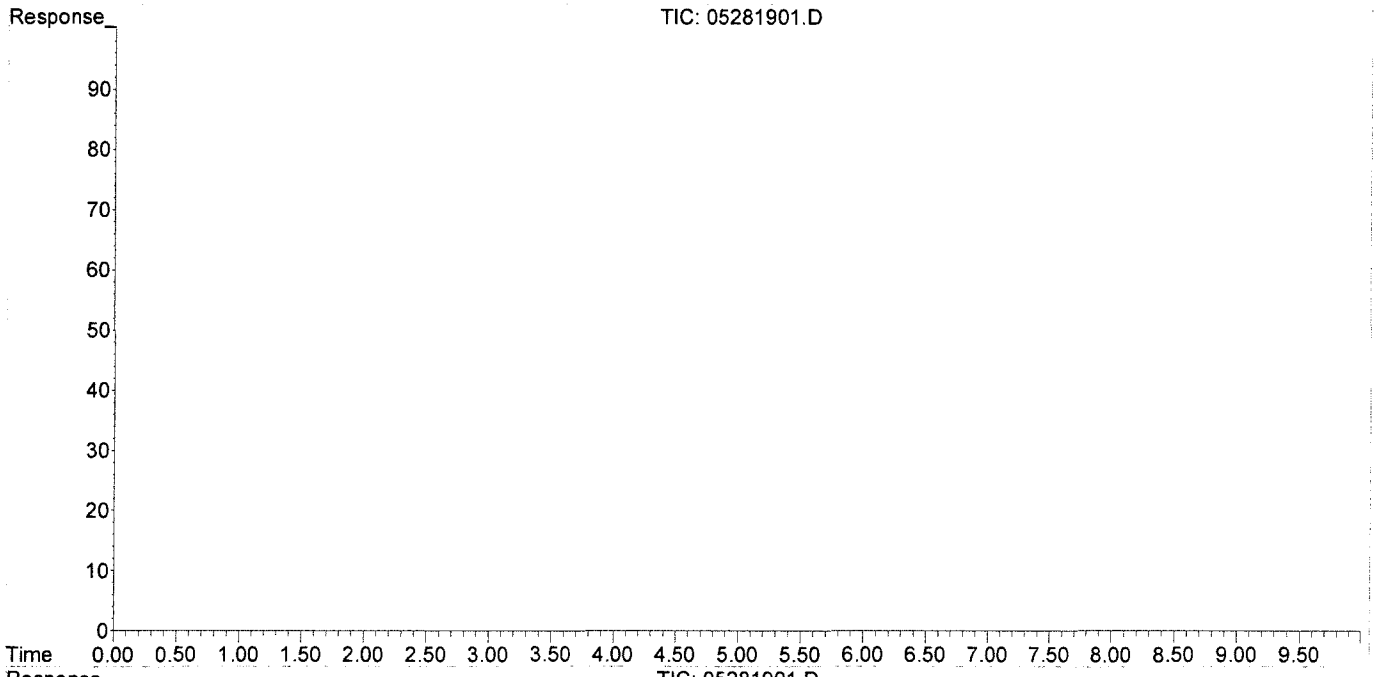
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.114	851117	93.832	ppm
7)	Ethylene	1.677	1674030	100.036	ppm
8)	Ethane	1.940	1679084	99.060	ppm
9)	Propylene	4.314	2465324	105.214	ppm
10)	Propane	4.438	2524970	101.485	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

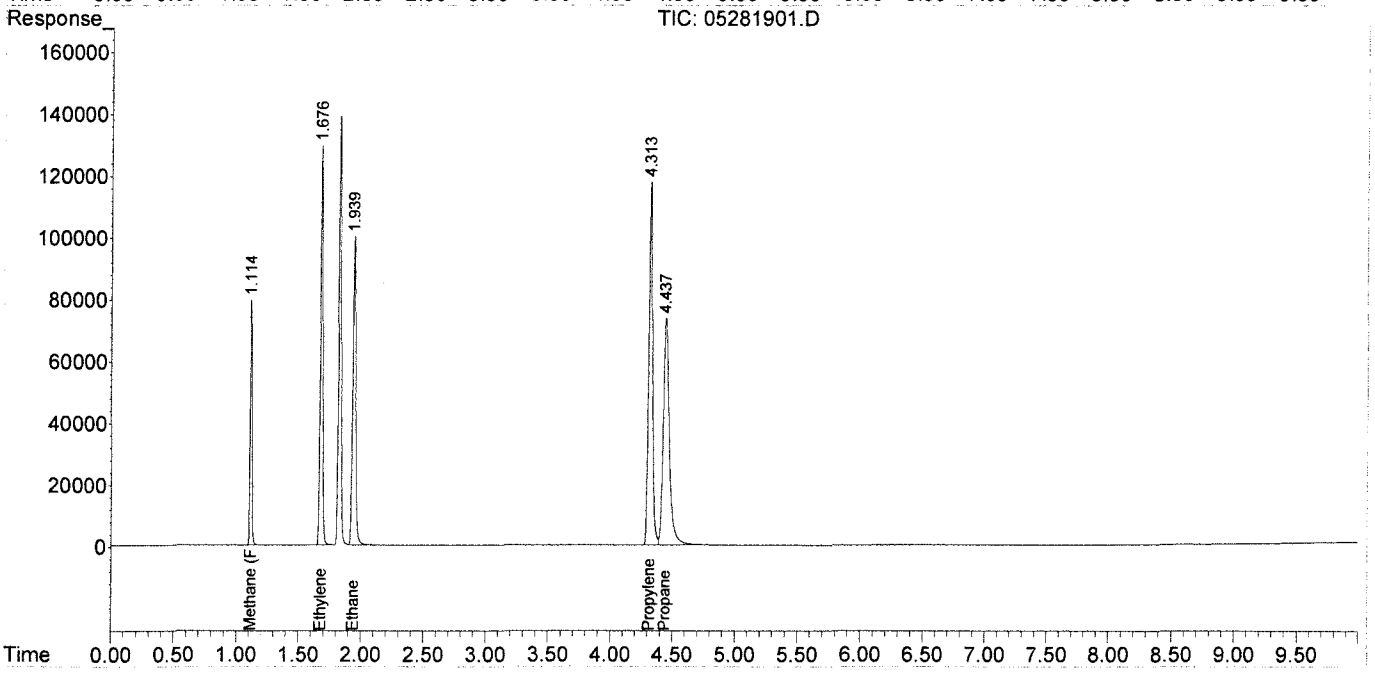
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 10:19:27
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:02:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 15:38:06
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 15:59:32 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

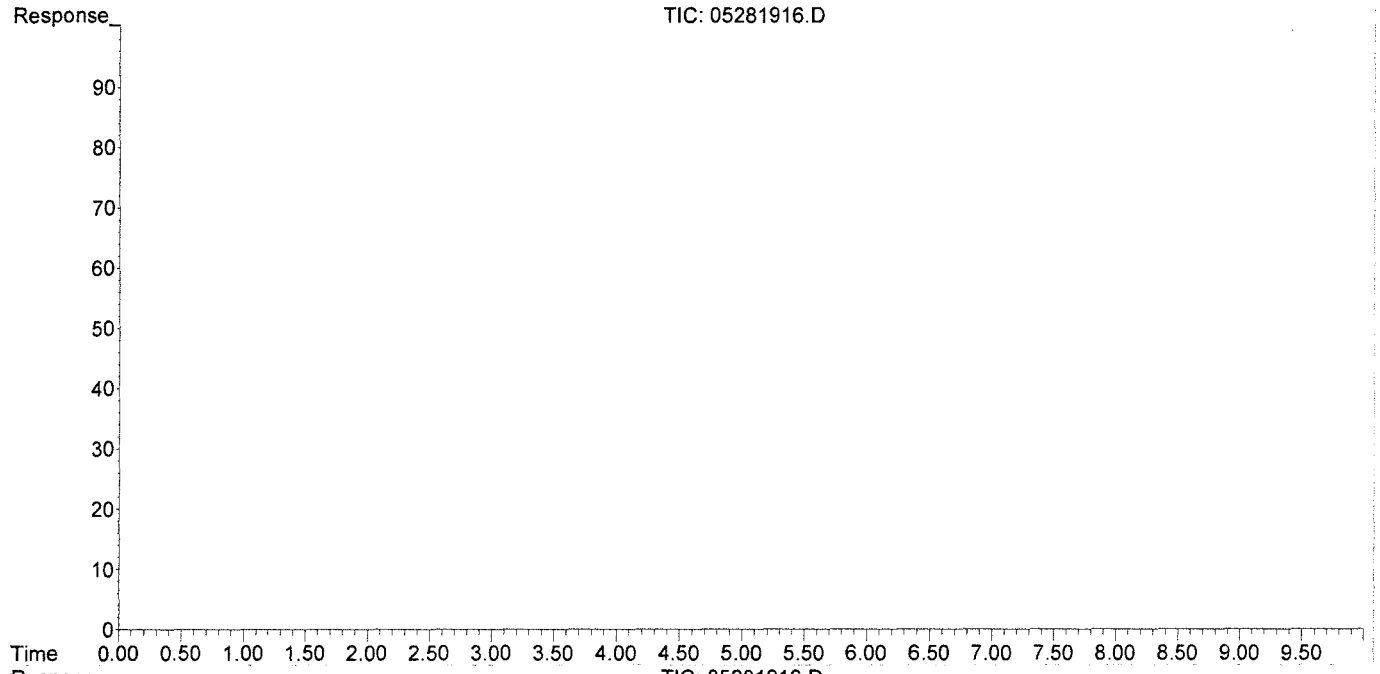
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	811155	89.426	ppm
7)	Ethylene	1.667	1597260	95.448	ppm
8)	Ethane	1.928	1607550	94.840	ppm
9)	Propylene	4.301	2352132	100.383	ppm
10)	Propane	4.425	2417670	97.172	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

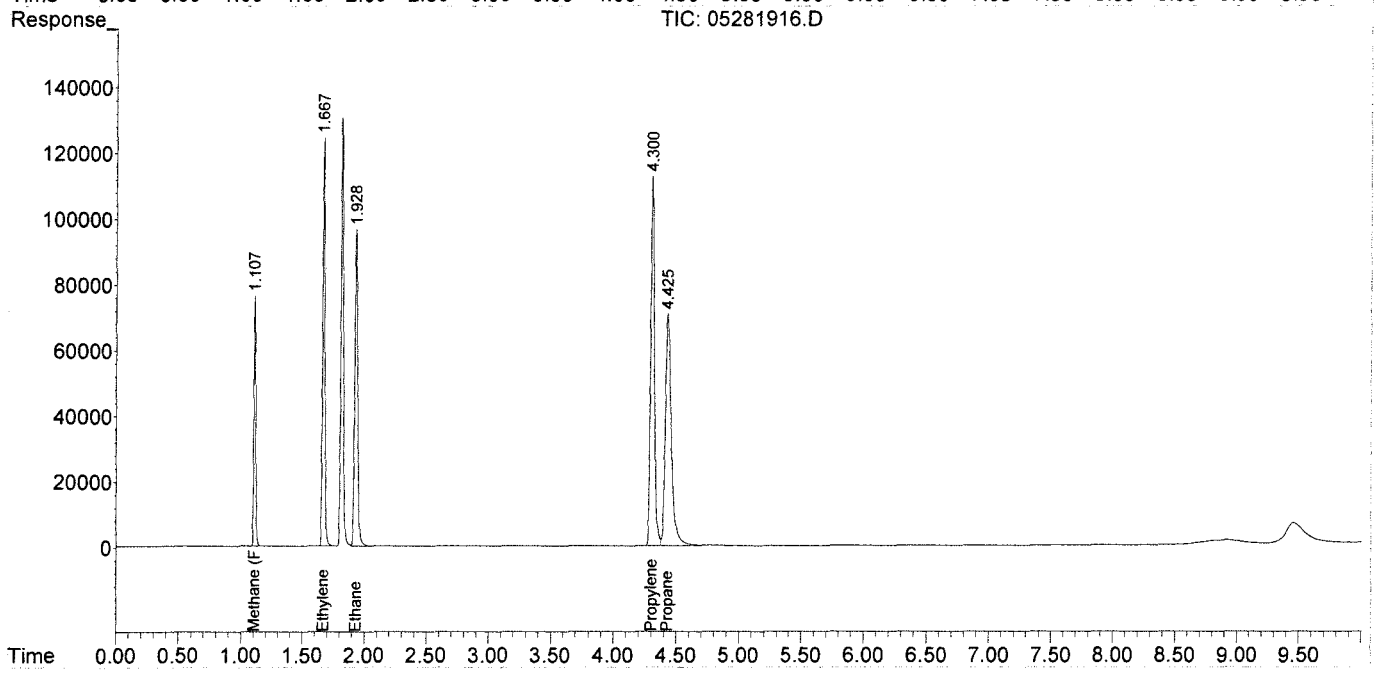
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 15:38:06
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 15:59:32 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2019_05\28\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	28-May-19, 10:19:27	05281901.D	std s32-05221901		WH	RSKBOTH.M	pass
2	28-May-19, 11:03:07	05281902.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	28-May-19, 11:21:43	05281903.D	mcs 0.1ml		WH	RSKBOTH.M	pass
4	28-May-19, 11:54:17	05281904.D	P1902951-001 0.1ml		WH	RSKBOTH.M	
5	28-May-19, 12:07:09	05281905.D	P1902951-002 0.1ml		WH	RSKBOTH.M	
6	28-May-19, 12:27:20	05281906.D	P1902951-003 0.1ml		WH	RSKBOTH.M	
7	28-May-19, 13:03:55	05281907.D	P1902951-004 0.1ml		WH	RSKBOTH.M	
8	28-May-19, 13:19:30	05281908.D	lcs fid 0.1ml		WH	RSKBOTH.M	pass
9	28-May-19, 13:36:35	05281909.D	lcsd fid 0.1ml		WH	RSKBOTH.M	pass
10	28-May-19, 13:55:09	05281910.D	P1902949-001 0.1ml		WH	RSKBOTH.M	
11	28-May-19, 14:09:08	05281911.D	P1902949-002 0.1ml		WH	RSKBOTH.M	
12	28-May-19, 14:22:03	05281912.D	P1902949-003 0.1ml		WH	RSKBOTH.M	
13	28-May-19, 14:37:52	05281913.D	J1902773-005 0.1		WH	RSKBOTH.M	
14	28-May-19, 15:00:54	05281914.D	J1902773-006 0.1		WH	RSKBOTH.M	
15	28-May-19, 15:18:15	05281915.D	J1902792-010 0.1ml		WH	RSKBOTH.M	
16	28-May-19, 15:38:06	05281916.D	std s32-05221901		WH	RSKBOTH.M	pass

10450 Stancliff Rd. Suite 210
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June 05, 2019

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

Work Order: **HS19051330**

Laboratory Results for: **LHAAP-37**

Dear Susan,

ALS Environmental received 8 sample(s) on May 22, 2019 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: 05-jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Work Order: HS19051330

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19051330-01	35BWW09-190521	Groundwater		21-May-2019 08:10	22-May-2019 09:20	☐
HS19051330-02	35BWW05-190521	Groundwater		21-May-2019 08:55	22-May-2019 09:20	☐
HS19051330-03	35BWW11-190521	Groundwater		21-May-2019 09:45	22-May-2019 09:20	☐
HS19051330-04	35BWW12-190521	Groundwater		21-May-2019 10:35	22-May-2019 09:20	☐
HS19051330-05	35BWW12-190521-FD	Groundwater		21-May-2019 10:35	22-May-2019 09:20	☐
HS19051330-06	35BWW14-190521	Groundwater		21-May-2019 11:40	22-May-2019 09:20	☐
HS19051330-07	35BWW23-190521	Groundwater		21-May-2019 12:40	22-May-2019 09:20	☐
HS19051330-08	Trip Blank - ALS-112818-51	Water		21-May-2019 00:00	22-May-2019 09:20	☐

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-37
Work Order:

Work Order Comments

• The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

Work Order Comments

• The analyses for TOC was subcontracted to ALS Environmental in Kelso, WA. Final Report attached.

GCMS Volatiles by Method SW8260

Batch ID: R339199

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

WetChemistry by Method SW9056

Batch ID: R339155

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051330
Sample ID: 35BWW09-190521 Lab ID:HS19051330-01
Collection Date: 21-May-2019 08:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 16:08
1,1,2-Trichlor-1,2,2-trifluoroethane	**24**		**0.50**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 16:08
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
1,1-Dichloroethane	**0.83**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 16:08
1,1-Dichloroethene	**5.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 16:08
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 16:08
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 16:08
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 16:08
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 16:08
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 16:08
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 16:08
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 16:08
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 16:08
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	24-May-2019 16:08
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 16:08
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	24-May-2019 16:08
Acetone	**5.7**		**0.40**	**1.0**	**2.0**	**UG/L**	1	24-May-2019 16:08
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 16:08
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 16:08
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 16:08
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	24-May-2019 16:08
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 16:08
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051330
Sample ID: 35BWW09-190521 Lab ID:HS19051330-01
Collection Date: 21-May-2019 08:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
cis-1,2-Dichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 16:08
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	24-May-2019 16:08
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	24-May-2019 16:08
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 16:08
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 16:08
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 16:08
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
Tetrachloroethene	**41**		**0.30**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 16:08
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
Trichloroethene	**20**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 16:08
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 16:08
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 16:08
Surr: 1,2-Dichloroethane-d4	*85.5*			**0**	*81-118*	*%REC*	*1*	*24-May-2019 16:08*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*24-May-2019 16:08*
Surr: Dibromofluoromethane	*89.3*			**0**	*80-119*	*%REC*	*1*	*24-May-2019 16:08*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*24-May-2019 16:08*

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW05-190521
Collection Date: 21-May-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:44
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 13:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	24-May-2019 13:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	24-May-2019 13:44
Acetone	**8.5**		**0.40**	**1.0**	**2.0**	**UG/L**	1	24-May-2019 13:44
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:44
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	24-May-2019 13:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW05-190521
Collection Date: 21-May-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	24-May-2019 13:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	24-May-2019 13:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 13:44
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 13:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
Tetrachloroethene	**1.1**		**0.30**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 13:44
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
Trichloroethene	**5.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 13:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:44
Surr: 1,2-Dichloroethane-d4	*86.3*			**0**	*81-118*	*%REC*	*1*	*24-May-2019 13:44*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*24-May-2019 13:44*
Surr: Dibromofluoromethane	*90.0*			**0**	*80-119*	*%REC*	*1*	*24-May-2019 13:44*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*24-May-2019 13:44*

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW11-190521
Collection Date: 21-May-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:08
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:08
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:08
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:08
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:08
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:08
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:08
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:08
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:08
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 14:08
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	24-May-2019 14:08
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:08
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	24-May-2019 14:08
Acetone	**10**		**0.40**	**1.0**	**2.0**	**UG/L**	1	24-May-2019 14:08
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:08
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:08
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:08
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	24-May-2019 14:08
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:08
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW11-190521
Collection Date: 21-May-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	24-May-2019 14:08
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	24-May-2019 14:08
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 14:08
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 14:08
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:08
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:08
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:08
Surr: 1,2-Dichloroethane-d4	*85.4*			**0**	*81-118*	*%REC*	*1*	*24-May-2019 14:08*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*24-May-2019 14:08*
Surr: Dibromofluoromethane	*88.6*			**0**	*80-119*	*%REC*	*1*	*24-May-2019 14:08*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*24-May-2019 14:08*

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051330
Sample ID: 35BWW12-190521 Lab ID:HS19051330-04
Collection Date: 21-May-2019 10:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:32
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:32
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:32
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:32
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:32
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:32
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:32
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:32
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:32
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 14:32
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	24-May-2019 14:32
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:32
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	24-May-2019 14:32
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 14:32
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:32
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:32
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:32
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	24-May-2019 14:32
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:32
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051330
Sample ID: 35BWW12-190521 Lab ID:HS19051330-04
Collection Date: 21-May-2019 10:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	24-May-2019 14:32
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	24-May-2019 14:32
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 14:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 14:32
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:32
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
Tetrachloroethene	**6.2**		**0.30**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 14:32
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
Trichloroethene	**0.55**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 14:32
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:32
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:32
Surr: 1,2-Dichloroethane-d4	*85.8*			**0**	*81-118*	*%REC*	*1*	*24-May-2019 14:32*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*1*	*24-May-2019 14:32*
Surr: Dibromofluoromethane	*89.3*			**0**	*80-119*	*%REC*	*1*	*24-May-2019 14:32*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*24-May-2019 14:32*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**6.61**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 20:51
Nitrogen, Nitrate (As N)	**0.104**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	22-May-2019 20:51
Sulfate	**39.9**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 20:51
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2019 12:12
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2019 08:57

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Sample ID: 35BWW12-190521-FD
Collection Date: 21-May-2019 10:35

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:56
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:56
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:56
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:56
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:56
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:56
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:56
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:56
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:56
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 14:56
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	24-May-2019 14:56
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:56
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	24-May-2019 14:56
Acetone	**2.6**		**0.40**	**1.0**	**2.0**	**UG/L**	1	24-May-2019 14:56
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:56
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:56
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	24-May-2019 14:56
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 14:56
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW12-190521-FD
Collection Date: 21-May-2019 10:35

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	24-May-2019 14:56
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	24-May-2019 14:56
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 14:56
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 14:56
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 14:56
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
Tetrachloroethene	**5.7**		**0.30**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 14:56
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
Trichloroethene	**0.53**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 14:56
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 14:56
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 14:56
Surr: 1,2-Dichloroethane-d4	*85.6*			**0**	*81-118*	*%REC*	*1*	*24-May-2019 14:56*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*24-May-2019 14:56*
Surr: Dibromofluoromethane	*88.3*			**0**	*80-119*	*%REC*	*1*	*24-May-2019 14:56*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*24-May-2019 14:56*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**6.37**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 21:05
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	22-May-2019 21:05
Sulfate	**38.4**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 21:05
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2019 12:12
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2019 08:57

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW14-190521
Collection Date: 21-May-2019 11:40

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:44
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 15:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	24-May-2019 15:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	24-May-2019 15:44
Acetone	**5.0**		**0.40**	**1.0**	**2.0**	**UG/L**	1	24-May-2019 15:44
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:44
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	24-May-2019 15:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW14-190521
Collection Date: 21-May-2019 11:40

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
cis-1,2-Dichloroethene	**0.66**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 15:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	24-May-2019 15:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	24-May-2019 15:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 15:44
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 15:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
Trichloroethene	**110**		**0.20**	**0.50**	**1.0**	**UG/L**	1	24-May-2019 15:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:44
Surr: 1,2-Dichloroethane-d4	*85.9*			**0**	*81-118*	*%REC*	*1*	*24-May-2019 15:44*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*24-May-2019 15:44*
Surr: Dibromofluoromethane	*89.5*			**0**	*80-119*	*%REC*	*1*	*24-May-2019 15:44*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*24-May-2019 15:44*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**18.4**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 21:20
Nitrogen, Nitrate (As N)	**0.368**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	22-May-2019 21:20
Sulfate	**72.4**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 21:20
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2019 12:12
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2019 08:57

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW23-190521
Collection Date: 21-May-2019 12:40

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:20
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:20
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:20
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:20
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:20
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:20
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:20
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 15:20
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	24-May-2019 15:20
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:20
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	24-May-2019 15:20
Acetone	**4.9**		**0.40**	**1.0**	**2.0**	**UG/L**	1	24-May-2019 15:20
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:20
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	24-May-2019 15:20
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 15:20
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW23-190521
Collection Date: 21-May-2019 12:40

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	24-May-2019 15:20
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	24-May-2019 15:20
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 15:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 15:20
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 15:20
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 15:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 15:20
Surr: 1,2-Dichloroethane-d4	*87.2*			**0**	*81-118*	*%REC*	*1*	*24-May-2019 15:20*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*24-May-2019 15:20*
Surr: Dibromofluoromethane	*89.5*			**0**	*80-119*	*%REC*	*1*	*24-May-2019 15:20*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*24-May-2019 15:20*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**39.8**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 21:35
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	22-May-2019 21:35
Sulfate	**88.1**		**0.200**	**0.500**	**0.500**	**mg/L**	1	22-May-2019 21:35
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2019 12:12
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2019 08:57

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051330
Sample ID: Trip Blank - ALS-112818-51 Lab ID:HS19051330-08
Collection Date: 21-May-2019 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:20
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:20
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:20
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:20
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:20
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:20
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:20
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 13:20
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	24-May-2019 13:20
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:20
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	24-May-2019 13:20
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 13:20
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:20
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	24-May-2019 13:20
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	24-May-2019 13:20
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Sample ID: Trip Blank - ALS-112818-51
Collection Date: 21-May-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19051330
Lab ID:HS19051330-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	24-May-2019 13:20
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	24-May-2019 13:20
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	24-May-2019 13:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	24-May-2019 13:20
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	24-May-2019 13:20
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	24-May-2019 13:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	24-May-2019 13:20
Surr: 1,2-Dichloroethane-d4	*86.0*			**0**	*81-118*	*%REC*	*1*	*24-May-2019 13:20*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*24-May-2019 13:20*
Surr: Dibromofluoromethane	*88.8*			**0**	*80-119*	*%REC*	*1*	*24-May-2019 13:20*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*24-May-2019 13:20*

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

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R339155	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS19051330-04	35BWW12-190521	21 May 2019 10:35			22 May 2019 20:51	1
HS19051330-05	35BWW12-190521-FD	21 May 2019 10:35			22 May 2019 21:05	1
HS19051330-06	35BWW14-190521	21 May 2019 11:40			22 May 2019 21:20	1
HS19051330-07	35BWW23-190521	21 May 2019 12:40			22 May 2019 21:35	1
Batch ID R339199	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19051330-08	Trip Blank - ALS-112818-51	21 May 2019 00:00			24 May 2019 13:20	1
Batch ID R339199	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS19051330-01	35BWW09-190521	21 May 2019 08:10			24 May 2019 16:08	1
HS19051330-02	35BWW05-190521	21 May 2019 08:55			24 May 2019 13:44	1
HS19051330-03	35BWW11-190521	21 May 2019 09:45			24 May 2019 14:08	1
HS19051330-04	35BWW12-190521	21 May 2019 10:35			24 May 2019 14:32	1
HS19051330-05	35BWW12-190521-FD	21 May 2019 10:35			24 May 2019 14:56	1
HS19051330-06	35BWW14-190521	21 May 2019 11:40			24 May 2019 15:44	1
HS19051330-07	35BWW23-190521	21 May 2019 12:40			24 May 2019 15:20	1
Batch ID R339660	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS19051330-04	35BWW12-190521	21 May 2019 10:35			03 Jun 2019 12:12	1
HS19051330-05	35BWW12-190521-FD	21 May 2019 10:35			03 Jun 2019 12:12	1
HS19051330-06	35BWW14-190521	21 May 2019 11:40			03 Jun 2019 12:12	1
HS19051330-07	35BWW23-190521	21 May 2019 12:40			03 Jun 2019 12:12	1
Batch ID R339713	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS19051330-04	35BWW12-190521	21 May 2019 10:35			04 Jun 2019 08:57	1
HS19051330-05	35BWW12-190521-FD	21 May 2019 10:35			04 Jun 2019 08:57	1
HS19051330-06	35BWW14-190521	21 May 2019 11:40			04 Jun 2019 08:57	1
HS19051330-07	35BWW23-190521	21 May 2019 12:40			04 Jun 2019 08:57	1

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190524** Units: **UG/L** Analysis Date: **24-May-2019 12:56**
Client ID: Run ID: **VOA6_339199** SeqNo: **5092783** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190524** Units: **UG/L** Analysis Date: **24-May-2019 12:56**
Client ID: Run ID: **VOA6_339199** SeqNo: **5092783** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*42.74*	*1.0*	*50*	*0*	*85.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.21*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*44.26*	*1.0*	*50*	*0*	*88.5*	*80 - 119*				

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190524** Units: **UG/L** Analysis Date: **24-May-2019 12:56**
Client ID: Run ID: **VOA6_339199** SeqNo: **5092783** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53*	*1.0*	*50*	*0*	*106*	*89 - 112*				

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190524** Units: **UG/L** Analysis Date: **24-May-2019 12:08**
Client ID: Run ID: **VOA6_339199** SeqNo: **5092782** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.19	1.0	20	0	96.0	78 - 124				
1,1,1-Trichloroethane	18.36	1.0	20	0	91.8	74 - 131				
1,1,2,2-Tetrachloroethane	20.86	1.0	20	0	104	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	18.72	1.0	20	0	93.6	70 - 136				
1,1,2-Trichloroethane	21.37	1.0	20	0	107	80 - 119				
1,1-Dichloroethane	20.8	1.0	20	0	104	77 - 125				
1,1-Dichloroethene	18.65	1.0	20	0	93.2	71 - 131				
1,1-Dichloropropene	19.01	1.0	20	0	95.1	78 - 125				
1,2,3-Trichlorobenzene	21.56	1.0	20	0	108	69 - 129				
1,2,3-Trichloropropane	20.59	1.0	20	0	103	73 - 122				
1,2,4-Trichlorobenzene	19.61	1.0	20	0	98.1	69 - 130				
1,2,4-Trimethylbenzene	19.84	1.0	20	0	99.2	76 - 124				
1,2-Dibromo-3-chloropropane	20.27	1.0	20	0	101	62 - 128				
1,2-Dibromoethane	20.51	1.0	20	0	103	77 - 121				
1,2-Dichlorobenzene	19.57	1.0	20	0	97.8	80 - 119				
1,2-Dichloroethane	19.25	1.0	20	0	96.2	73 - 128				
1,2-Dichloropropane	22.06	1.0	20	0	110	78 - 122				
1,3,5-Trimethylbenzene	19.7	1.0	20	0	98.5	75 - 124				
1,3-Dichlorobenzene	19.34	1.0	20	0	96.7	80 - 119				
1,3-Dichloropropane	21.31	1.0	20	0	107	80 - 119				
1,4-Dichlorobenzene	19.63	1.0	20	0	98.2	79 - 118				
2,2-Dichloropropane	19.03	1.0	20	0	95.1	60 - 139				
2-Butanone	46.87	2.0	40	0	117	56 - 143				
2-Chlorotoluene	19.67	1.0	20	0	98.3	79 - 122				
2-Hexanone	43.96	2.0	40	0	110	57 - 139				
4-Chlorotoluene	19.73	1.0	20	0	98.7	78 - 122				
4-Isopropyltoluene	18.9	1.0	20	0	94.5	77 - 127				
4-Methyl-2-pentanone	45.15	2.0	40	0	113	67 - 130				
Acetone	43.2	2.0	40	0	108	39 - 160				
Benzene	21.07	1.0	20	0	105	79 - 120				
Bromobenzene	19.11	1.0	20	0	95.5	80 - 120				
Bromochloromethane	21.17	1.0	20	0	106	78 - 123				
Bromodichloromethane	20.3	1.0	20	0	102	79 - 125				
Bromoform	19.52	1.0	20	0	97.6	66 - 130				

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190524** Units: **UG/L** Analysis Date: **24-May-2019 12:08**
Client ID: Run ID: **VOA6_339199** SeqNo: **5092782** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	20.8	1.0	20	0	104	53 - 141				
Carbon disulfide	45.31	2.0	40	0	113	64 - 133				
Carbon tetrachloride	16.51	1.0	20	0	82.5	72 - 136				
Chlorobenzene	20.33	1.0	20	0	102	82 - 118				
Chloroethane	18.87	1.0	20	0	94.4	60 - 138				
Chloroform	20.42	1.0	20	0	102	79 - 124				
Chloromethane	19.23	1.0	20	0	96.2	50 - 139				
cis-1,2-Dichloroethene	20.74	1.0	20	0	104	78 - 123				
cis-1,3-Dichloropropene	21.63	1.0	20	0	108	75 - 124				
Dibromochloromethane	18.99	1.0	20	0	94.9	74 - 126				
Dibromomethane	20.79	1.0	20	0	104	79 - 123				
Dichlorodifluoromethane	18.05	1.0	20	0	90.3	32 - 152				
Ethylbenzene	19.78	1.0	20	0	98.9	79 - 121				
Hexachlorobutadiene	19.67	1.0	20	0	98.4	66 - 134				
Isopropylbenzene	19.44	1.0	20	0	97.2	72 - 131				
m,p-Xylene	40.51	2.0	40	0	101	80 - 121				
Methylene chloride	22.74	2.0	20	0	114	74 - 124				
Naphthalene	20.47	1.0	20	0	102	61 - 128				
n-Butylbenzene	19.33	1.0	20	0	96.7	75 - 128				
n-Propylbenzene	19.21	1.0	20	0	96.1	76 - 126				
o-Xylene	20.47	1.0	20	0	102	78 - 122				
sec-Butylbenzene	18.87	1.0	20	0	94.3	77 - 126				
Styrene	20.99	1.0	20	0	105	78 - 123				
tert-Butylbenzene	18.72	1.0	20	0	93.6	78 - 124				
Tetrachloroethene	18.86	1.0	20	0	94.3	74 - 129				
Toluene	20.32	1.0	20	0	102	80 - 121				
trans-1,2-Dichloroethene	20.64	1.0	20	0	103	75 - 124				
trans-1,3-Dichloropropene	21.36	1.0	20	0	107	73 - 127				
Trichloroethene	19.55	1.0	20	0	97.8	79 - 123				
Trichlorofluoromethane	16.47	1.0	20	0	82.3	65 - 141				
Vinyl chloride	18.48	1.0	20	0	92.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.15*	*1.0*	*50*	*0*	*92.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*54.87*	*1.0*	*50*	*0*	*110*	*85 - 114*				
Surr: Dibromofluoromethane	*49.63*	*1.0*	*50*	*0*	*99.3*	*80 - 119*				

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190524** Units: **UG/L** Analysis Date: **24-May-2019 12:08**
Client ID: Run ID: **VOA6_339199** SeqNo: **5092782** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*45.81*	*1.0*	*50*	*0*	*91.6*	*89 - 112*				

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051330-02MS** Units: **UG/L** Analysis Date: **24-May-2019 16:32**
Client ID: **35BWW05-190521** Run ID: **VOA6_339199** SeqNo: **5092792** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	16.63	1.0	20	0	83.1	78 - 124				
1,1,1-Trichloroethane	16.29	1.0	20	0	81.4	74 - 131				
1,1,2,2-Tetrachloroethane	19.77	1.0	20	0	98.9	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	17.29	1.0	20	0	86.4	70 - 136				
1,1,2-Trichloroethane	18.46	1.0	20	0	92.3	80 - 119				
1,1-Dichloroethane	17.21	1.0	20	0	86.1	77 - 125				
1,1-Dichloroethene	15.79	1.0	20	0	79.0	71 - 131				
1,1-Dichloropropene	18.15	1.0	20	0	90.8	78 - 125				
1,2,3-Trichlorobenzene	21.83	1.0	20	0	109	69 - 129				
1,2,3-Trichloropropane	18.7	1.0	20	0	93.5	73 - 122				
1,2,4-Trichlorobenzene	19.19	1.0	20	0	96.0	69 - 130				
1,2,4-Trimethylbenzene	18.22	1.0	20	0	91.1	76 - 124				
1,2-Dibromo-3-chloropropane	19.49	1.0	20	0	97.4	62 - 128				
1,2-Dibromoethane	17.67	1.0	20	0	88.4	77 - 121				
1,2-Dichlorobenzene	18.26	1.0	20	0	91.3	80 - 119				
1,2-Dichloroethane	15.97	1.0	20	0	79.8	73 - 128				
1,2-Dichloropropane	18.35	1.0	20	0	91.8	78 - 122				
1,3,5-Trimethylbenzene	19.02	1.0	20	0	95.1	75 - 124				
1,3-Dichlorobenzene	18.32	1.0	20	0	91.6	80 - 119				
1,3-Dichloropropane	18.42	1.0	20	0	92.1	80 - 119				
1,4-Dichlorobenzene	18.15	1.0	20	0	90.7	79 - 118				
2,2-Dichloropropane	15.7	1.0	20	0	78.5	60 - 139				
2-Butanone	39.52	2.0	40	0	98.8	56 - 143				
2-Chlorotoluene	18.92	1.0	20	0	94.6	79 - 122				
2-Hexanone	37.94	2.0	40	0	94.9	57 - 139				
4-Chlorotoluene	18.82	1.0	20	0	94.1	78 - 122				
4-Isopropyltoluene	19.4	1.0	20	0	97.0	77 - 127				
4-Methyl-2-pentanone	39.9	2.0	40	0	99.7	67 - 130				
Acetone	42.86	2.0	40	8.55	85.8	39 - 160				
Benzene	17.81	1.0	20	0	89.0	79 - 120				
Bromobenzene	17.46	1.0	20	0	87.3	80 - 120				
Bromochloromethane	16.28	1.0	20	0	81.4	78 - 123				
Bromodichloromethane	16.18	1.0	20	0	80.9	79 - 125				
Bromoform	16.89	1.0	20	0	84.4	66 - 130				

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051330-02MS** Units: **UG/L** Analysis Date: **24-May-2019 16:32**
Client ID: **35BWW05-190521** Run ID: **VOA6_339199** SeqNo: **5092792** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	13	1.0	20	0	65.0	53 - 141				
Carbon disulfide	36.14	2.0	40	0	90.3	64 - 133				
Carbon tetrachloride	15.68	1.0	20	0	78.4	72 - 136				
Chlorobenzene	18.02	1.0	20	0	90.1	82 - 118				
Chloroethane	16.05	1.0	20	0	80.2	60 - 138				
Chloroform	16.26	1.0	20	0	81.3	79 - 124				
Chloromethane	14.61	1.0	20	0	73.1	50 - 139				
cis-1,2-Dichloroethene	16.97	1.0	20	0	84.8	78 - 123				
cis-1,3-Dichloropropene	18.1	1.0	20	0	90.5	75 - 124				
Dibromochloromethane	16.63	1.0	20	0	83.1	74 - 126				
Dibromomethane	16.69	1.0	20	0	83.5	79 - 123				
Dichlorodifluoromethane	13.3	1.0	20	0	66.5	32 - 152				
Ethylbenzene	18.09	1.0	20	0	90.5	79 - 121				
Hexachlorobutadiene	17.14	1.0	20	0	85.7	66 - 134				
Isopropylbenzene	18.55	1.0	20	0	92.8	72 - 131				
m,p-Xylene	37.25	2.0	40	0	93.1	80 - 121				
Methylene chloride	17.36	2.0	20	0	86.8	74 - 124				
Naphthalene	20.09	1.0	20	0	100	61 - 128				
n-Butylbenzene	19.31	1.0	20	0	96.5	75 - 128				
n-Propylbenzene	19.7	1.0	20	0	98.5	76 - 126				
o-Xylene	18.89	1.0	20	0	94.4	78 - 122				
sec-Butylbenzene	19.82	1.0	20	0	99.1	77 - 126				
Styrene	18.05	1.0	20	0	90.3	78 - 123				
tert-Butylbenzene	19.58	1.0	20	0	97.9	78 - 124				
Tetrachloroethene	19.19	1.0	20	1.057	90.7	74 - 129				
Toluene	17.91	1.0	20	0	89.5	80 - 121				
trans-1,2-Dichloroethene	17.41	1.0	20	0	87.1	75 - 124				
trans-1,3-Dichloropropene	17.05	1.0	20	0	85.3	73 - 127				
Trichloroethene	22.6	1.0	20	5.549	85.2	79 - 123				
Trichlorofluoromethane	14.76	1.0	20	0	73.8	65 - 141				
Vinyl chloride	16.66	1.0	20	0	83.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.78*	*1.0*	*50*	*0*	*87.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.84*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*44.54*	*1.0*	*50*	*0*	*89.1*	*80 - 119*				

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051330-02MS** Units: **UG/L** Analysis Date: **24-May-2019 16:32**
Client ID: **35BWW05-190521** Run ID: **VOA6_339199** SeqNo: **5092792** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.96*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051330-02MSD** Units: **UG/L** Analysis Date: **24-May-2019 16:56**
Client ID: **35BWW05-190521** Run ID: **VOA6_339199** SeqNo: **5092793** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	16.81	1.0	20	0	84.0	78 - 124	16.63	1.09	20	
1,1,1-Trichloroethane	16.27	1.0	20	0	81.4	74 - 131	16.29	0.0895	20	
1,1,2,2-Tetrachloroethane	20.06	1.0	20	0	100	71 - 121	19.77	1.43	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	16.79	1.0	20	0	84.0	70 - 136	17.29	2.91	20	
1,1,2-Trichloroethane	18.74	1.0	20	0	93.7	80 - 119	18.46	1.51	20	
1,1-Dichloroethane	16.77	1.0	20	0	83.8	77 - 125	17.21	2.6	20	
1,1-Dichloroethene	15.4	1.0	20	0	77.0	71 - 131	15.79	2.52	20	
1,1-Dichloropropene	18	1.0	20	0	90.0	78 - 125	18.15	0.823	20	
1,2,3-Trichlorobenzene	22.79	1.0	20	0	114	69 - 129	21.83	4.32	20	
1,2,3-Trichloropropane	19.24	1.0	20	0	96.2	73 - 122	18.7	2.87	20	
1,2,4-Trichlorobenzene	20.15	1.0	20	0	101	69 - 130	19.19	4.84	20	
1,2,4-Trimethylbenzene	18.58	1.0	20	0	92.9	76 - 124	18.22	1.94	20	
1,2-Dibromo-3-chloropropane	20.15	1.0	20	0	101	62 - 128	19.49	3.37	20	
1,2-Dibromoethane	17.78	1.0	20	0	88.9	77 - 121	17.67	0.603	20	
1,2-Dichlorobenzene	18.86	1.0	20	0	94.3	80 - 119	18.26	3.25	20	
1,2-Dichloroethane	16.07	1.0	20	0	80.4	73 - 128	15.97	0.65	20	
1,2-Dichloropropane	18.36	1.0	20	0	91.8	78 - 122	18.35	0.0397	20	
1,3,5-Trimethylbenzene	19.31	1.0	20	0	96.5	75 - 124	19.02	1.53	20	
1,3-Dichlorobenzene	18.52	1.0	20	0	92.6	80 - 119	18.32	1.09	20	
1,3-Dichloropropane	18.59	1.0	20	0	92.9	80 - 119	18.42	0.91	20	
1,4-Dichlorobenzene	18.36	1.0	20	0	91.8	79 - 118	18.15	1.19	20	
2,2-Dichloropropane	15.19	1.0	20	0	76.0	60 - 139	15.7	3.25	20	
2-Butanone	40.17	2.0	40	0	100	56 - 143	39.52	1.62	20	
2-Chlorotoluene	19.12	1.0	20	0	95.6	79 - 122	18.92	1.03	20	
2-Hexanone	39.09	2.0	40	0	97.7	57 - 139	37.94	2.97	20	
4-Chlorotoluene	19.11	1.0	20	0	95.6	78 - 122	18.82	1.57	20	
4-Isopropyltoluene	19.43	1.0	20	0	97.1	77 - 127	19.4	0.12	20	
4-Methyl-2-pentanone	40.3	2.0	40	0	101	67 - 130	39.9	1.01	20	
Acetone	43.08	2.0	40	8.55	86.3	39 - 160	42.86	0.504	20	
Benzene	17.52	1.0	20	0	87.6	79 - 120	17.81	1.61	20	
Bromobenzene	17.41	1.0	20	0	87.1	80 - 120	17.46	0.289	20	
Bromochloromethane	16.44	1.0	20	0	82.2	78 - 123	16.28	0.974	20	
Bromodichloromethane	16.28	1.0	20	0	81.4	79 - 125	16.18	0.638	20	
Bromoform	17.26	1.0	20	0	86.3	66 - 130	16.89	2.15	20	

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051330-02MSD** Units: **UG/L** Analysis Date: **24-May-2019 16:56**
Client ID: **35BWW05-190521** Run ID: **VOA6_339199** SeqNo: **5092793** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	12.69	1.0	20	0	63.5	53 - 141	13	2.4	20	
Carbon disulfide	35.1	2.0	40	0	87.7	64 - 133	36.14	2.92	20	
Carbon tetrachloride	15.56	1.0	20	0	77.8	72 - 136	15.68	0.805	20	
Chlorobenzene	18.12	1.0	20	0	90.6	82 - 118	18.02	0.525	20	
Chloroethane	15.49	1.0	20	0	77.5	60 - 138	16.05	3.54	20	
Chloroform	16.01	1.0	20	0	80.1	79 - 124	16.26	1.55	20	
Chloromethane	13.83	1.0	20	0	69.1	50 - 139	14.61	5.5	20	
cis-1,2-Dichloroethene	16.52	1.0	20	0	82.6	78 - 123	16.97	2.69	20	
cis-1,3-Dichloropropene	18.31	1.0	20	0	91.6	75 - 124	18.1	1.16	20	
Dibromochloromethane	16.96	1.0	20	0	84.8	74 - 126	16.63	1.98	20	
Dibromomethane	16.9	1.0	20	0	84.5	79 - 123	16.69	1.24	20	
Dichlorodifluoromethane	12.87	1.0	20	0	64.3	32 - 152	13.3	3.33	20	
Ethylbenzene	17.81	1.0	20	0	89.0	79 - 121	18.09	1.59	20	
Hexachlorobutadiene	17.67	1.0	20	0	88.4	66 - 134	17.14	3.08	20	
Isopropylbenzene	18.44	1.0	20	0	92.2	72 - 131	18.55	0.635	20	
m,p-Xylene	37.02	2.0	40	0	92.5	80 - 121	37.25	0.621	20	
Methylene chloride	17	2.0	20	0	85.0	74 - 124	17.36	2.07	20	
Naphthalene	21.32	1.0	20	0	107	61 - 128	20.09	5.94	20	
n-Butylbenzene	19.69	1.0	20	0	98.5	75 - 128	19.31	1.98	20	
n-Propylbenzene	19.74	1.0	20	0	98.7	76 - 126	19.7	0.157	20	
o-Xylene	18.65	1.0	20	0	93.3	78 - 122	18.89	1.25	20	
sec-Butylbenzene	19.81	1.0	20	0	99.0	77 - 126	19.82	0.0696	20	
Styrene	17.92	1.0	20	0	89.6	78 - 123	18.05	0.745	20	
tert-Butylbenzene	19.77	1.0	20	0	98.9	78 - 124	19.58	0.994	20	
Tetrachloroethene	19.14	1.0	20	1.057	90.4	74 - 129	19.19	0.276	20	
Toluene	18.15	1.0	20	0	90.8	80 - 121	17.91	1.35	20	
trans-1,2-Dichloroethene	17.3	1.0	20	0	86.5	75 - 124	17.41	0.64	20	
trans-1,3-Dichloropropene	17.21	1.0	20	0	86.1	73 - 127	17.05	0.941	20	
Trichloroethene	22.36	1.0	20	5.549	84.1	79 - 123	22.6	1.04	20	
Trichlorofluoromethane	14.39	1.0	20	0	72.0	65 - 141	14.76	2.55	20	
Vinyl chloride	16.12	1.0	20	0	80.6	58 - 137	16.66	3.27	20	
Surr: 1,2-Dichloroethane-d4	*44.09*	*1.0*	*50*	*0*	*88.2*	*81 - 118*	*43.78*	*0.7*	*20*	
Surr: 4-Bromofluorobenzene	*51.57*	*1.0*	*50*	*0*	*103*	*85 - 114*	*52.84*	*2.41*	*20*	
Surr: Dibromofluoromethane	*44.68*	*1.0*	*50*	*0*	*89.4*	*80 - 119*	*44.54*	*0.306*	*20*	

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339199 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051330-02MSD** Units: **UG/L** Analysis Date: **24-May-2019 16:56**
Client ID: **35BWW05-190521** Run ID: **VOA6_339199** SeqNo: **5092793** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.14*	*1.0*	*50*	*0*	*104*	*89 - 112*	*51.96*	*0.346*	*20*	

The following samples were analyzed in this batch:

HS19051330-01	HS19051330-02	HS19051330-03	HS19051330-04
HS19051330-05	HS19051330-06	HS19051330-07	HS19051330-08

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339155 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-052219** Units: **mg/L** Analysis Date: **22-May-2019 20:04**
Client ID: Run ID: **ICS2100_339155** SeqNo: **5091203** PrepDate: DF: **1**

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

LCS Sample ID: **WLCSW1-052219** Units: **mg/L** Analysis Date: **22-May-2019 20:22**
Client ID: Run ID: **ICS2100_339155** SeqNo: **5091204** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.08	0.500	20	0	100	80 - 120				
Nitrogen, Nitrate (As N)	3.914	0.100	4	0	97.8	80 - 120				
Sulfate	19.61	0.500	20	0	98.0	80 - 120				

LCSD Sample ID: **WLCSDW1-052219** Units: **mg/L** Analysis Date: **22-May-2019 20:36**
Client ID: Run ID: **ICS2100_339155** SeqNo: **5091205** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.6	0.500	20	0	103	80 - 120	20.08	2.55	20	
Nitrogen, Nitrate (As N)	4.016	0.100	4	0	100	80 - 120	3.914	2.57	20	
Sulfate	20.32	0.500	20	0	102	80 - 120	19.61	3.58	20	

MS Sample ID: **HS19050872-12MS** Units: **mg/L** Analysis Date: **23-May-2019 01:00**
Client ID: Run ID: **ICS2100_339155** SeqNo: **5091223** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	33.73	0.500	10	24.56	91.7	80 - 120				
Nitrogen, Nitrate (As N)	1.9	0.100	2	0.139	88.0	80 - 120				
Sulfate	17.65	0.500	10	8.111	95.4	80 - 120				

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051330

QC BATCH REPORT

Batch ID: R339155 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS19050872-12MSD** Units: **mg/L** Analysis Date: **23-May-2019 01:14**
Client ID: Run ID: **ICS2100_339155** SeqNo: **5091224** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	33.93	0.500	10	24.56	93.7	80 - 120	33.73	0.579	20	
Nitrogen, Nitrate (As N)	1.944	0.100	2	0.139	90.2	80 - 120	1.9	2.29	20	
Sulfate	17.89	0.500	10	8.111	97.8	80 - 120	17.65	1.33	20	

The following samples were analyzed in this batch: HS19051330-04 HS19051330-05 HS19051330-06 HS19051330-07

ALS Houston, US Date: 05-Jun-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: **HS19051330**

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

ALS Houston, US Date: 05-Jun-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
Maryland	343, 2018-2019	30-Jun-2019
Arkansas	19-028-0	27-Mar-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 05-Jun-19

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19051330
Date/Time Received: **22-May-2019 09:20**
Received by: **NDR**

Checklist completed by: *Nilesh D. Ranchod* eSignature 22-May-2019 Date
Reviewed by: *RJ Modashia* eSignature 22-May-2019 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 ☐	
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):	2.4C UC/C	IR # 25
Cooler(s)/Kit(s):	43171	
Date/Time sample(s) sent to storage:	05/22/2019 5:00PM	

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:

00956505

APTIM

Page 1 of

COC ID: LHAAP37-MAY2019-ALS | TURNAROUND TIME: | 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-37			Email	RJ.Modashia@alsglobal.com			Email Report To	Susan.Huang@aptim.com		
Address	1203-B East Grand Avenue			Address	10450 Stanciiff 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

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	3-40 ml VOA/Cool to 6 deg C	2-40ml Amber/H2SO4	1-250ml/Cool to 6 deg C
									ANALYSIS	Vocs by 8260B	MEE by RSK175	CO2 by RSK175	TOC by Sm5310C	Anions (chloride/sulfate/nitrate) by 9056
35BWW09-190521	LHAAP 37	22.82	23.05		WG	5/21/19	0810	3		X				
35BWW05-190521	LHAAP 37	20.47	20.72		WG	5/21/19	0855	3		X				
35BWW11-190521	LHAAP 37	18.53	18.76		WG	5/21/19	0945	3		X				
35BWW12-190521	LHAAP 37	17.78	18.02		WG	5/21/19	1035	12		X	X	X	X	X
35BWW12-190521-FD	LHAAP 37	17.78	18.02		WG	5/21/19	1035	12		X	X	X	X	X
35BWW14-190521	LHAAP 37	19.30	19.54		WG	5/21/19	1140	12		X	X	X	X	X
35BWW23-190521	LHAAP 37	26.55	26.82		WG	5/21/19	1240	12		X	X	X	X	X
TRIP BLANK	LHAAP37				W	5/21/19		2		X				

HS19051330

Aptim Environmental & Infrastructure, Inc.
LHAAP-37

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Susan Belsay / BHATT	5/21/19 1430	Nilesh Panwar (ALS)	5.22.19 09.20

43171 Temp 4°C 2.4
ICE # 25 C/F 8

00956506

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

43171

CUSTODY SEAL

Date: 5/21/19 Time: 1430
Name: Scott Beeson/GAP
Company: SHAW

Seal Broken By: SW
Date: 05/22/19

43171 MAY 2 2 2019

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099

43171

(281) 530-5656
REF: LHAAP-37-BO 65124-RJ

RMA:

FedEx Express

FedEx
TRK# 0221 4809 7833 1340

WED - 22 MAY 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

1 1D 1622D5 21MAY19 GGGA 553C1/0A6C/0C8A

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
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www.alsglobal.com

June 04, 2019

Analytical Report for Service Request No: K1904713

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

RE: HS19051330

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory May 23, 2019
For your reference, these analyses have been assigned our service request number **K1904713.**

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
Project Manager

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Table of Contents

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)636-1 068
www.alsglobal.com

Client: ALS Environmental - US
Project: HS19051330
Sample Matrix: Ground Water

Service Request: K1904713
Date Received: 05/23/2019

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:

Four ground water samples were received for analysis at ALS Environmental on 05/23/2019. 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 06/04/2019

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
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K1904713

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: **Texas** **COC ID:** **11353**

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:	HS19051330
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19051330-04**	**35BWW12-190521**	**Groundwater**	**21 May 2019 10:35**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			06 Jun 2019
2.	**HS19051330-05**	**35BWW12-190521-FD**	**Groundwater**	**21 May 2019 10:35**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			06 Jun 2019
3.	**HS19051330-06**	**35BWW14-190521**	**Groundwater**	**21 May 2019 11:40**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			06 Jun 2019
4.	**HS19051330-07**	**35BWW23-190521**	**Groundwater**	**21 May 2019 12:40**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			06 Jun 2019

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. Mawal Date/Time: 5/22/19 18:00

Received By: N Pedersen Date/Time: 5.23.19 9:50

Cooler ID(s): _____ Temperature(s): _____

K1904713

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

Purchase Order

PO: HS19051330

VENDOR:

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:	11353
TSR:	Sonia West

Item	Catalog No	Unit Price	Quantity	Ext Price
1. TOC Analysis with DOD Level IV/EQuIS APTIM EDD	NA	$9.00	4	$36.00

Order Total: $36.00

PC Kelly

Cooler Receipt and Preservation Form

Client AIS Houston Service Request *K19* 04713

Received: 5.23.19 Opened: 5.23.19 By: MP Unloaded: 5.23.19 By: MP

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

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.3	0.5				0.2	113.50	4809 7834 1763	

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)636-1 068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1904713
Project:	HS19051330	**Date Collected:**	05/21/19
Sample Matrix:	Ground Water	**Date Received:**	05/23/19
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
35BWW12-190521	K1904713-001	**1.27**	0.50	0.20	0.07	1	05/25/19 15:23	
35BWW12-190521-FD	K1904713-002	**1.45**	0.50	0.20	0.07	1	05/25/19 15:51	
35BWW14-190521	K1904713-003	**0.70**	0.50	0.20	0.07	1	05/25/19 16:19	
35BWW23-190521	K1904713-004	**1.59**	0.50	0.20	0.07	1	05/25/19 16:47	
Method Blank	K1904713-MB	ND U	0.50	0.20	0.07	1	05/25/19 08:18	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1904713
Project	HS19051330	**Date Collected:**	05/21/19
Sample Matrix:	Ground Water	**Date Received:**	05/23/19
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
35BWW12-190521	K1904713-001DUP	0.50	0.20	0.07	1.27	1.28	1.28	<1	10	05/25/19
35BWW12-190521-FD	K1904713-002DUP	0.50	0.20	0.07	1.45	1.45	1.45	<1	10	05/25/19
35BWW14-190521	K1904713-003DUP	0.50	0.20	0.07	0.70	0.68	0.689	3	10	05/25/19
35BWW23-190521	K1904713-004DUP	0.50	0.20	0.07	1.59	1.55	1.57	2	10	05/25/19

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:**	K1904713
Project:	HS19051330	**Date Analyzed:**	05/25/19
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:	636917

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1904713-LCS	24.7	25.0	99	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1904713
Project: HS19051330

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	636917	KQ1907131-01	05/25/19 07:48	25.0	24.0	96	90-110
CCV2	636917	KQ1907131-02	05/25/19 12:05	25.0	24.4	97	90-110
CCV3	636917	KQ1907131-03	05/25/19 17:15	25.0	24.0	96	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1904713
Project: HS19051330

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	636917	KQ1907131-04	05/25/19 08:03	0.50	0.20	0.07	ND	U
CCB2	636917	KQ1907131-05	05/25/19 12:20	0.50	0.20	0.07	ND	U
CCB3	636917	KQ1907131-06	05/25/19 17:30	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
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General Chemistry

ALS Environmental—Kelso Laboratory
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Work Request # (Original) KI904547, 4594, 4614, 4668, 4667, 4710, 4714, 4716, 4679, 4715, 4597, 4713, 4684, 4686, 4718

Tier: II II II II II II IV III II IV II IV III IV III

Date Analyzed: 5/24/19

Analyst: BCP

Analysis: ~~5/24/19~~ BCP 5/29/19 TOC/DOC

TOC: 636915, 636916, 636917

Run # DOC: 636919

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: KI904618-2/3/4 and KI904667-1 are overdiluted, and have been sent for reanalysis. KI904716-1/1d, KI904594-4/4d, KI904594-5/5d, KI904716-1/1d, KI904718-1/1d, and KI904718-2/2d report a high %RSD. However these samples are less than 5x the MRL.

Final Approved by: [signature] Date: 05/29/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 636915 **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?	
K1904547-001	Carbon, Total Organic	N/A		Water	17.90 mg/L	10 mL	3580 mg/L	200	20	100			5/25/19 00:44:00	N	
K1904594-001	Carbon, Total Organic	N/A		Ground Water	7.02 mg/L	10 mL	7.02 mg/L	1	0.07	0.50			5/24/19 16:57:00	N	
K1904594-002	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/24/19 17:54:00	N	
K1904594-003	Carbon, Total Organic	N/A		Ground Water	0.20 mg/L	10 mL	0.20 mg/L J	1	0.07	0.50			5/24/19 18:22:00	N	
K1904594-004	Carbon, Total Organic	N/A		Ground Water	0.47 mg/L	10 mL	0.47 mg/L J	1	0.07	0.50			5/24/19 18:50:00	N	
K1904594-005	Carbon, Total Organic	N/A		Ground Water	0.42 mg/L	10 mL	0.42 mg/L J	1	0.07	0.50			5/24/19 19:18:00	N	
K1904594-006	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/24/19 19:46:00	N	
K1904614-001	Carbon, Total Organic	N/A		Water	1.65 mg/L	10 mL	1.65 mg/L	1	0.07	0.50			5/24/19 20:14:00	N	
K1904614-002	Carbon, Total Organic	N/A		Water	1.46 mg/L	10 mL	1.46 mg/L	1	0.07	0.50			5/24/19 20:43:00	N	
K1904618-001	Carbon, Total Organic	N/A		Water	0.95 mg/L	10 mL	95 mg/L	100	7	50			5/24/19 21:11:00	N	
K1904618-002	Carbon, Total Organic	N/A		Water	0.47 mg/L	10 mL	47 mg/L J	100	7	50			5/24/19 21:39:00	Y	
K1904618-003	Carbon, Total Organic	N/A		Water	0.48 mg/L	10 mL	48 mg/L J	100	7	50			5/24/19 22:07:00	N	
K1904618-004	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50			5/24/19 23:34:00	N	
K1904667-001	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50			5/25/19 01:12:00	N	
K1904667-002	Carbon, Total Organic	N/A		Water	2.06 mg/L	10 mL	2.06 mg/L	1	0.07	0.50			5/25/19 01:40:00	N	
K1904710-001	Carbon, Total Organic	N/A		Water	2.21 mg/L	10 mL	2.21 mg/L	1	0.07	0.50			5/24/19 15:32:00	N	
K1904710-002	Carbon, Total Organic	N/A		Water	2.24 mg/L	10 mL	2.24 mg/L	1	0.07	0.50			5/24/19 16:00:00	N	I
K1904714-001	Carbon, Total Organic	N/A		Water	1.65 mg/L	10 mL	1.65 mg/L	1	0.07	0.50			5/24/19 16:28:00	N	I
K1904716-001	Carbon, Total Organic	N/A		Ground Water	0.15 mg/L	10 mL	0.15 mg/L J	1	0.07	0.50			5/24/19 14:35:00	Y	I
KQ1907129-01	Carbon, Total Organic	CCV		Ground Water	24.62 mg/L	10 mL	24.6 mg/L	1					5/24/19 13:21:00	N	I
KQ1907129-02	Carbon, Total Organic	CCV		Ground Water	24.54 mg/L	10 mL	24.5 mg/L	1					5/24/19 17:25:00	N	I
KQ1907129-03	Carbon, Total Organic	CCV		Ground Water	24.11 mg/L	10 mL	24.1 mg/L	1					5/24/19 22:07:00	N	II
KQ1907129-04	Carbon, Total Organic	CCV		Ground Water	23.57 mg/L	10 mL	23.6 mg/L	1					5/25/19 03:05:00	N	II
KQ1907129-05	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/24/19 13:36:00	N	II
KQ1907129-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/24/19 17:39:00	N	II
KQ1907129-07	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/24/19 22:50:00	N	II
KQ1907129-08	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 03:19:00	N	II

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

05/29/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 636915 **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?	T
KQ1907129-09	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/24/19 13:50:00	N	
KQ1907129-10	Carbon, Total Organic	LCS		Ground Water	25.12 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		5/24/19 14:05:00	N	
KQ1907129-11	Carbon, Total Organic	MS	K1904716-001	Ground Water	25.06 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		5/24/19 15:03:00	N	
KQ1907129-12	Carbon, Total Organic	MS	K1904618-002	Water	26.07 mg/L	10 mL	2610 mg/L	100	7	50	102		5/25/19 00:02:00	N	
KQ1907129-13	Carbon, Total Organic	DUP	K1904716-001	Ground Water	0.11 mg/L	10 mL	0.11 mg/L J	1	0.07	0.50		32*	5/24/19 14:35:00	N	
KQ1907129-14	Carbon, Total Organic	DUP	K1904710-001	Water	2.25 mg/L	10 mL	2.25 mg/L	1	0.07	0.50		2	5/24/19 15:32:00	N	
KQ1907129-15	Carbon, Total Organic	DUP	K1904710-002	Water	2.22 mg/L	10 mL	2.22 mg/L	1	0.07	0.50		<1	5/24/19 16:00:00	N	
KQ1907129-16	Carbon, Total Organic	DUP	K1904714-001	Water	1.68 mg/L	10 mL	1.68 mg/L	1	0.07	0.50		2	5/24/19 16:28:00	N	
KQ1907129-17	Carbon, Total Organic	DUP	K1904594-001	Ground Water	7.00 mg/L	10 mL	7.00 mg/L	1	0.07	0.50		<1	5/24/19 16:57:00	N	
KQ1907129-18	Carbon, Total Organic	DUP	K1904594-002	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	5/24/19 17:54:00	N	
KQ1907129-19	Carbon, Total Organic	DUP	K1904594-003	Ground Water	0.21 mg/L	10 mL	0.21 mg/L J	1	0.07	0.50		2	5/24/19 18:22:00	N	
KQ1907129-20	Carbon, Total Organic	DUP	K1904594-004	Ground Water	0.27 mg/L	10 mL	0.27 mg/L J	1	0.07	0.50		54*	5/24/19 18:50:00	N	
KQ1907129-21	Carbon, Total Organic	DUP	K1904594-005	Ground Water	0.32 mg/L	10 mL	0.32 mg/L J	1	0.07	0.50		27*	5/24/19 19:18:00	N	
KQ1907129-22	Carbon, Total Organic	DUP	K1904594-006	Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	5/24/19 19:46:00	N	I
KQ1907129-23	Carbon, Total Organic	DUP	K1904614-001	Water	1.62 mg/L	10 mL	1.62 mg/L	1	0.07	0.50		2	5/24/19 20:14:00	N	I
KQ1907129-24	Carbon, Total Organic	DUP	K1904614-002	Water	1.46 mg/L	10 mL	1.46 mg/L	1	0.07	0.50		<1	5/24/19 20:43:00	N	I
KQ1907129-25	Carbon, Total Organic	DUP	K1904618-001	Water	0.98 mg/L	10 mL	98 mg/L	100	7	50		3	5/24/19 21:11:00	N	I
KQ1907129-26	Carbon, Total Organic	DUP	K1904618-002	Water	0.47 mg/L	10 mL	47 mg/L J	100	7	50		<1	5/24/19 21:39:00	N	I
KQ1907129-27	Carbon, Total Organic	DUP	K1904618-003	Water	0.47 mg/L	10 mL	47 mg/L J	100	7	50		3	5/24/19 22:07:00	N	I
KQ1907129-28	Carbon, Total Organic	DUP	K1904618-004	Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50		NC	5/24/19 23:34:00	N	I
KQ1907129-29	Carbon, Total Organic	DUP	K1904547-001	Water	17.64 mg/L	10 mL	3530 mg/L	200	20	100		1	5/25/19 00:44:00	N	I
KQ1907129-30	Carbon, Total Organic	DUP	K1904667-001	Water	0.00 mg/L	10 mL	50 mg/L U	100	7	50		NC	5/25/19 01:12:00	N	I
KQ1907129-31	Carbon, Total Organic	DUP	K1904667-002	Water	2.07 mg/L	10 mL	2.07 mg/L	1	0.07	0.50		<1	5/25/19 01:40:00	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:** 636916 **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?	
K1904679-001	Carbon, Total Organic	N/A		Water	11.53 mg/L	10 mL	57.6 mg/L	5	0.4	2.5			5/25/19 02:08:00	N	
K1904679-002	Carbon, Total Organic	N/A		Water	1.25 mg/L	10 mL	12.5 mg/L	10	0.7	5.0			5/25/19 02:37:00	N	
K1904679-003	Carbon, Total Organic	N/A		Water	0.87 mg/L	10 mL	0.87 mg/L	1	0.07	0.50			5/25/19 03:34:00	N	
K1904679-004	Carbon, Total Organic	N/A		Water	0.42 mg/L	10 mL	0.42 mg/L J	1	0.07	0.50			5/25/19 04:02:00	N	
K1904715-001	Carbon, Total Organic	N/A		Water	2.96 mg/L	10 mL	2.96 mg/L	1	0.07	0.50			5/25/19 04:30:00	N	
K1904715-002	Carbon, Total Organic	N/A		Water	3.88 mg/L	10 mL	3.88 mg/L	1	0.07	0.50			5/25/19 04:58:00	N	
K1904715-003	Carbon, Total Organic	N/A		Water	2.91 mg/L	10 mL	2.91 mg/L	1	0.07	0.50			5/25/19 05:26:00	N	
K1904715-004	Carbon, Total Organic	N/A		Water	1.08 mg/L	10 mL	1.08 mg/L	1	0.07	0.50			5/25/19 05:55:00	N	
K1904715-005	Carbon, Total Organic	N/A		Water	1.09 mg/L	10 mL	1.09 mg/L	1	0.07	0.50			5/25/19 06:23:00	N	
K1904715-006	Carbon, Total Organic	N/A		Water	2.95 mg/L	10 mL	2.95 mg/L	1	0.07	0.50			5/25/19 06:51:00	Y	
K1904715-007	Carbon, Total Organic	N/A		Water	3.04 mg/L	10 mL	3.04 mg/L	1	0.07	0.50			5/25/19 08:47:00	N	
K1904715-008	Carbon, Total Organic	N/A		Water	4.20 mg/L	10 mL	4.20 mg/L	1	0.07	0.50			5/25/19 09:15:00	N	
K1904715-009	Carbon, Total Organic	N/A		Water	1.37 mg/L	10 mL	1.37 mg/L	1	0.07	0.50			5/25/19 09:43:00	N	
KQ1907130-01	Carbon, Total Organic	CCV		Water	24.11 mg/L	10 mL	24.1 mg/L	1					5/25/19 22:35:00	N	
KQ1907130-02	Carbon, Total Organic	CCV		Water	23.57 mg/L	10 mL	23.6 mg/L	1					5/25/19 03:05:00	N	
KQ1907130-03	Carbon, Total Organic	CCV		Water	23.98 mg/L	10 mL	24.0 mg/L	1					5/25/19 07:48:00	N	
KQ1907130-04	Carbon, Total Organic	CCV		Water	24.37 mg/L	10 mL	24.4 mg/L	1					5/25/19 12:05:00	N	
KQ1907130-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 22:50:00	N	
KQ1907130-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 03:19:00	N	
KQ1907130-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 08:03:00	N	I
KQ1907130-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 12:20:00	N	I
KQ1907130-09	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 23:04:00	N	I
KQ1907130-10	Carbon, Total Organic	LCS		Water	24.46 mg/L	10 mL	24.5 mg/L	1	0.07	0.50	98		5/25/19 23:19:00	N	I
KQ1907130-11	Carbon, Total Organic	MS	K1904715-006	Water	28.02 mg/L	10 mL	28.0 mg/L	1	0.07	0.50	100		5/25/19 07:19:00	N	I
KQ1907130-12	Carbon, Total Organic	DUP	K1904679-001	Water	11.27 mg/L	10 mL	56.4 mg/L	5	0.4	2.5		2	5/25/19 02:08:00	N	I
KQ1907130-13	Carbon, Total Organic	DUP	K1904679-002	Water	1.22 mg/L	10 mL	12.2 mg/L	10	0.7	5.0		3	5/25/19 02:37:00	N	I
KQ1907130-14	Carbon, Total Organic	DUP	K1904679-003	Water	0.95 mg/L	10 mL	0.95 mg/L	1	0.07	0.50		9	5/25/19 03:34:00	N	I
KQ1907130-15	Carbon, Total Organic	DUP	K1904679-004	Water	0.41 mg/L	10 mL	0.41 mg/L J	1	0.07	0.50		2	5/25/19 04:02:00	N	I
KQ1907130-16	Carbon, Total Organic	DUP	K1904715-001	Water	2.94 mg/L	10 mL	2.94 mg/L	1	0.07	0.50		<1	5/25/19 04:30:00	N	I
KQ1907130-17	Carbon, Total Organic	DUP	K1904715-002	Water	3.90 mg/L	10 mL	3.90 mg/L	1	0.07	0.50		<1	5/25/19 04:58:00	N	I
KQ1907130-18	Carbon, Total Organic	DUP	K1904715-003	Water	2.90 mg/L	10 mL	2.90 mg/L	1	0.07	0.50		<1	5/25/19 05:26:00	N	I
KQ1907130-19	Carbon, Total Organic	DUP	K1904715-004	Water	1.08 mg/L	10 mL	1.08 mg/L	1	0.07	0.50		<1	5/25/19 05:55:00	N	I
KQ1907130-20	Carbon, Total Organic	DUP	K1904715-005	Water	1.06 mg/L	10 mL	1.06 mg/L	1	0.07	0.50		3	5/25/19 06:23:00	N	I
KQ1907130-21	Carbon, Total Organic	DUP	K1904715-006	Water	2.90 mg/L	10 mL	2.90 mg/L	1	0.07	0.50		2	5/25/19 06:51:00	N	I
KQ1907130-22	Carbon, Total Organic	DUP	K1904715-007	Water	2.98 mg/L	10 mL	2.98 mg/L	1	0.07	0.50		2	5/25/19 08:47:00	N	I
KQ1907130-23	Carbon, Total Organic	DUP	K1904715-008	Water	4.13 mg/L	10 mL	4.13 mg/L	1	0.07	0.50		2	5/25/19 09:15:00	N	I

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

05/29/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 636916 **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
KQ1907130-24	Carbon, Total Organic	DUP	K1904715-009	Water	1.37 mg/L	10 mL	1.37 mg/L	1	0.07	0.50		<1	5/25/19 09:43:00	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:** 636917 **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?	
K1904597-001	Carbon, Total Organic	N/A		Water	8.03 mg/L	10 mL	803 mg/L	100	7	50			5/25/19 13:59:00	N	
K1904597-002	Carbon, Total Organic	N/A		Water	7.05 mg/L	10 mL	705 mg/L	100	7	50			5/25/19 14:27:00	N	
K1904713-001	Carbon, Total Organic	N/A		Ground Water	1.27 mg/L	10 mL	1.27 mg/L	1	0.07	0.50			5/25/19 15:23:00	N	
K1904713-002	Carbon, Total Organic	N/A		Ground Water	1.45 mg/L	10 mL	1.45 mg/L	1	0.07	0.50			5/25/19 15:51:00	N	
K1904713-003	Carbon, Total Organic	N/A		Ground Water	0.70 mg/L	10 mL	0.70 mg/L	1	0.07	0.50			5/25/19 16:19:00	N	
K1904713-004	Carbon, Total Organic	N/A		Ground Water	1.59 mg/L	10 mL	1.59 mg/L	1	0.07	0.50			5/25/19 16:47:00	N	
K1904715-011	Carbon, Total Organic	N/A		Water	1.33 mg/L	10 mL	1.33 mg/L	1	0.07	0.50			5/25/19 10:12:00	Y	
K1904715-016	Carbon, Total Organic	N/A		Water	8.57 mg/L	10 mL	8.57 mg/L	1	0.07	0.50			5/25/19 11:09:00	N	
K1904715-017	Carbon, Total Organic	N/A		Water	6.24 mg/L	10 mL	6.24 mg/L	1	0.07	0.50			5/25/19 11:37:00	N	
K1904715-018	Carbon, Total Organic	N/A		Water	40.02 mg/L	10 mL	40.0 mg/L	1	0.07	0.50			5/25/19 12:34:00	N	
K1904715-019	Carbon, Total Organic	N/A		Water	12.59 mg/L	10 mL	12.6 mg/L	1	0.07	0.50			5/25/19 13:03:00	N	
K1904715-020	Carbon, Total Organic	N/A		Water	17.75 mg/L	10 mL	17.8 mg/L	1	0.07	0.50			5/25/19 13:31:00	N	
KQ1907131-01	Carbon, Total Organic	CCV		Water	23.98 mg/L	10 mL	24.0 mg/L	1					5/25/19 07:48:00	N	
KQ1907131-02	Carbon, Total Organic	CCV		Water	24.37 mg/L	10 mL	24.4 mg/L	1					5/25/19 12:05:00	N	
KQ1907131-03	Carbon, Total Organic	CCV		Water	23.98 mg/L	10 mL	24.0 mg/L	1					5/25/19 17:15:00	N	
KQ1907131-04	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 08:03:00	N	
KQ1907131-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 12:20:00	N	
KQ1907131-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 17:30:00	N	
KQ1907131-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 08:18:00	N	
KQ1907131-08	Carbon, Total Organic	LCS		Water	24.71 mg/L	10 mL	24.7 mg/L	1	0.07	0.50	99		5/25/19 08:32:00	N	
KQ1907131-09	Carbon, Total Organic	MS	K1904715-011	Water	26.81 mg/L	10 mL	26.8 mg/L	1	0.07	0.50	102		5/25/19 10:40:00	N	
KQ1907131-10	Carbon, Total Organic	DUP	K1904715-011	Water	1.30 mg/L	10 mL	1.30 mg/L	1	0.07	0.50		2	5/25/19 10:12:00	N	
KQ1907131-11	Carbon, Total Organic	DUP	K1904715-016	Water	8.90 mg/L	10 mL	8.90 mg/L	1	0.07	0.50		4	5/25/19 11:09:00	N	
KQ1907131-12	Carbon, Total Organic	DUP	K1904715-017	Water	6.27 mg/L	10 mL	6.27 mg/L	1	0.07	0.50		<1	5/25/19 11:37:00	N	
KQ1907131-13	Carbon, Total Organic	DUP	K1904715-018	Water	40.34 mg/L	10 mL	40.3 mg/L	1	0.07	0.50		<1	5/25/19 12:34:00	N	I
KQ1907131-14	Carbon, Total Organic	DUP	K1904715-019	Water	12.20 mg/L	10 mL	12.2 mg/L	1	0.07	0.50		3	5/25/19 13:03:00	N	I
KQ1907131-15	Carbon, Total Organic	DUP	K1904715-020	Water	17.66 mg/L	10 mL	17.7 mg/L	1	0.07	0.50		<1	5/25/19 13:31:00	N	I
KQ1907131-16	Carbon, Total Organic	DUP	K1904597-001	Water	7.76 mg/L	10 mL	776 mg/L	100	7	50		3	5/25/19 13:59:00	N	
KQ1907131-17	Carbon, Total Organic	DUP	K1904597-002	Water	7.04 mg/L	10 mL	704 mg/L	100	7	50		<1	5/25/19 14:27:00	N	
KQ1907131-18	Carbon, Total Organic	DUP	K1904713-001	Ground Water	1.28 mg/L	10 mL	1.28 mg/L	1	0.07	0.50		<1	5/25/19 15:23:00	N	
KQ1907131-19	Carbon, Total Organic	DUP	K1904713-002	Ground Water	1.45 mg/L	10 mL	1.45 mg/L	1	0.07	0.50		<1	5/25/19 15:51:00	N	I
KQ1907131-20	Carbon, Total Organic	DUP	K1904713-003	Ground Water	0.68 mg/L	10 mL	0.68 mg/L	1	0.07	0.50		3	5/25/19 16:19:00	N	I

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

05/29/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 636917 **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?	T
KQ1907131-21	Carbon, Total Organic	DUP	K1904713-004	Ground Water	1.55 mg/L	10 mL	1.55 mg/L	1	0.07	0.50		2	5/25/19 16:47:00	N	

# 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:** 636919 **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?	
K1904684-001	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	10.77 mg/L	10 mL	10.8 mg/L	1	0.07	0.50			5/25/19 19:11:00	N	I
K1904684-002	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	2.40 mg/L	10 mL	2.40 mg/L	1	0.07	0.50			5/25/19 19:39:00	Y	I
K1904684-003	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	2.77 mg/L	10 mL	2.77 mg/L	1	0.07	0.50			5/25/19 20:37:00	N	I
K1904684-004	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	8.57 mg/L	10 mL	8.57 mg/L	1	0.07	0.50			5/25/19 21:34:00	N	I
K1904686-001	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	4.98 mg/L	10 mL	4.98 mg/L	1	0.07	0.50			5/25/19 22:02:00	N	
K1904686-002	Carbon, Dissolved Organic (DOC)	N/A		Ground Water	12.28 mg/L	10 mL	12.3 mg/L	1	0.07	0.50			5/25/19 22:31:00	N	I
K1904716-001	Carbon, Dissolved Organic (DOC)	N/A		Ground Water	0.26 mg/L	10 mL	0.26 mg/L J	1	0.07	0.50			5/25/19 18:14:00	Y	I
K1904718-001	Carbon, Dissolved Organic (DOC)	N/A		Ground Water	0.47 mg/L	10 mL	0.47 mg/L J	1	0.07	0.50			5/25/19 22:59:00	N	I
K1904718-002	Carbon, Dissolved Organic (DOC)	N/A		Ground Water	0.24 mg/L	10 mL	0.24 mg/L J	1	0.07	0.50			5/25/19 23:27:00	N	I
KQ1907132-01	Carbon, Dissolved Organic (DOC)	CCV		Ground Water	23.98 mg/L	10 mL	24.0 mg/L	1					5/25/19 17:15:00	N	I
KQ1907132-02	Carbon, Dissolved Organic (DOC)	CCV		Ground Water	23.80 mg/L	10 mL	23.8 mg/L	1					5/25/19 21:05:00	N	I
KQ1907132-03	Carbon, Dissolved Organic (DOC)	CCV		Ground Water	23.87 mg/L	10 mL	23.9 mg/L	1					5/26/19 00:23:00	N	I
KQ1907132-04	Carbon, Dissolved Organic (DOC)	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 17:30:00	N	I
KQ1907132-05	Carbon, Dissolved Organic (DOC)	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 21:19:00	N	I
KQ1907132-06	Carbon, Dissolved Organic (DOC)	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/26/19 00:38:00	N	I
KQ1907132-07	Carbon, Dissolved Organic (DOC)	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			5/25/19 17:45:00	N	II
KQ1907132-08	Carbon, Dissolved Organic (DOC)	LCS		Ground Water	24.79 mg/L	10 mL	24.8 mg/L	1	0.07	0.50	99		5/25/19 17:59:00	N	II
KQ1907132-09	Carbon, Dissolved Organic (DOC)	MS	K1904716-001	Ground Water	25.39 mg/L	10 mL	25.4 mg/L	1	0.07	0.50	101		5/25/19 18:42:00	N	II
KQ1907132-11	Carbon, Dissolved Organic (DOC)	DUP	K1904716-001	Ground Water	0.15 mg/L	10 mL	0.15 mg/L J	1	0.07	0.50		54*	5/25/19 18:14:00	N	II
KQ1907132-16	Carbon, Dissolved Organic (DOC)	DUP	K1904686-001	Surface Water	4.91 mg/L	10 mL	4.91 mg/L	1	0.07	0.50		1	5/25/19 22:02:00	N	I
KQ1907132-17	Carbon, Dissolved Organic (DOC)	DUP	K1904686-002	Ground Water	12.23 mg/L	10 mL	12.2 mg/L	1	0.07	0.50		<1	5/25/19 22:31:00	N	I
KQ1907132-18	Carbon, Dissolved Organic (DOC)	DUP	K1904718-001	Ground Water	0.29 mg/L	10 mL	0.29 mg/L J	1	0.07	0.50		48*	5/25/19 22:59:00	N	II
KQ1907132-19	Carbon, Dissolved Organic (DOC)	DUP	K1904718-002	Ground Water	0.28 mg/L	10 mL	0.28 mg/L J	1	0.07	0.50		17*	5/25/19 23:27:00	N	II

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

05/29/19

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 636919 **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?	Tie
KQ1907132-20	Carbon, Dissolved Organic (DOC)	MS	K1904684-002	Surface Water	27.21 mg/L	10 mL	27.2 mg/L	1	0.07	0.50	99		5/25/19 20:08:00	N	I
KQ1907132-21	Carbon, Dissolved Organic (DOC)	DUP	K1904684-001	Surface Water	10.94 mg/L	10 mL	10.9 mg/L	1	0.07	0.50		2	5/25/19 19:11:00	N	I
KQ1907132-22	Carbon, Dissolved Organic (DOC)	DUP	K1904684-002	Surface Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50		2	5/25/19 19:39:00	N	II
KQ1907132-23	Carbon, Dissolved Organic (DOC)	DUP	K1904684-003	Surface Water	2.79 mg/L	10 mL	2.79 mg/L	1	0.07	0.50		<1	5/25/19 20:37:00	N	II
KQ1907132-24	Carbon, Dissolved Organic (DOC)	DUP	K1904684-004	Surface Water	8.94 mg/L	10 mL	8.94 mg/L	1	0.07	0.50		4	5/25/19 21:34:00	N	II

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

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	C] CCV 25 ppm [25 p	1	23.978	0.0000	23.9780	23.978	24.0	5/25/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
4	MB3	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
5	[TOC] LCS [25ppm]	1	24.708	0.0000	24.7077	24.7077	24.7	5/25/2019
6	K1904715-011	1	1.332	0.0000	1.3315	1.3315	1.33	5/25/2019
7	K1904715-011d	1	1.301	0.0000	1.3010	1.301	1.3	5/25/2019
8	K1904715-011ms	1	26.806	0.0000	26.8061	26.8061	27	5/25/2019
9	K1904715-016	1	8.570	0.0000	8.5704	8.5704	8.57	5/25/2019
10	K1904715-016d	1	8.904	0.0000	8.9036	8.9036	8.90	5/25/2019
11	K1904715-017	1	6.238	0.0000	6.2378	6.2378	6.2	5/25/2019
12	K1904715-017d	1	6.265	0.0000	6.2651	6.2651	6.27	5/25/2019
13	C] CCV 25 ppm [25 p	1	24.367	0.0000	24.3668	24.3668	24.37	5/25/2019
14	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
15	K1904715-018	1	40.018	0.0000	40.0182	40.0182	40.0	5/25/2019
16	K1904715-018d	1	40.342	0.0000	40.3419	40.3419	40.3	5/25/2019
17	K1904715-019	1	12.595	0.0000	12.5948	12.5948	12.59	5/25/2019
18	K1904715-019d	1	12.198	0.0000	12.1984	12.1984	12.2	5/25/2019
19	K1904715-020	1	17.752	0.0000	17.7522	17.7522	17.8	5/25/2019
20	K1904715-020d	1	17.660	0.0000	17.6597	17.6597	17.66	5/25/2019
21	K1904597-001	100	8.028	0.0000	8.0276	802.76	802.76	5/25/2019
22	K1904597-001d	100	7.761	0.0000	7.7611	776.11	776.1	5/25/2019
23	K1904597-002	100	7.049	0.0000	7.0488	704.88	704.9	5/25/2019
24	K1904597-002d	100	7.043	0.0000	7.0428	704.28	704.28	5/25/2019
25	K1904713-001	1	1.272	0.0000	1.2720	1.272	1.27	5/25/2019

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:	BCD	Date Analyzed	5/24/19
Reviewed By:		Date Reviewed	05/29/19

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	K1904713-001d	1	1.279	0.0000	1.2786	1.2786	1.28	5/25/2019
27	K1904713-002	1	1.455	0.0000	1.4545	1.4545	1.45	5/25/2019
28	K1904713-002d	1	1.454	0.0000	1.4542	1.4542	1.5	5/25/2019
29	K1904713-003	1	0.699	0.0000	0.6989	0.6989	0.7	5/25/2019
30	K1904713-003d	1	0.680	0.0000	0.6797	0.6797	0.7	5/25/2019
31	K1904713-004	1	1.585	0.0000	1.5850	1.585	1.6	5/25/2019
32	K1904713-004d	1	1.549	0.0000	1.5486	1.5486	1.5	5/25/2019
33	C] CCV 25 ppm [25 p	1	23.979	0.0000	23.9794	23.9794	24.0	5/25/2019
34	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
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	5/24/19
Reviewed By:		Date Reviewed	05/29/19

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	C] CCV 25 ppm [25 p	1	24.111	0.0000	24.1106	24.1106	24.1	5/24/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
4	MB2	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
5	[TOC] LCS [24ppm]	1	24.464	0.0000	24.4640	24.464	24.5	5/24/2019
6	K1904679-001	5	11.526	0.0000	11.5257	57.6285	57.63	5/25/2019
7	K1904679-001d	5	11.271	0.0000	11.2706	56.353	56.4	5/25/2019
8	K1904679-002	10	1.252	0.0000	1.2518	12.518	13	5/25/2019
9	K1904679-002d	10	1.215	0.0000	1.2151	12.151	12.15	5/25/2019
10	C] CCV 25 ppm [25 p	1	23.566	0.0000	23.5658	23.5658	23.57	5/25/2019
11	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
12	K1904679-003	1	0.866	0.0000	0.8663	0.8663	0.87	5/25/2019
13	K1904679-003d	1	0.952	0.0000	0.9523	0.9523	0.95	5/25/2019
14	K1904679-004	1	0.421	0.0000	0.4209	0.4209	<0.5	5/25/2019
15	K1904679-004d	1	0.413	0.0000	0.4134	0.4134	<0.5	5/25/2019
16	K1904715-001	1	2.956	0.0000	2.9564	2.9564	3.0	5/25/2019
17	K1904715-001d	1	2.944	0.0000	2.9435	2.9435	2.94	5/25/2019
18	K1904715-002	1	3.879	0.0000	3.8787	3.8787	3.9	5/25/2019
19	K1904715-002d	1	3.902	0.0000	3.9021	3.9021	3.9	5/25/2019
20	K1904715-003	1	2.909	0.0000	2.9093	2.9093	2.91	5/25/2019
21	K1904715-003d	1	2.897	0.0000	2.8968	2.8968	2.90	5/25/2019
22	K1904715-004	1	1.078	0.0000	1.0780	1.078	1.1	5/25/2019
23	K1904715-004d	1	1.082	0.0000	1.0818	1.0818	1.1	5/25/2019
24	K1904715-005	1	1.091	0.0000	1.0914	1.0914	1.09	5/25/2019
25	K1904715-005d	1	1.060	0.0000	1.0603	1.0603	1.06	5/25/2019

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	5/29/19
Reviewed By:	[signature]	Date Reviewed	05/29/19

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	K1904715-006	1	2.953	0.0000	2.9533	2.9533	2.95	5/25/2019
27	K1904715-006d	1	2.904	0.0000	2.9043	2.9043	2.90	5/25/2019
28	K1904715-006ms	1	28.017	0.0000	28.0166	28.0166	28.0	5/25/2019
29	C] CCV 25 ppm [25 p	1	23.978	0.0000	23.9780	23.978	24.0	5/25/2019
30	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
31	K1904715-007	1	3.041	0.0000	3.0407	3.0407	3.0	5/25/2019
32	K1904715-007d	1	2.983	0.0000	2.9825	2.9825	3.0	5/25/2019
33	K1904715-008	1	4.196	0.0000	4.1963	4.1963	4.2	5/25/2019
34	K1904715-008d	1	4.130	0.0000	4.1300	4.13	4.1	5/25/2019
35	K1904715-009	1	1.373	0.0000	1.3726	1.3726	1.4	5/25/2019
36	K1904715-009d	1	1.375	0.0000	1.3748	1.3748	1.4	5/25/2019
37	C] CCV 25 ppm [25 p	1	24.367	0.0000	24.3668	24.3668	24.4	5/25/2019
38	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
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:	BLD	Date Analyzed	5/24/19
Reviewed By:	[signature]	Date Reviewed	05/29/19

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	C] CCV 25 ppm [25 p	1	24.619	0.0000	24.6186	24.6186	24.6	5/24/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
4	MB1	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
5	[TOC] LCS [24ppm]	1	25.116	0.0000	25.1159	25.1159	25.1	5/24/2019
6	K1904716-001	1	0.153	0.0000	0.1531	0.1531	<0.5	5/24/2019
7	K1904716-001d	1	0.111	0.0000	0.1111	0.1111	<0.5	5/24/2019
8	K1904716-001ms	1	25.056	0.0000	25.0556	25.0556	25	5/24/2019
9	K1904710-001	1	2.205	0.0000	2.2050	2.205	2.21	5/24/2019
10	K1904710-001d	1	2.248	0.0000	2.2481	2.2481	2.25	5/24/2019
11	K1904710-002	1	2.237	0.0000	2.2374	2.2374	2.2	5/24/2019
12	K1904710-002d	1	2.217	0.0000	2.2166	2.2166	2.22	5/24/2019
13	K1904714-001	1	1.652	0.0000	1.6518	1.6518	1.65	5/24/2019
14	K1904714-001d	1	1.678	0.0000	1.6783	1.6783	1.68	5/24/2019
15	K1904594-001	1	7.016	0.0000	7.0158	7.0158	7.0	5/24/2019
16	K1904594-001d	1	7.004	0.0000	7.0038	7.0038	7.0	5/24/2019
17	C] CCV 25 ppm [25 p	1	24.537	0.0000	24.5370	24.537	24.54	5/24/2019
18	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
19	K1904594-002	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
20	K1904594-002d	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
21	K1904594-003	1	0.203	0.0000	0.2030	0.203	<0.5	5/24/2019
22	K1904594-003d	1	0.207	0.0000	0.2070	0.207	<0.5	5/24/2019
23	K1904594-004	1	0.471	0.0000	0.4711	0.4711	<0.5	5/24/2019
24	K1904594-004d	1	0.272	0.0000	0.2720	0.272	<0.5	5/24/2019
25	K1904594-005	1	0.416	0.0000	0.4160	0.416	<0.5	5/24/2019

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: BKD	Date Analyzed 5/24/19
Reviewed By:	Date Reviewed 05/29/19

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	K1904594-005d	1	0.317	0.0000	0.3165	0.3165	<0.5	5/24/2019
27	K1904594-006	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
28	K1904594-006d	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
29	K1904614-001	1	1.649	0.0000	1.6490	1.649	1.6	5/24/2019
30	K1904614-001d	1	1.618	0.0000	1.6179	1.6179	1.6	5/24/2019
31	K1904614-002	1	1.456	0.0000	1.4563	1.4563	1.5	5/24/2019
32	K1904614-002d	1	1.456	0.0000	1.4558	1.4558	1.5	5/24/2019
33	K1904618-001	100	0.949	0.0000	0.9492	94.92	94.9	5/24/2019
34	K1904618-001d	100	0.982	0.0000	0.9822	98.22	98.2	5/24/2019
35	K1904618-002	100	0.468	0.0000	0.4675	46.75	46.8	5/24/2019
36	K1904618-002d	100	0.471	0.0000	0.4710	47.1	47.1	5/24/2019
37	K1904618-003	100	0.480	0.0000	0.4797	47.97	48.0	5/24/2019
38	K1904618-003d	100	0.465	0.0000	0.4650	46.5	46.5	5/24/2019
39	C] CCV 25 ppm [25 p	1	24.111	0.0000	24.1106	24.1106	24.1	5/24/2019
40	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/24/2019
41	K1904618-004	100	0.000	0.0000	0.0000	0	<0.5	5/24/2019
42	K1904618-004d	100	0.000	0.0000	0.0000	0	<0.5	5/24/2019
43	K1904618-002ms	100	26.071	0.0000	26.0707	2607.07	2607.1	5/25/2019
44	K1904547-001	200	17.897	0.0000	17.8966	3579.32	3579.3	5/25/2019
45	K1904547-001d	200	17.645	0.0000	17.6447	3528.94	3528.9	5/25/2019
46	K1904667-001	100	0.000	0.0000	0.0000	0	<0.5	5/25/2019
47	K1904667-001d	100	0.000	0.0000	0.0000	0	<0.5	5/25/2019
48	K1904667-002	1	2.060	0.0000	2.0601	2.0601	2.1	5/25/2019
49	K1904667-002d	1	2.072	0.0000	2.0724	2.0724	2.1	5/25/2019
50	C] CCV 25 ppm [25 p	1	23.566	0.0000	23.5658	23.5658	23.6	5/25/2019

Analyzed By:	BD	Date Analyzed	5/24/19
Reviewed By:		Date Reviewed	05/29/19

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	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
52		1		0.0000	0.0000	0	<0.5	
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: BCD	Date Analyzed 5/24/19
Reviewed By:	Date Reviewed 05/29/19

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	C] CCV 25 ppm [25 p	1	23.979	0.0000	23.9794	23.9794	24.0	5/25/2019
3	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
4	MB4	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
5	[TOC] LCS [25ppm]	1	24.794	0.0000	24.7942	24.7942	24.8	5/25/2019
6	K1904716-001	1	0.264	0.0000	0.2642	0.2642	<0.5	5/25/2019
7	K1904716-001d	1	0.152	0.0000	0.1523	0.1523	<0.5	5/25/2019
8	K1904716-001ms	1	25.393	0.0000	25.3933	25.3933	25	5/25/2019
9	K1904684-001	1	10.773	0.0000	10.7732	10.7732	10.77	5/25/2019
10	K1904684-001d	1	10.940	0.0000	10.9403	10.9403	10.94	5/25/2019
11	K1904684-002	1	2.403	0.0000	2.4025	2.4025	2.4	5/25/2019
12	K1904684-002d	1	2.347	0.0000	2.3473	2.3473	2.35	5/25/2019
13	K1904684-002ms	1	27.210	0.0000	27.2097	27.2097	27.21	5/25/2019
14	K1904684-003	1	2.771	0.0000	2.7713	2.7713	2.77	5/25/2019
15	K1904684-003d	1	2.792	0.0000	2.7922	2.7922	2.8	5/25/2019
16	C] CCV 25 ppm [25 p	1	23.805	0.0000	23.8048	23.8048	23.8	5/25/2019
17	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/25/2019
18	K1904684-004	1	8.565	0.0000	8.5652	8.5652	8.6	5/25/2019
19	K1904684-004d	1	8.939	0.0000	8.9391	8.9391	8.9	5/25/2019
20	K1904686-001	1	4.979	0.0000	4.9785	4.9785	4.98	5/25/2019
21	K1904686-001d	1	4.910	0.0000	4.9095	4.9095	4.91	5/25/2019
22	K1904686-002	1	12.277	0.0000	12.2766	12.2766	12.3	5/25/2019
23	K1904686-002d	1	12.229	0.0000	12.2286	12.2286	12.2	5/25/2019
24	K1904718-001	1	0.472	0.0000	0.4723	0.4723	<0.5	5/25/2019
25	K1904718-001d	1	0.290	0.0000	0.2899	0.2899	<0.5	5/25/2019

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:	RD	Date Analyzed	5/24/19
Reviewed By:		Date Reviewed	05/29/19

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	K1904718-002	1	0.238	0.0000	0.2376	0.2376	<0.5	5/25/2019
27	K1904718-002d	1	0.282	0.0000	0.2815	0.2815	<0.5	5/25/2019
28	C] CCV 25 ppm [25 p	1	23.873	0.0000	23.8734	23.8734	23.9	5/26/2019
29	[TOC] CCB [0 ppm]	1	0.000	0.0000	0.0000	0	<0.5	5/26/2019
30		1		0.0000	0.0000	0	<0.5	
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	5/24/19
Reviewed By:		Date Reviewed	05/29/19

TOC: 636915, 636916, 636917
DOC: 636919

Schedule: 05242019

Version: 8
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/05/24 12:28 - 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 [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	K1904716-001.07	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1904716-001.07 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1904710-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K1904710-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1904714-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1904594-001.11	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	K1904594-002.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1904594-003.12	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1904594-004.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1904594-005.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1904594-006.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1904614-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1904614-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1904618-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1904618-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1904618-003.01 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
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	K1904618-004.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1904618-002.01 ms 100x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
23	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1904547-001.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1904667-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1904667-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1904679-001.15 5x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1904679-002.15 10x	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	K1904679-003.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1904679-004.14	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1904715-001.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1904715-002.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1904715-003.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1904715-004.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1904715-005.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1904715-006.11	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1904715-006.11 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
38	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

Printed on: May 29, 2019 09:22:15

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Schedule: 05242019

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	Status
D	Check Standard	[TOC] CCB [0 ppm]	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
A1	Sample	K1904715-005.11	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
A3	Sample	K1904715-011.11	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
A5	Sample	[illegible]	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
A7	Sample	K1904715-017.11	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
A9	Sample	K1904715-019.11	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
B1	Sample	K1904837-001.01 1:5dil	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
B3	Sample	PB	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
B5	Sample	K1904715-002.01	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
B7	Sample	K1904715-004.01	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
B9	Sample	K1904715-007.02 1:5dil dup	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
C2	Sample	K1904834-001.08 diss	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
C4	Sample	K1904834-002.08 1:5dil dup	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	1	True	Ready
C6	Sample	K1904834-003.08 diss	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
C8	Sample	K1904834-004.08 diss	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
D0	Sample	K1904715-001.02 diss	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	2	True	Ready
D2	Sample	PB	[CAS_cert_010711] [CAS_cert_010711]	2	True	Ready
[illegible]	[illegible]	[illegible]	[illegible]	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	[CAS_cert_010711] [CAS_cert_010711]	1	True	Ready
					False	

Fusion Report - 05242019
Friday, May 24, 2019 10:30 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/05/29 09:22 - Wednesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	05242019	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) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v8)		
Comment:			

Report Results

05/29/19

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/05/24 10:30

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	14.07	17.29	3.22	49.94	07:57
2	TC Clean	6.92	10.04	3.12	49.78	07:18
3	TC Clean	2.48	5.56	3.08	49.69	07:02
4	TC Clean	1.55	4.76	3.20	49.66	07:03

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/05/24 11:05

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.95	14.93	2.98	49.80	07:58
2	TC Clean	4.18	7.21	3.03	49.63	07:13
3	TC Clean	1.92	4.77	2.85	49.64	07:02

4	TC Clean	1.53	4.54	3.01	49.63	07:01

Sample Type: Clean From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/05/24 11:39

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.06	14.97	2.90	49.79	07:58
2	TC Clean	3.59	6.68	3.08	49.64	07:16
3	TC Clean	1.83	4.89	3.06	49.87	07:03
4	TC Clean	1.33	4.32	2.99	49.73	07:01

Sample Type: Blank (Creating v1260) From Schedule Version 6

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/05/24 12:15

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	11.97	14.96	2.98	49.85	07:59
2	TC Clean	3.57	6.65	3.07	49.70	07:17
3	TC Clean	1.65	4.65	3.00	49.67	07:02
4	TC Clean	1.05	4.19	3.14	49.65	07:02
5	Reagent Blank	3.50	6.42	2.91	49.70	08:12
6	Acid Blank	1.27	4.19	2.92	49.83	08:02

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/24 13:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.72	10.68	2.96	49.95	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 8

	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)	24.6186 ppm (PASS)	0.0000 ppm	0%	2019/05/24 13:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6186	246.1859	176.57	179.59	3.02	49.92	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 8

	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%	2019/05/24 13:36

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.02	9.06	3.03	49.99	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/24 13:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.40	8.36	2.95	50.01	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS

From Schedule Version 8

	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)	25.1159 ppm (PASS)	0.0000 ppm	0%	2019/05/24 14:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1159	251.1594	179.95	182.81	2.87	49.98	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/24 14:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.70	10.81	3.11	49.93	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1904716-001.07	0.1321 ppm	0.0297 ppm	22.4800%	2019/05/24 14:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1531	1.5308	9.79	12.79	3.00	49.98	10:30
2	TOC	0.1111	1.1109	9.50	12.60	3.09	49.94	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1904716-001.07 ms	25.0556 ppm	0.0000 ppm	0.0000%	2019/05/24 15:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.0556	250.5562	178.83	181.77	2.95	49.90	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/24 15:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.25	10.24	2.99	49.86	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC)	CAS_salt_010711	CAS_salt_010711

(v1260) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1904710-001.01	2.2265 ppm	0.0305 ppm	1.3700%	2019/05/24 15:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2050	22.0495	23.72	26.79	3.07	49.87	10:28
2	TOC	2.2481	22.4812	24.01	27.04	3.03	49.96	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1904710-002.01	2.2270 ppm	0.0147 ppm	0.6600%	2019/05/24 16:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2374	22.3736	23.94	26.92	2.98	49.91	10:30
2	TOC	2.2166	22.1659	23.80	26.74	2.94	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1904714-001.01	1.6650 ppm	0.0188 ppm	1.1300%	2019/05/24 16:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6518	16.5177	19.96	23.22	3.26	49.90	10:29
2	TOC	1.6783	16.7828	20.14	23.09	2.95	49.87	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1904594-001.11	7.0098 ppm	0.0085 ppm	0.1200%	2019/05/24 16:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.0158	70.1584	56.37	59.48	3.11	49.86	10:27
2	TOC	7.0038	70.0376	56.29	59.23	2.94	49.87	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 8

	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)	24.5370 ppm (PASS)	0.0000 ppm	0%	2019/05/24 17:25

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5370	245.3697	176.02	179.04	3.03	49.92	10:29

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)
STD Conc - Pos B: 50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 8

	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%	2019/05/24 17:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.88	8.79	2.91	49.92	10:33

Completion State: Success - Criteria met.
Success Action: Do Nothing
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)
STD Conc - Pos D: 0 ppmC

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K1904594-002.11	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/24 17:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.69	8.70	3.00	49.92	10:28
2	TOC	0.0000	0.0000	5.59	8.59	3.00	49.91	10:29

Dilution: 1:10
Blank Contribution: (TC) 8.7499 (IC) (v1260)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K1904594-003.12	0.2050 ppm	0.0028 ppm	1.3700%	2019/05/24 18:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2030	2.0302	10.13	13.10	2.97	49.90	10:28
2	TOC	0.2070	2.0700	10.16	13.18	3.03	49.92	10:25

Dilution: 1:10
Blank Contribution: (TC) 8.7499 (IC) (v1260)
Method: CAS_salt_010711 (v4)
Calibration: CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1904594-004.11	0.3716 ppm	0.1408 ppm	37.9100%	2019/05/24 18:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4711	4.7114	11.95	15.09	3.14	49.91	10:27
2	TOC	0.2720	2.7197	10.60	13.77	3.18	49.93	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1904594-005.11	0.3663 ppm	0.0704 ppm	19.2300%	2019/05/24 19:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4160	4.1605	11.57	14.57	2.99	49.95	10:28
2	TOC	0.3165	3.1646	10.90	14.00	3.10	49.94	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1904594-006.11	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/24 19:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.07	9.22	3.15	49.96	10:29
2	TOC	0.0000	0.0000	6.24	9.16	2.92	49.99	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1904614-001.01	1.6334 ppm	0.0220 ppm	1.3500%	2019/05/24 20:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6490	16.4897	19.94	22.86	2.92	50.00	10:32
2	TOC	1.6179	16.1788	19.73	22.72	2.99	49.99	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K1904614-002.01	1.4561 ppm	0.0003 ppm	0.0200%	2019/05/24 20:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4563	14.5627	18.64	21.68	3.04	49.99	10:28

2	TOC	1.4558	14.5583	18.63	21.66	3.03	50.00	10:28

Dilution 1:10 | **Blank Contribution** (TC) 8.7499 (IC) (v1260) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1904618-001.01 100x	0.9657 ppm	0.0233 ppm	2.4200%	2019/05/24 21:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9492	9.4920	15.19	18.13	2.94	50.00	10:30
2	TOC	0.9822	9.8220	15.42	18.34	2.92	50.01	10:29

Dilution 1:10 | **Blank Contribution** (TC) 8.7499 (IC) (v1260) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1904618-002.01 100x	0.4692 ppm	0.0025 ppm	0.5300%	2019/05/24 21:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4675	4.6746	11.92	14.92	2.99	50.03	10:26
2	TOC	0.4710	4.7100	11.95	14.98	3.03	50.03	10:25

Dilution 1:10 | **Blank Contribution** (TC) 8.7499 (IC) (v1260) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1904618-003.01 100x	0.4723 ppm	0.0104 ppm	2.2100%	2019/05/24 22:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4797	4.7969	12.01	15.09	3.08	50.05	10:28
2	TOC	0.4650	4.6496	11.91	15.03	3.12	50.06	10:31

Dilution 1:10 | **Blank Contribution** (TC) 8.7499 (IC) (v1260) | **Method** CAS_salt_010711 (v4) | **Calibration** CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	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)	24.1106 ppm (PASS)	0.0000 ppm	0%	2019/05/24 22:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1106	241.1063	173.12	176.14	3.02	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 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	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%	2019/05/24 22:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.74	8.69	2.95	50.06	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/24 23:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.19	8.19	3.00	50.07	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 8

	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)	24.4640 ppm (PASS)	0.0000 ppm	0%	2019/05/24 23:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.4640	244.6405	175.52	178.56	3.04	50.08	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K1904618-004.01 100x	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/24 23:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.64	8.78	3.14	50.06	10:30
2	TOC	0.0000	0.0000	4.96	8.04	3.08	50.08	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K1904618-002.01 ms 100x	26.0707 ppm	0.0000 ppm	0.0000%	2019/05/25 00:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.0707	260.7066	185.72	188.72	3.00	50.09	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 00:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.63	8.75	3.12	50.08	10:28
2	TOC	0.0000	0.0000	5.25	8.28	3.02	50.08	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K1904547-001.01 200x	17.7706 ppm	0.1781 ppm	1.0000%	2019/05/25 00:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	17.8966	178.9660	130.23	133.30	3.07	50.10	10:29
2	TOC	17.6447	176.4469	128.52	131.63	3.11	50.10	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1904667-001.01 100x	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 01:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.54	9.61	3.07	50.12	10:25

2	TOC	0.0000	0.0000	5.67	8.77	3.11	50.12	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1904667-002.01	2.0663 ppm	0.0086 ppm	0.4200%	2019/05/25 01:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0601	20.6014	22.73	25.73	2.99	50.14	10:29
2	TOC	2.0724	20.7237	22.82	25.91	3.10	50.13	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1904679-001.15 5x	11.3982 ppm	0.1804 ppm	1.5800%	2019/05/25 02:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.5257	115.2575	86.99	89.90	2.92	50.13	10:31
2	TOC	11.2706	112.7059	85.25	88.31	3.05	50.13	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1904679-002.15 10x	1.2335 ppm	0.0259 ppm	2.1000%	2019/05/25 02:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2518	12.5179	17.25	20.43	3.18	50.14	10:30
2	TOC	1.2151	12.1511	17.00	20.15	3.15	50.17	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 8

	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)	23.5658 ppm (PASS)	0.0000 ppm	0%	2019/05/25 03:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.5658	235.6584	169.43	172.53	3.10	50.16	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 8

	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%	2019/05/25 03:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.74	8.82	3.07	50.13	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1904679-003.14	0.9093 ppm	0.0608 ppm	6.6900%	2019/05/25 03:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8663	8.6626	14.63	17.71	3.08	50.10	10:27
2	TOC	0.9523	9.5229	15.21	18.24	3.03	50.11	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1904679-004.14	0.4172 ppm	0.0053 ppm	1.2700%	2019/05/25 04:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4209	4.2091	11.61	14.83	3.22	50.09	10:27
2	TOC	0.4134	4.1339	11.56	14.71	3.16	50.10	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1904715-001.11	2.9500 ppm	0.0092 ppm	0.3100%	2019/05/25 04:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9564	29.5643	28.82	31.85	3.03	50.09	10:27

2	TOC	2.9435	29.4347	28.73	31.76	3.03	50.10	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K1904715-002.11	3.8904 ppm	0.0166 ppm	0.4300%	2019/05/25 04:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8787	38.7866	35.08	38.10	3.03	50.12	10:24
2	TOC	3.9021	39.0208	35.24	38.41	3.17	50.09	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1904715-003.11	2.9030 ppm	0.0089 ppm	0.3100%	2019/05/25 05:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9093	29.0929	28.50	31.58	3.08	50.12	10:28
2	TOC	2.8968	28.9677	28.41	31.40	2.98	50.10	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1904715-004.11	1.0799 ppm	0.0027 ppm	0.2500%	2019/05/25 05:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0780	10.7795	16.07	19.17	3.11	50.10	10:28
2	TOC	1.0818	10.8179	16.09	19.07	2.97	50.10	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1904715-005.11	1.0758 ppm	0.0220 ppm	2.0400%	2019/05/25 06:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0914	10.9136	16.16	19.17	3.01	50.09	10:30
2	TOC	1.0603	10.6028	15.95	19.07	3.12	50.11	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

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

◈	36	TOC	K1904715-006.11	2.9288 ppm	0.0347 ppm	1.1800%	2019/05/25 06:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9533	29.5334	28.80	31.86	3.06	50.09	10:27
2	TOC	2.9043	29.0428	28.46	31.63	3.17	50.10	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1904715-006.11 ms	28.0166 ppm	0.0000 ppm	0.0000%	2019/05/25 07:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.0166	280.1661	198.92	202.04	3.12	50.11	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 07:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.37	9.49	3.13	50.10	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	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)	23.9780 ppm (PASS)	0.0000 ppm	0%	2019/05/25 07:48

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9780	239.7804	172.22	175.41	3.18	50.11	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 8

	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%	2019/05/25 08:03

					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	5.25	8.37	3.12	50.12	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 08:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.76	7.88	3.13	50.11	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 8

	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)	24.7077 ppm (PASS)	0.0000 ppm	0%	2019/05/25 08:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7077	247.0772	177.18	180.17	2.99	50.10	10:36

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K1904715-007.11	3.0116 ppm	0.0411 ppm	1.3700%	2019/05/25 08:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0407	30.4070	29.39	32.62	3.23	50.11	10:31
2	TOC	2.9825	29.8251	28.99	32.15	3.16	50.08	10:28

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1904715-008.11	4.1631 ppm	0.0469 ppm	1.1300%	2019/05/25 09:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1963	41.9628	37.23	40.27	3.03	50.08	10:25
2	TOC	4.1300	41.2998	36.78	39.89	3.11	50.08	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1904715-009.11	1.3737 ppm	0.0016 ppm	0.1100%	2019/05/25 09:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3726	13.7259	18.07	21.26	3.19	50.05	10:31
2	TOC	1.3748	13.7480	18.08	21.16	3.08	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1904715-011.11	1.3162 ppm	0.0216 ppm	1.6400%	2019/05/25 10:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3315	13.3149	17.79	20.78	3.00	50.08	10:29
2	TOC	1.3010	13.0100	17.58	20.73	3.15	50.08	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1904715-011.11 ms	26.8061 ppm	0.0000 ppm	0.0000%	2019/05/25 10:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	26.8061	268.0608	190.71	193.84	3.13	50.06	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 10:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0000	0.0000	5.67	8.83	3.16	50.07	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1904715-016.11	8.7370 ppm	0.2356 ppm	2.7000%	2019/05/25 11:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.5704	85.7036	66.92	70.09	3.16	50.07	10:26
2	TOC	8.9036	89.0360	69.19	72.43	3.24	50.07	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1904715-017.11	6.2515 ppm	0.0193 ppm	0.3100%	2019/05/25 11:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.2378	62.3784	51.09	54.39	3.30	50.06	10:29
2	TOC	6.2651	62.6509	51.28	54.30	3.03	50.06	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	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)	**24.3668** ppm (PASS)	0.0000 ppm	0%	2019/05/25 12:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.3668	243.6682	174.86	177.87	3.01	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 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	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%	2019/05/25 12:20

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.86	8.85	2.99	50.02	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample

From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	48	TOC	K1904715-018.11	40.1800 ppm	0.2289 ppm	0.5700%	2019/05/25 12:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	40.0182	400.1819	280.39	283.31	2.92	50.03	10:33
2	TOC	40.3419	403.4185	282.59	285.62	3.03	50.07	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	49	TOC	K1904715-019.11	12.3966 ppm	0.2803 ppm	2.2600%	2019/05/25 13:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.5948	125.9485	94.24	97.17	2.93	50.04	10:30
2	TOC	12.1984	121.9841	91.55	94.54	2.99	50.05	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	50	TOC	K1904715-020.11	17.7060 ppm	0.0654 ppm	0.3700%	2019/05/25 13:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	17.7522	177.5223	129.25	132.17	2.92	50.05	10:28
2	TOC	17.6597	176.5971	128.62	131.73	3.11	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	51	TOC	K1904597-001.01 100x	7.8944 ppm	0.1884 ppm	2.3900%	2019/05/25 13:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.0276	80.2763	63.24	66.36	3.12	50.09	10:28
2	TOC	7.7611	77.6113	61.43	64.62	3.19	50.07	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	52	TOC	K1904597-002.01 100x	7.0458 ppm	0.0043 ppm	0.0600%	2019/05/25 14:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.0488	70.4884	56.60	59.72	3.12	50.09	10:31
2	TOC	7.0428	70.4280	56.56	59.66	3.10	50.09	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	53	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 14:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.88	11.13	3.25	50.09	10:26
2	TOC	0.0000	0.0000	6.77	10.06	3.30	50.07	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	54	TOC	K1904713-001.01	1.2753 ppm	0.0047 ppm	0.3700%	2019/05/25 15:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2720	12.7198	17.38	20.50	3.12	50.07	10:26
2	TOC	1.2786	12.7860	17.43	20.46	3.03	50.04	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	55	TOC	K1904713-002.01	1.4544 ppm	0.0002 ppm	0.0100%	2019/05/25 15:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4545	14.5450	18.62	21.59	2.96	50.04	10:28
2	TOC	1.4542	14.5421	18.62	21.59	2.96	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	56	TOC	K1904713-003.01	0.6893 ppm	0.0135 ppm	1.9600%	2019/05/25 16:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6989	6.9890	13.49	16.55	3.05	50.02	10:27
2	TOC	0.6797	6.7975	13.36	16.49	3.13	50.02	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	57	TOC	K1904713-004.01	1.5668 ppm	0.0257 ppm	1.6400%	2019/05/25 16:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5850	15.8503	19.51	22.60	3.09	50.01	10:25
2	TOC	1.5486	15.4864	19.26	22.26	3.00	50.00	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 8

	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)	23.9794 ppm (PASS)	0.0000 ppm	0%	2019/05/25 17:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9794	239.7937	172.23	175.28	3.04	49.99	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 8

	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%	2019/05/25 17:30

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.26	8.53	3.27	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 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 17:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.58	7.73	3.15	49.99	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 8

	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)	24.7942 ppm (PASS)	0.0000 ppm	0%	2019/05/25 17:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.7942	247.9419	177.76	180.83	3.07	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 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	59	TOC	K1904716-001.02 doc	0.2083 ppm	0.0791 ppm	37.9700%	2019/05/25 18:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2642	2.6416	10.54	13.69	3.15	50.03	10:27
2	TOC	0.1523	1.5234	9.78	12.83	3.05	50.05	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	60	TOC	K1904716-001.02 ms doc	25.3933 ppm	0.0000 ppm	0.0000%	2019/05/25 18:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	25.3933	253.9328	181.12	184.15	3.03	50.06	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	61	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 18:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.40	8.43	3.03	50.08	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	62	TOC	K1904684-001.08 doc	10.8568 ppm	0.1181 ppm	1.0900%	2019/05/25 19:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.7732	107.7324	81.88	84.93	3.06	50.07	10:28
2	TOC	10.9403	109.4030	83.01	86.06	3.05	50.11	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	63	TOC	K1904684-002.08 doc	2.3749 ppm	0.0391 ppm	1.6400%	2019/05/25 19:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4025	24.0251	25.06	28.09	3.03	50.11	10:27
2	TOC	2.3473	23.4726	24.68	27.73	3.04	50.12	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	64	TOC	K1904684-002.08 ms doc	27.2097 ppm	0.0000 ppm	0.0000%	2019/05/25 20:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.2097	272.0974	193.45	196.51	3.07	50.13	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 20:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.61	8.73	3.12	50.15	10:34

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1904684-003.08 doc	2.7817 ppm	0.0148 ppm	0.5300%	2019/05/25 20:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7713	27.7125	27.56	30.66	3.10	50.15	10:27
2	TOC	2.7922	27.9217	27.70	30.80	3.09	50.17	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 8

	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)	23.8048 ppm (PASS)	0.0000 ppm	0%	2019/05/25 21:05

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8048	238.0479	171.05	174.07	3.03	50.16	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 8

	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%	2019/05/25 21:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.00	8.20	3.20	50.17	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample — From Schedule Version 8

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1904684-004.08 doc	8.7522 ppm	0.2644 ppm	3.0200%	2019/05/25 21:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.5652	85.6520	66.89	69.81	2.92	50.19	10:32
2	TOC	8.9391	89.3910	69.43	72.35	2.92	50.19	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	K1904686-001.08 doc	4.9440 ppm	0.0489 ppm	0.9900%	2019/05/25 22:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.9785	49.7855	42.54	45.47	2.92	50.19	10:30
2	TOC	4.9095	49.0946	42.08	45.05	2.98	50.21	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1904686-002.08 doc	12.2526 ppm	0.0340 ppm	0.2800%	2019/05/25 22:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.2766	122.7664	92.08	94.99	2.91	50.19	10:27
2	TOC	12.2286	122.2861	91.76	94.84	3.08	50.20	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1904718-001.02 doc	0.3811 ppm	0.1290 ppm	33.8400%	2019/05/25 22:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4723	4.7232	11.96	14.92	2.96	50.20	10:30
2	TOC	0.2899	2.8994	10.72	13.65	2.93	50.20	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC) (v1260)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	71	TOC	K1904718-002.02 doc	0.2596 ppm	0.0310 ppm	11.9600%	2019/05/25 23:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2376	2.3764	10.36	13.39	3.03	50.18	10:27
2	TOC	0.2815	2.8154	10.66	13.69	3.03	50.18	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7499 (IC)	CAS_salt_010711	CAS_salt_010711

(v1260) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	72	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/05/25 23:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	4.69	7.57	2.88	50.20	10:30
2	TOC	0.0000	0.0000	4.50	7.59	3.09	50.17	10:25

Dilution
1:10

Blank Contribution
(TC) 8.7499 (IC) (v1260)

Method
CAS_salt_010711 (v4)

Calibration
CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 8

	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)	23.8734 ppm (PASS)	0.0000 ppm	0%	2019/05/26 00:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8734	238.7344	171.51	174.58	3.06	50.15	10:30

Completion State
Success - Criteria met.

Success Action
Do Nothing

Method
CAS_salt_010711 (v4)

Calibration
CAS_salt_010711 (v30)

STD Conc - Pos B
50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 8

	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%	2019/05/26 00:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.26	8.25	2.99	50.12	10:30

Completion State
Success - Criteria met.

Success Action
Do Nothing

Method
CAS_salt_010711 (v4)

Calibration
CAS_salt_010711 (v30)

STD Conc - Pos D
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
v1259	2.7557	2.3080	0.0000	0.0000	0.0000	2019/05/22 19:26	Fusion1 (Fusion1)
v1260	1.1683	1.2700	0.0000	0.0000	0.0000	2019/05/24 13:06	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v30
Ver Creation: 2019/03/05 17:42
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 6.788x + 9.463
r^2 value: TOC: r^2 = 0.99963

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

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	2019/05/26 00:55

ALS Environmental

StarLIMS Run: 636915, 636916, 636917, 636919

Analysis: TOC/DOC

Method: 415.1, SM 5310 C, 9060, 9060A

CCV: 11-GEN-05-77K 50 ppm LCS: 11-GEN-05-77D 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-78B

21 % H3PO4: 11-GEN-05-78C

Equipment ID: K-TOC-03

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

FILTER ID: NA

Analyzed By: BCD	Date Analyzed: 5/29/19 ~~5/29/19~~ BCD 5/29/19
Reviewed By:	Date Reviewed: 05/29/19

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LABORATORY REPORT

June 3, 2019

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

RE: HS19051330

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on May 23, 2019. For your reference, these analyses have been assigned our service request number P1902951.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 3:59, June 03, 2019

Hayden Akers
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: ALS Laboratory Group
Project: HS19051330

Service Request No: P1902951

CASE NARRATIVE

The samples were received intact under chain of custody on May 23, 2019 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1521096
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-006
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS19051330

Service Request: P1902951

Date Received: 5/23/2019
Time Received: 09:40

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35BWW12-190521	P1902951-001	Water	5/21/2019	10:35	X	X
35BWW12-190521-FD	P1902951-002	Water	5/21/2019	10:35	X	X
35BWW14-190521	P1902951-003	Water	5/21/2019	11:40	X	X
35BWW23-190521	P1902951-004	Water	5/21/2019	12:40	X	X

00956578

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

Subcontract Chain of Custody

SAMPLING STATE: **Texas**

COC ID: **11354**

P1902951

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

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:	HS19051330
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19051330-04**	**35BWW12-190521**	**Groundwater**	**21 May 2019 10:35**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			06 Jun 2019
2.	**HS19051330-05**	**35BWW12-190521-FD**	**Groundwater**	**21 May 2019 10:35**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			06 Jun 2019
3.	**HS19051330-06**	**35BWW14-190521**	**Groundwater**	**21 May 2019 11:40**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			06 Jun 2019
4.	**HS19051330-07**	**35BWW23-190521**	**Groundwater**	**21 May 2019 12:40**
	MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn			06 Jun 2019

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: 5/22/19 1800

Received By: _____ Date/Time: 5/23/19 0940

Cooler ID(s): _____ Temperature(s): 0°C, wet ice

Temp 1/1/4/11 IC

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1902951

Project: HS19051330

Sample(s) received on: 5/23/19 Date opened: 5/23/19 by: SANDERSON

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 0° C Thermometer ID T-111 Wet Ice			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Sealing lid of the Cooler Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1902951-001.01	40mL VOA NP		6		A	wh 5/29/19
P1902951-001.02	40mL VOA NP				A	
P1902951-001.03	40mL VOA NP				A	
P1902951-001.04	40ml VOA HCL		1		A	wh 5/28/19
P1902951-001.05	40ml VOA HCL				A	
P1902951-001.06	40ml VOA HCL				A	
P1902951-002.01	40mL VOA NP		6		A	wh 5/29/19
P1902951-002.02	40mL VOA NP				A	
P1902951-002.03	40mL VOA NP				A	
P1902951-002.04	40ml VOA HCL		1		A	wh 5/28/19
P1902951-002.05	40ml VOA HCL				A	
P1902951-002.06	40ml VOA HCL				A	
P1902951-003.01	40mL VOA NP		6		A	wh 5/29/19
P1902951-003.02	40mL VOA NP				A	
P1902951-003.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1902951

Project: HS19051330

Sample(s) received on: 5/23/19 Date opened: 5/23/19 by: SANDERSON

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1902951-003.04	40ml VOA HCL		1		A	wh 5/28/19
P1902951-003.05	40ml VOA HCL				A	
P1902951-003.06	40ml VOA HCL				A	
P1902951-004.01	40mL VOA NP		6		A	wh 5/29/19
P1902951-004.02	40mL VOA NP				A	
P1902951-004.03	40mL VOA NP				A	
P1902951-004.04	40ml VOA HCL		1		A	wh 5/28/19
P1902951-004.05	40ml VOA HCL				A	
P1902951-004.06	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS19051330** ALS Project ID: P1902951

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date(s) Collected: 5/21/19
Date Received: 5/23/19
Date Analyzed: 5/29/19

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35BWW12-190521	P1902951-001	0.050	**590,000**	2,000	1,700	740	
35BWW12-190521-FD	P1902951-002	0.050	**580,000**	2,000	1,700	740	
35BWW14-190521	P1902951-003	0.10	**160,000**	1,000	860	370	
35BWW23-190521	P1902951-004	0.050	**730,000**	2,000	1,700	740	
Method Control Sample	P190529-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1902951
Client Project ID: **HS19051330** ALS Sample ID: P190529-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/29/19
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,800	19,200	**86**	**84**	80-122	2	12	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW12-190521**
Client Project ID: **HS19051330**

ALS Project ID: P1902951
ALS Sample ID: P1902951-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/21/19
Date Received: 5/23/19
Date Analyzed: 5/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW12-190521-FD**
Client Project ID: **HS19051330**

ALS Project ID: P1902951
ALS Sample ID: P1902951-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/21/19
Date Received: 5/23/19
Date Analyzed: 5/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW14-190521**
Client Project ID: **HS19051330**

ALS Project ID: P1902951
ALS Sample ID: P1902951-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/21/19
Date Received: 5/23/19
Date Analyzed: 5/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW23-190521**
Client Project ID: **HS19051330**

ALS Project ID: P1902951
ALS Sample ID: P1902951-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/21/19
Date Received: 5/23/19
Date Analyzed: 5/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample** ALS Project ID: P1902951
Client Project ID: **HS19051330** ALS Sample ID: P190528-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/28/19
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS19051330**

ALS Project ID: P1902951
ALS Sample ID: P190528-LCS
P190528-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/28/19
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.34	2.36	**93**	**94**	73-125	1	26	
74-85-1	Ethene	4.40	5.07	5.17	**115**	**118**	72-133	3	11	
74-84-0	Ethane	4.72	4.68	4.81	**99**	**102**	74-131	3	10	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 13:32:53
Operator : WH
Sample : P1902951-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 13:54:18 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

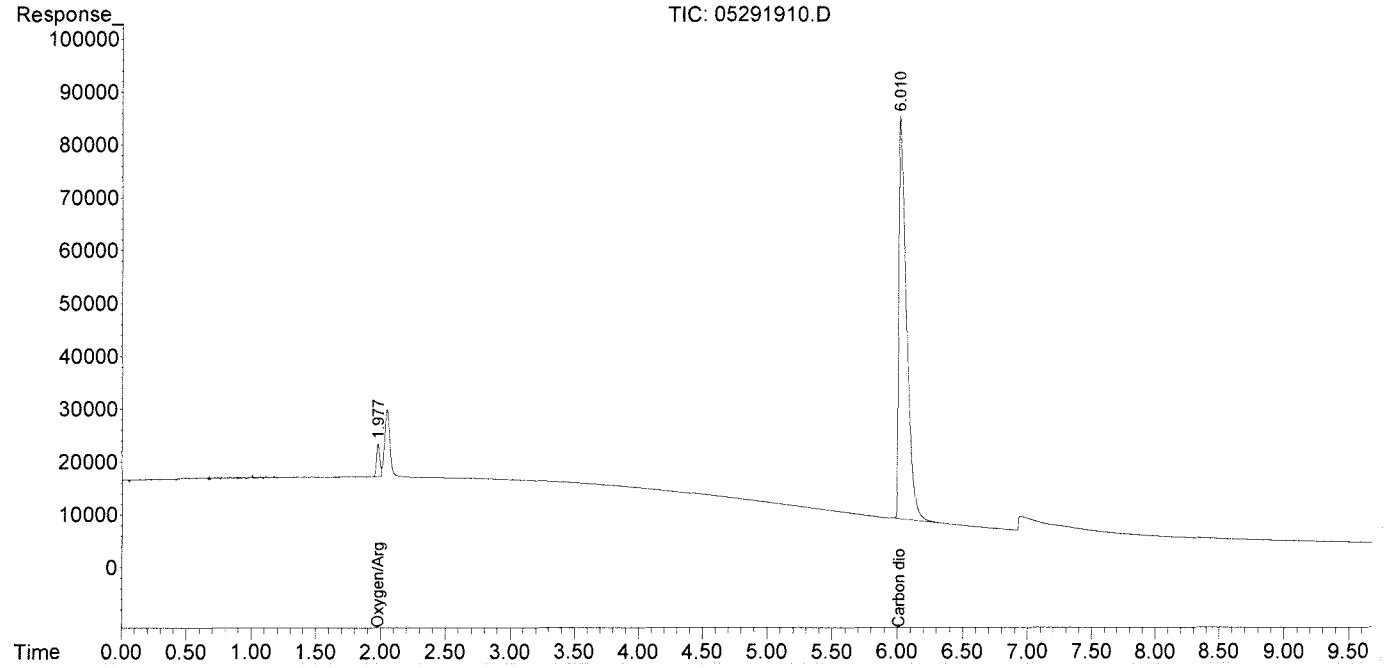
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.977f	112099	0.024	ppm
2)	Carbon monoxide	1.977f	112099	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.011	3165223	13484.572	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

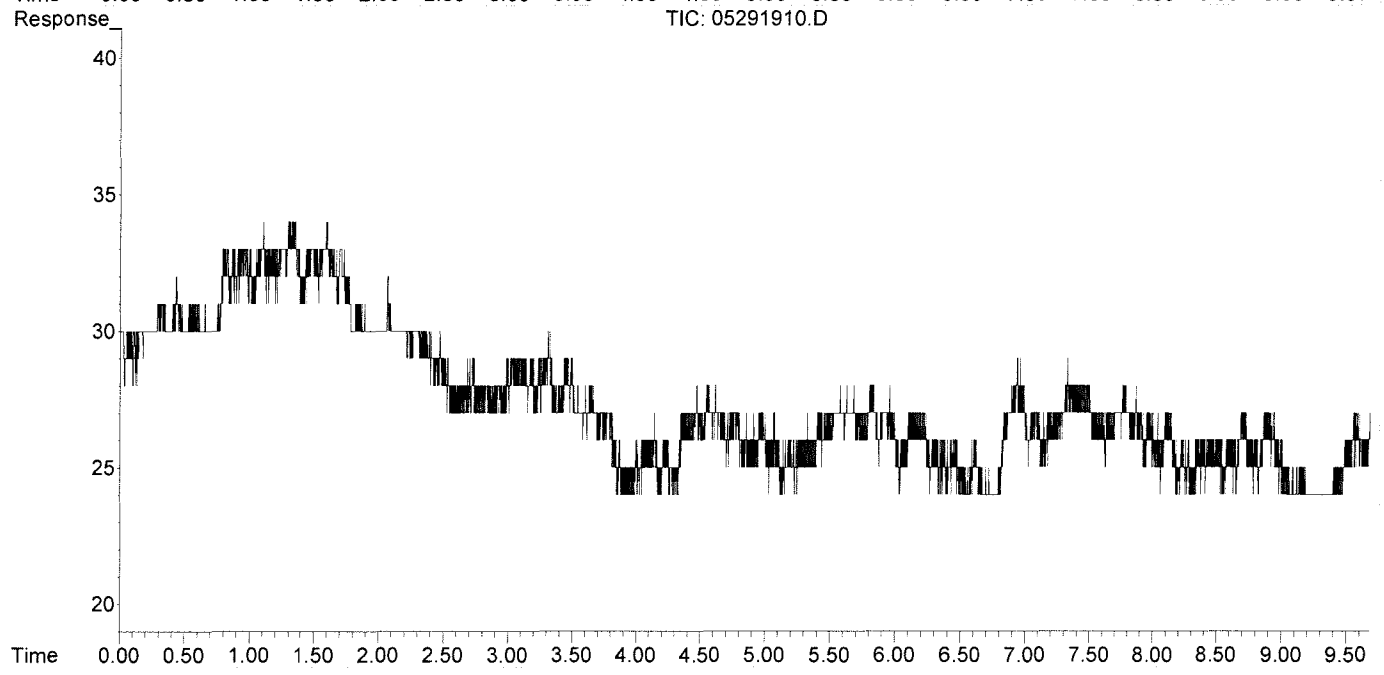
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 13:32:53
Operator : WH
Sample : P1902951-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 13:54:18 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





00956591

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 13:51:51
Operator : WH
Sample : P1902951-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:50:43 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

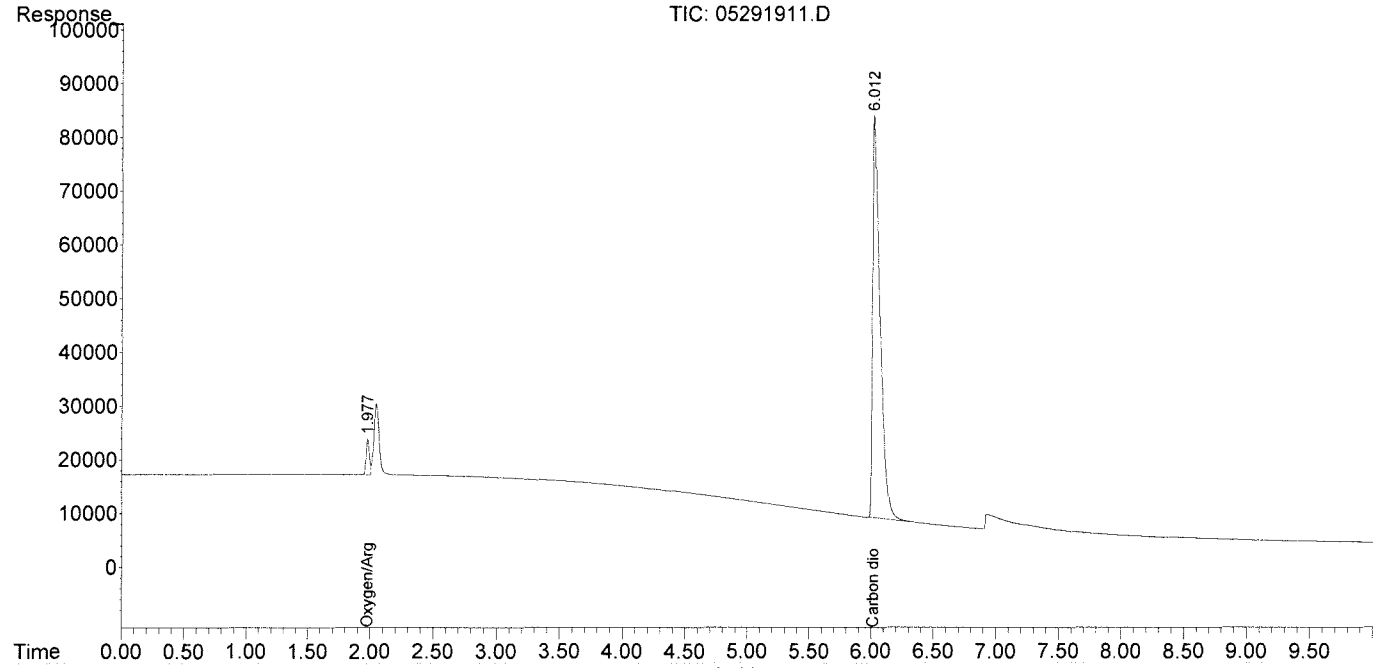
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.978f	120934	0.025	ppm
2)	Carbon monoxide	1.978f	120934	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.013	3106045	13232.461	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

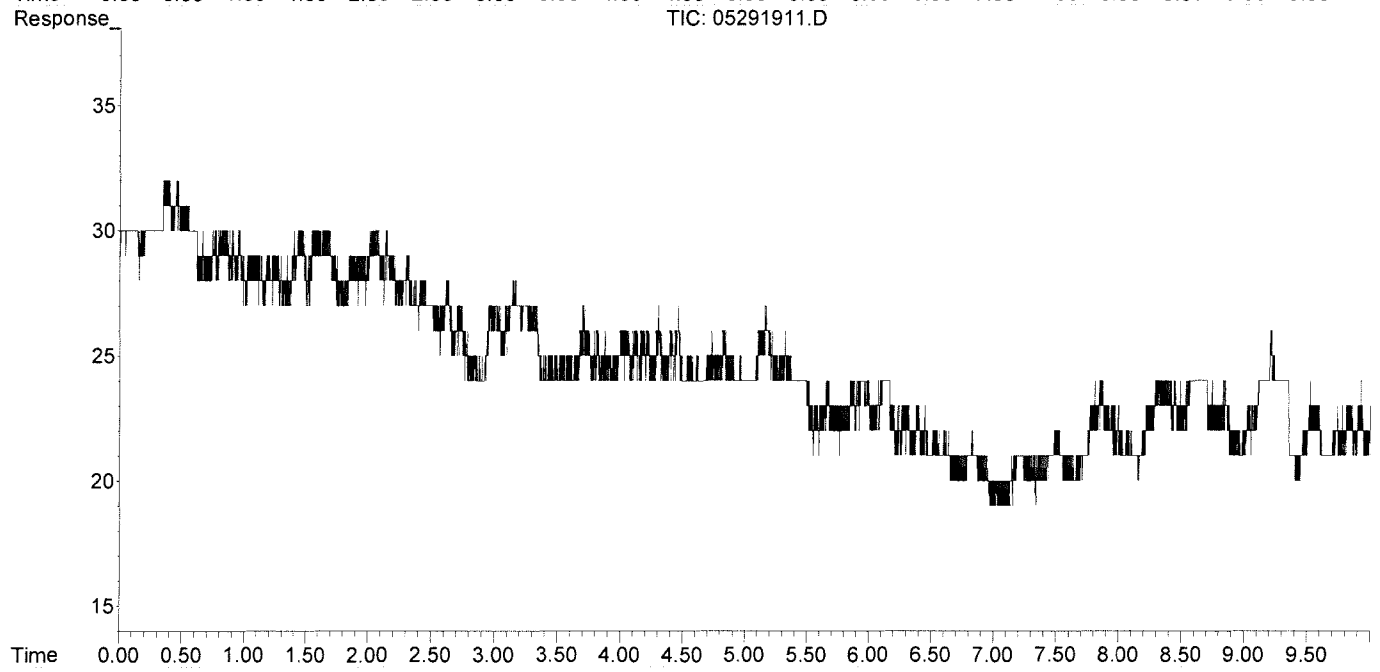
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 13:51:51
Operator : WH
Sample : P1902951-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:50:43 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 12:41:52
Operator : WH
Sample : P1902951-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 13:15:09 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

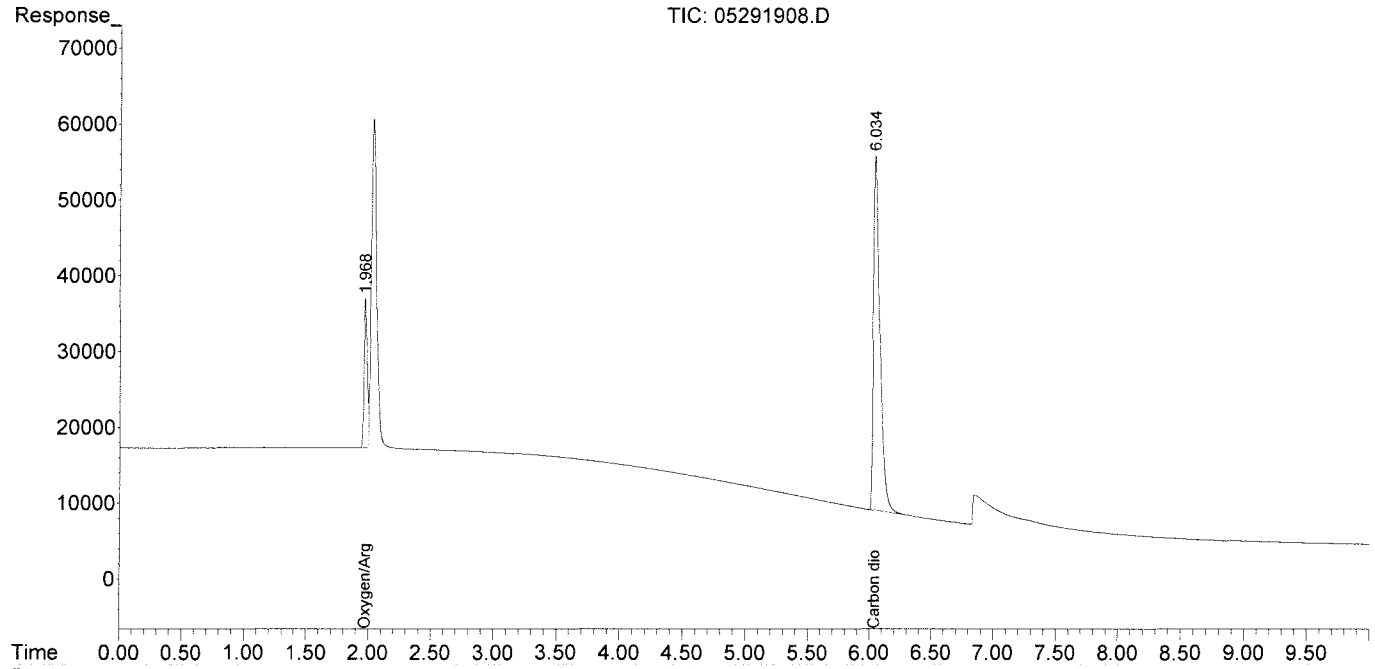
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.968f	351559	0.074	ppm
2)	Carbon monoxide	1.968f	351559	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.035	1693908	7216.434	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

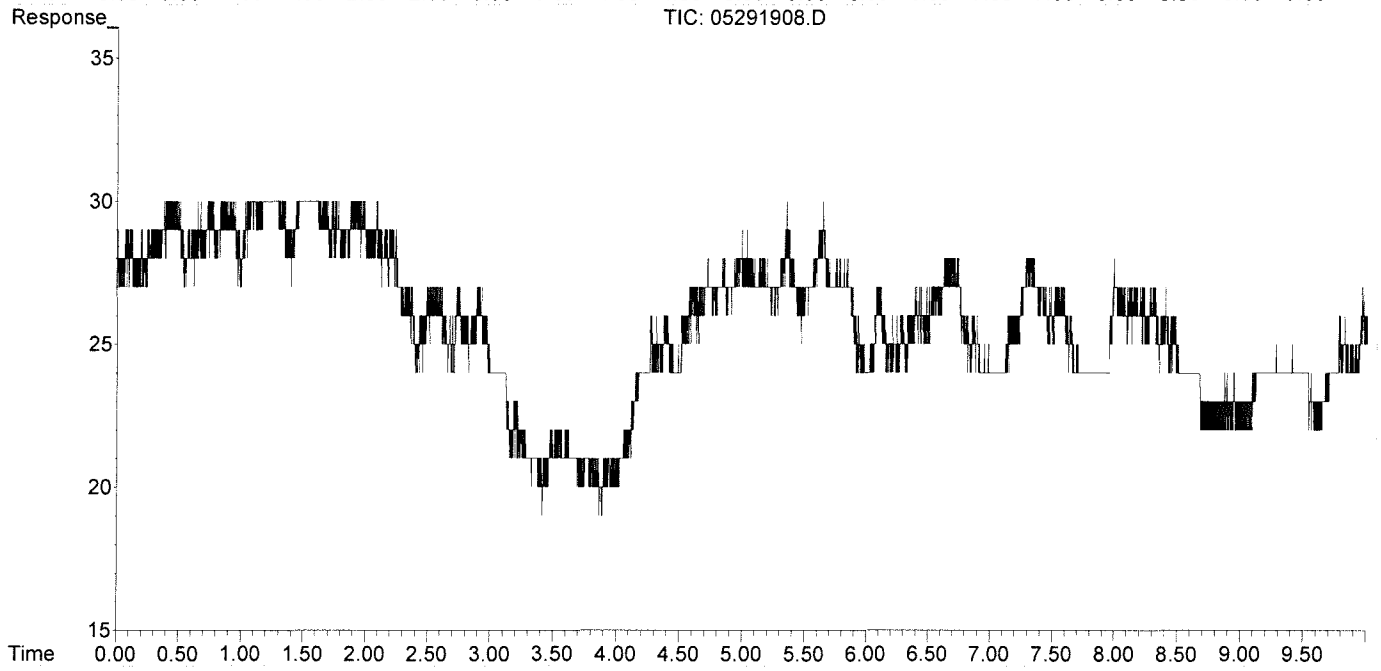
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 12:41:52
Operator : WH
Sample : P1902951-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 13:15:09 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 13:17:18
Operator : WH
Sample : P1902951-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 13:54:06 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

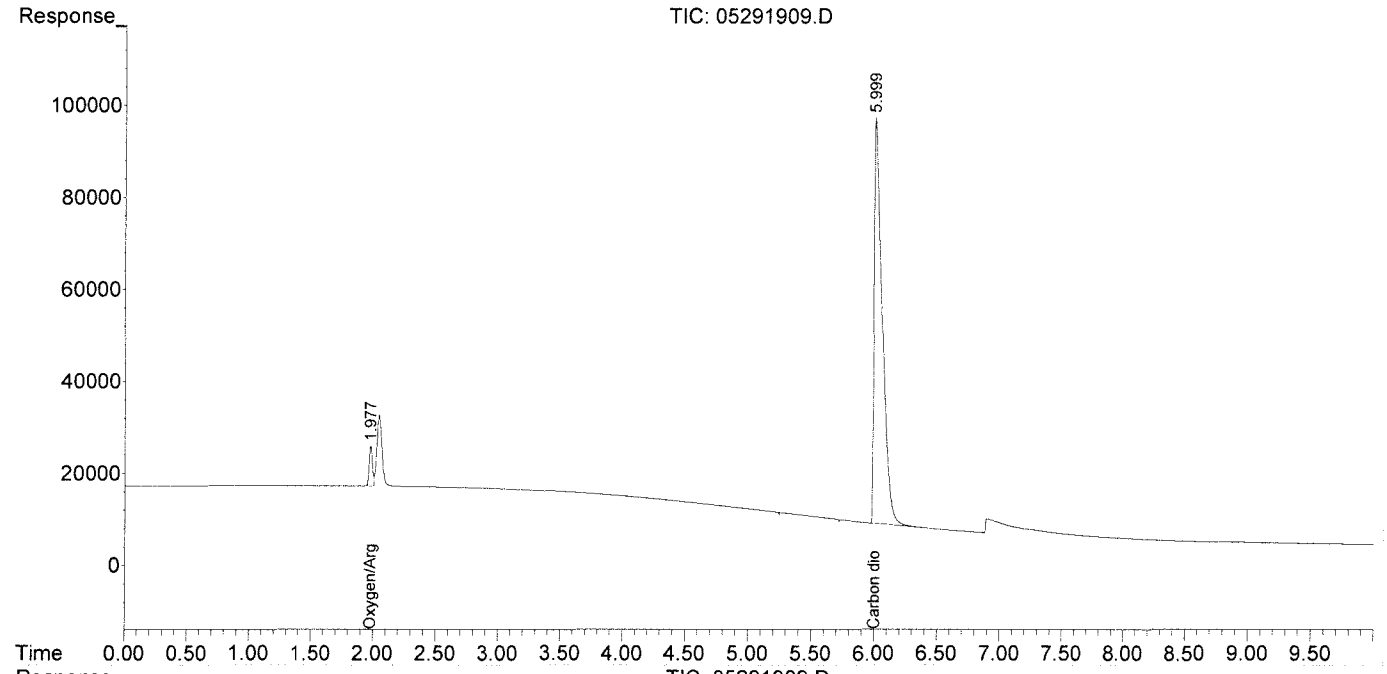
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.977f	156679	0.033	ppm
2)	Carbon monoxide	1.977f	156679	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.000	3915697	16681.764	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

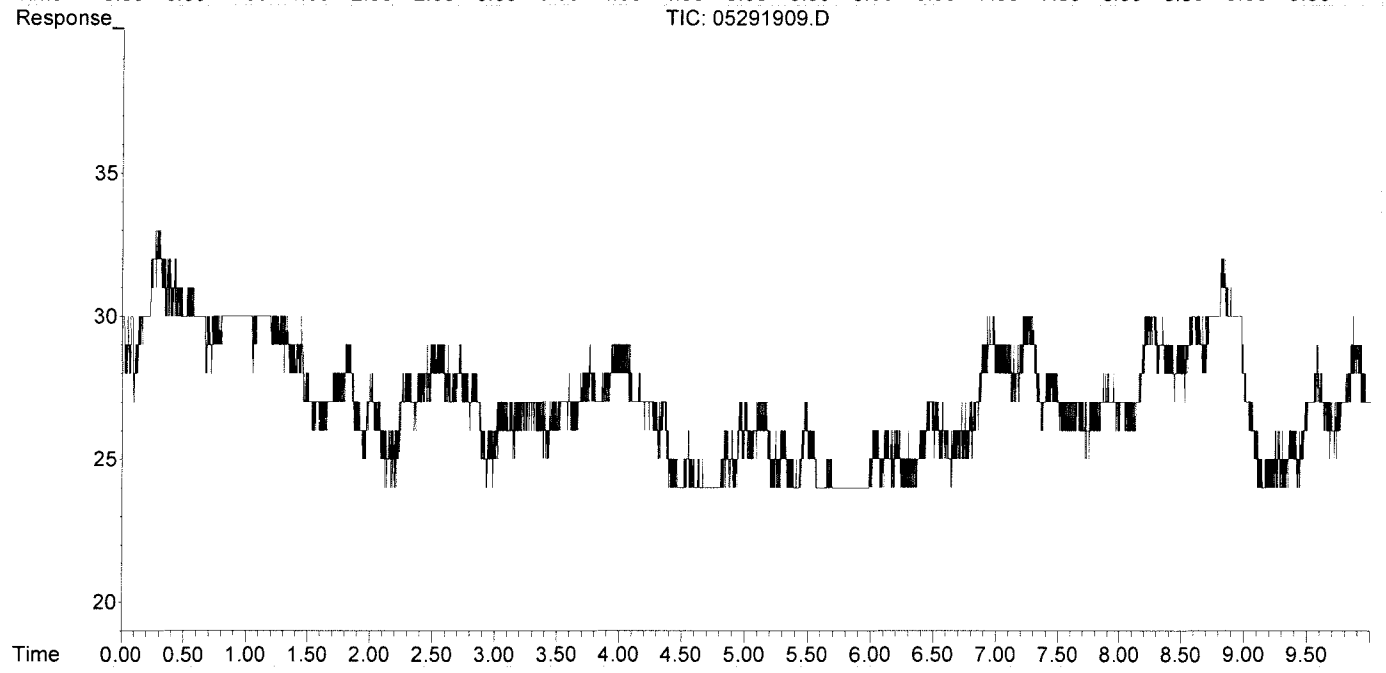
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 13:17:18
Operator : WH
Sample : P1902951-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 13:54:06 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:59:04
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:40:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

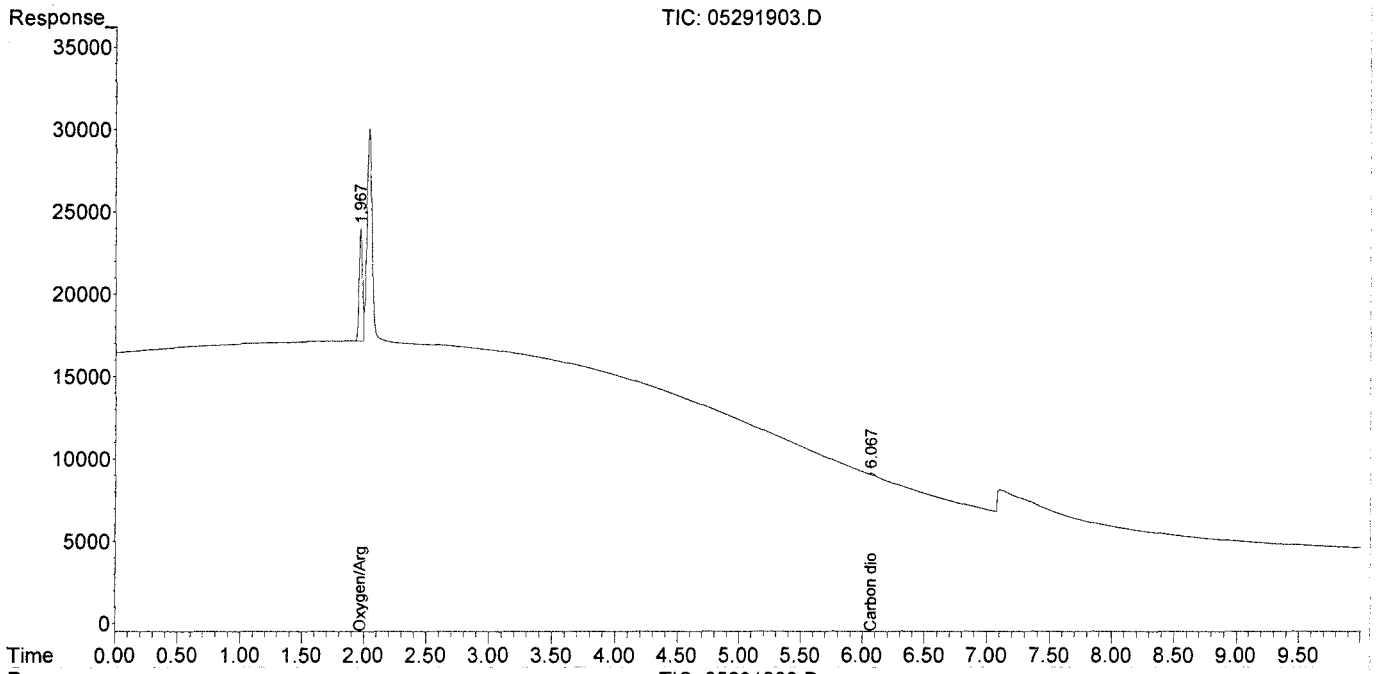
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.967f	126814	0.027	ppm	
2)	Carbon monoxide	1.967f	126814	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.067	2625	11.184	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

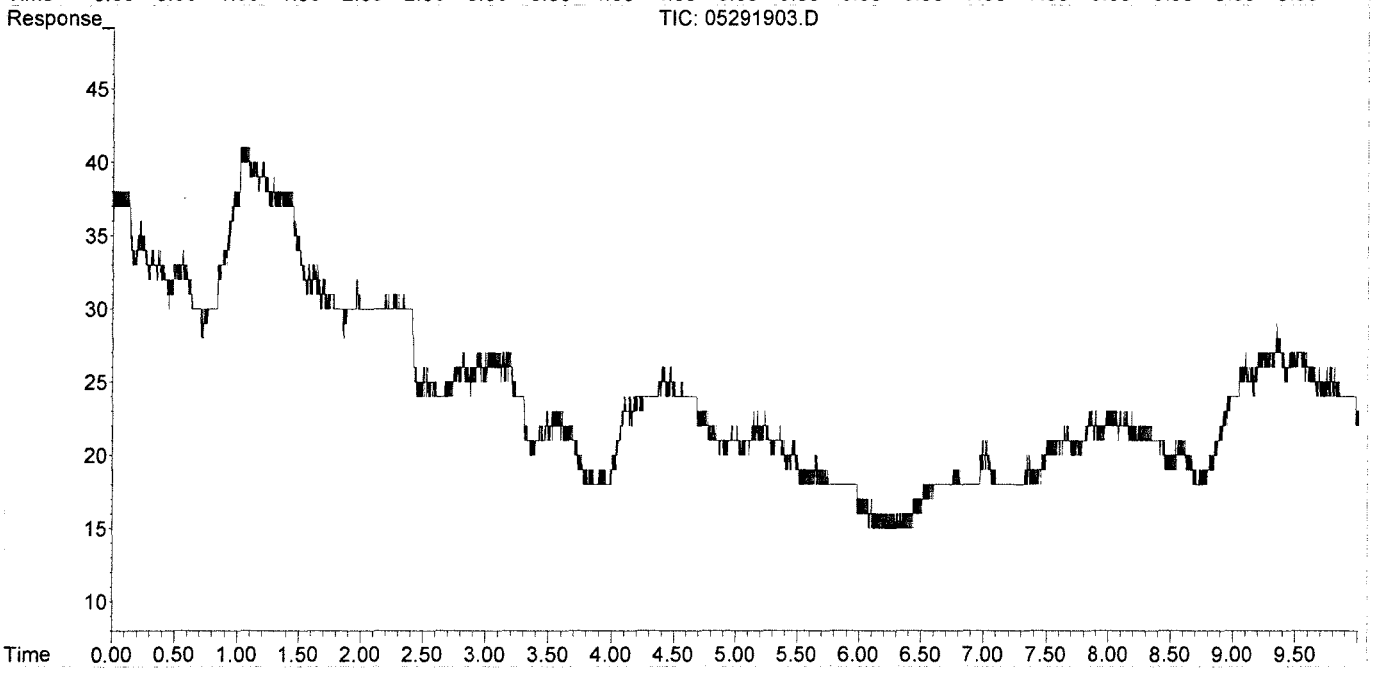
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:59:04
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:40:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

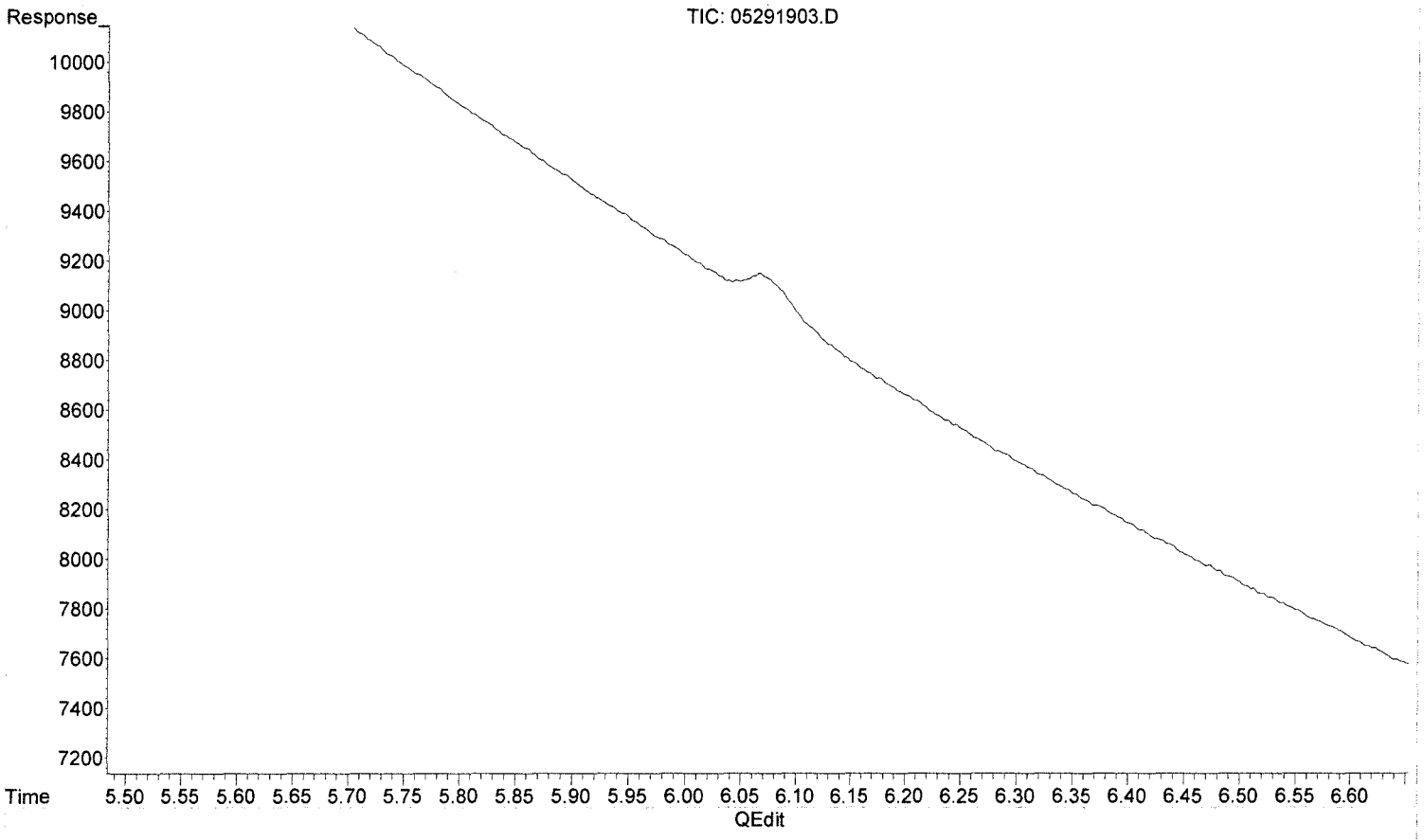




Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:59:04
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:40:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.039min 0.000 ppm

response 0

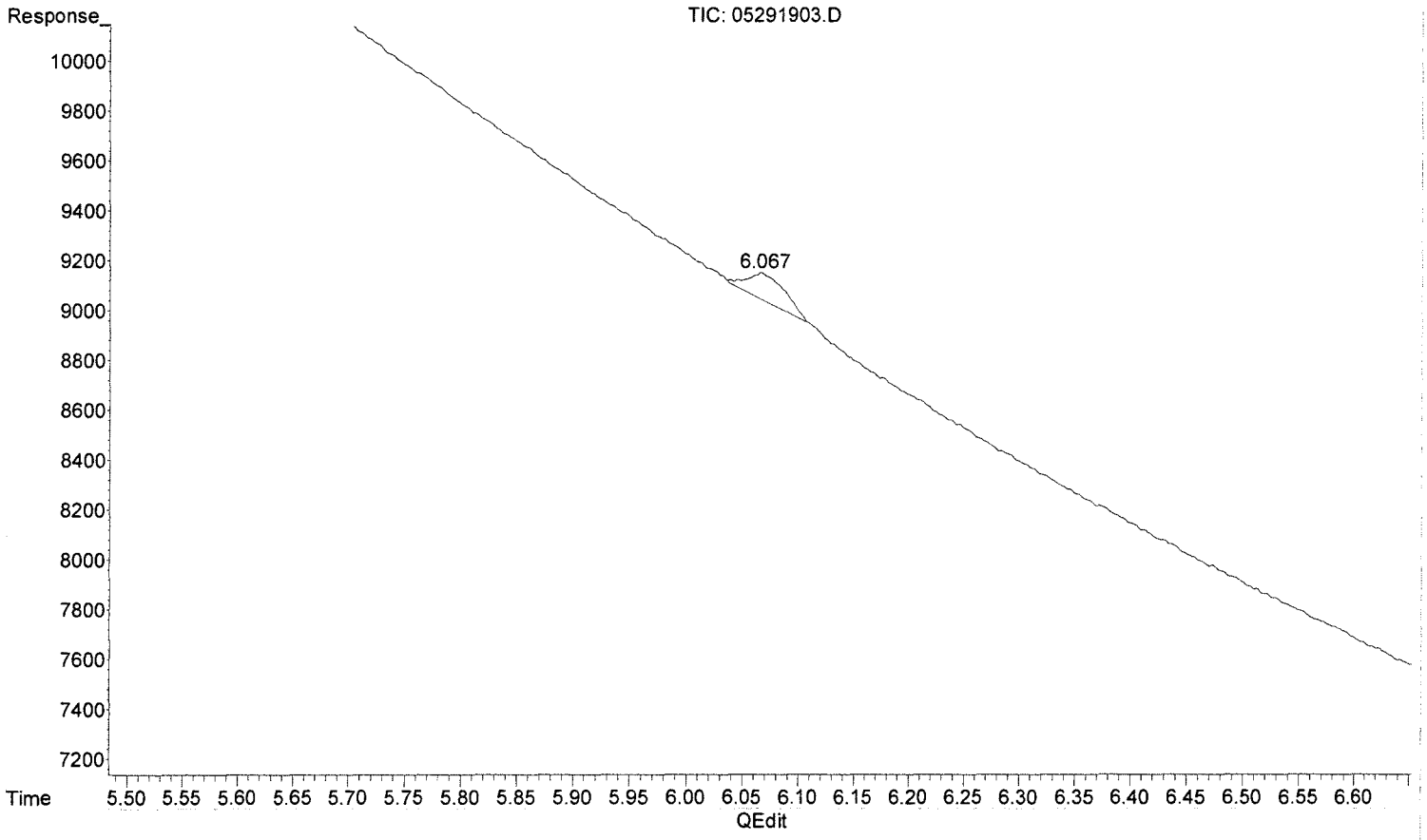
(+) = Expected Retention Time

00956600

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:59:04
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:40:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.067min 11.184 ppm m

response 2625

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:28:16
Operator : WH
Sample : lcs tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 11:45:26 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

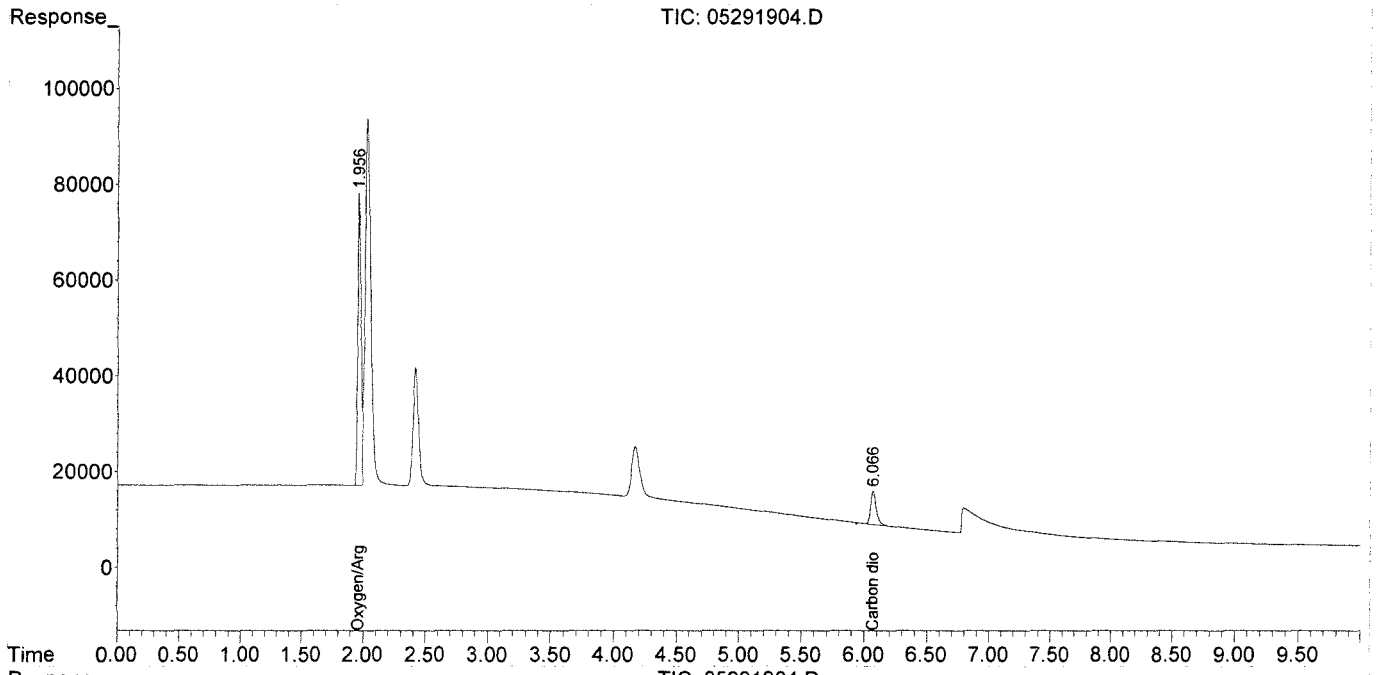
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.957f	1106500	0.232	ppm	
2)	Carbon monoxide	1.957f	1106500	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.066	215894	919.758	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

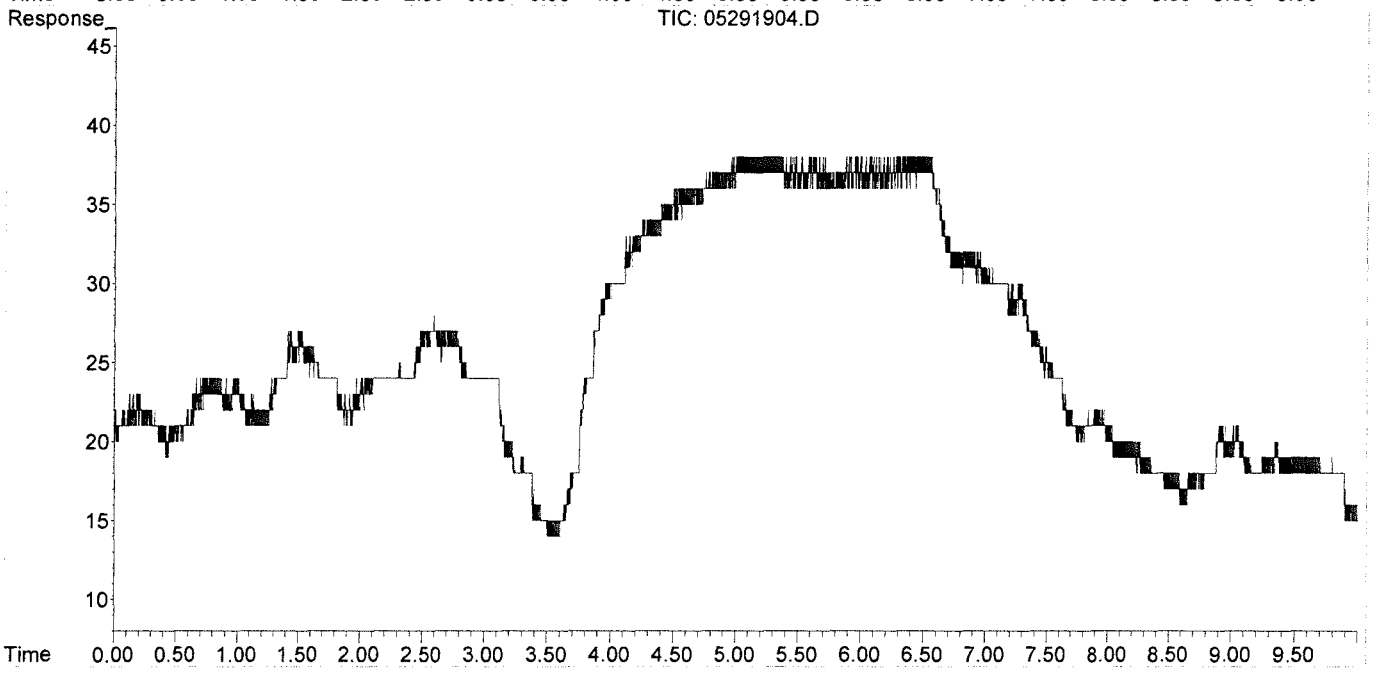
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:28:16
Operator : WH
Sample : lcs tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 11:45:26 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



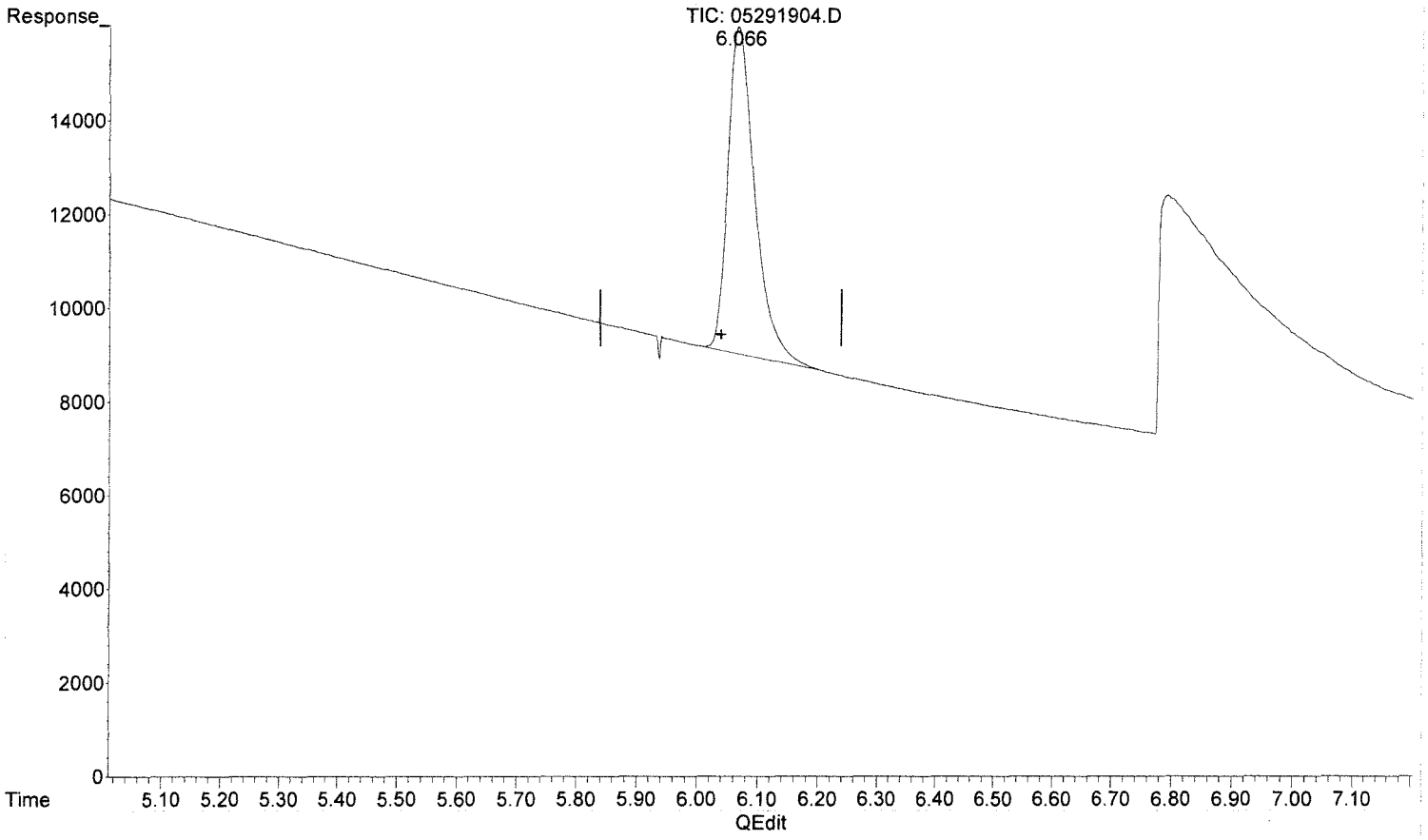


00956603

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:28:16
Operator : WH
Sample : lcs tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 11:45:26 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.066min 919.758 ppm m

response 215894

5/24/19
BLC
no previous

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:46:24
Operator : WH
Sample : lcsd tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 12:04:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

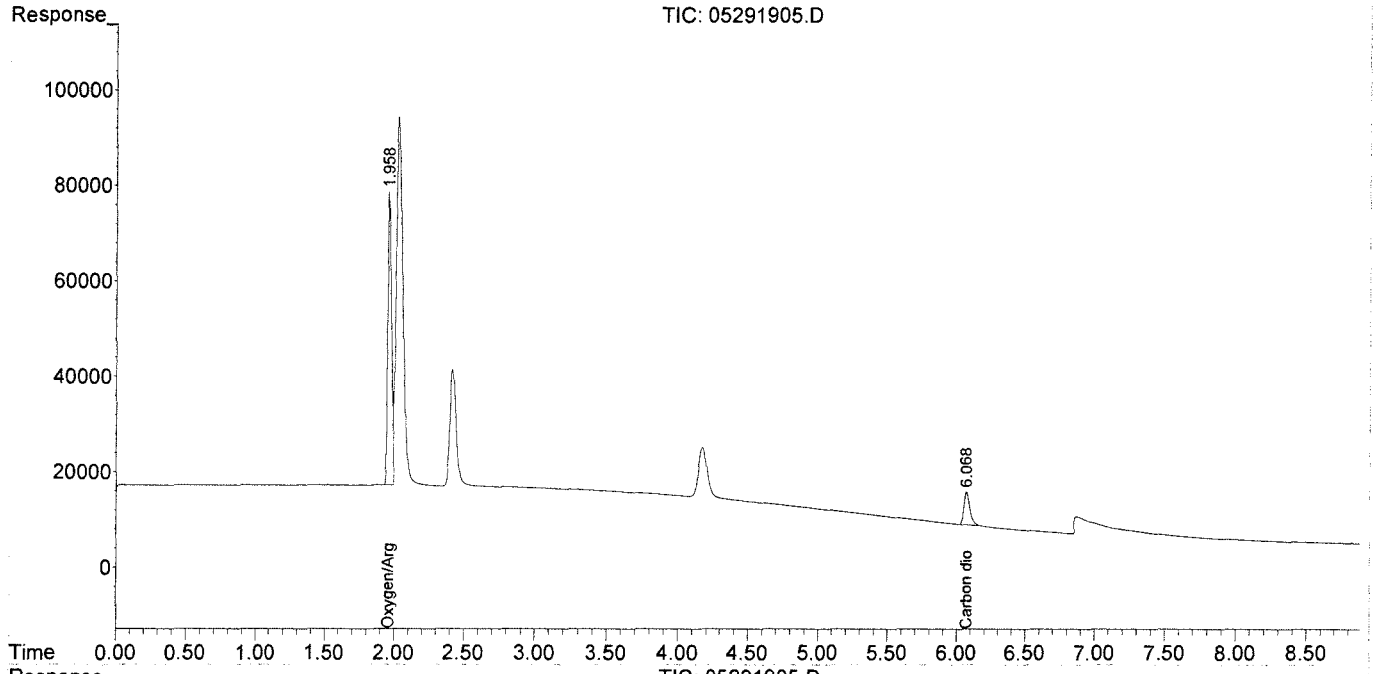
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.959f	1109769	0.233	ppm	
2)	Carbon monoxide	1.959f	1109769	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.068	209211	891.287	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

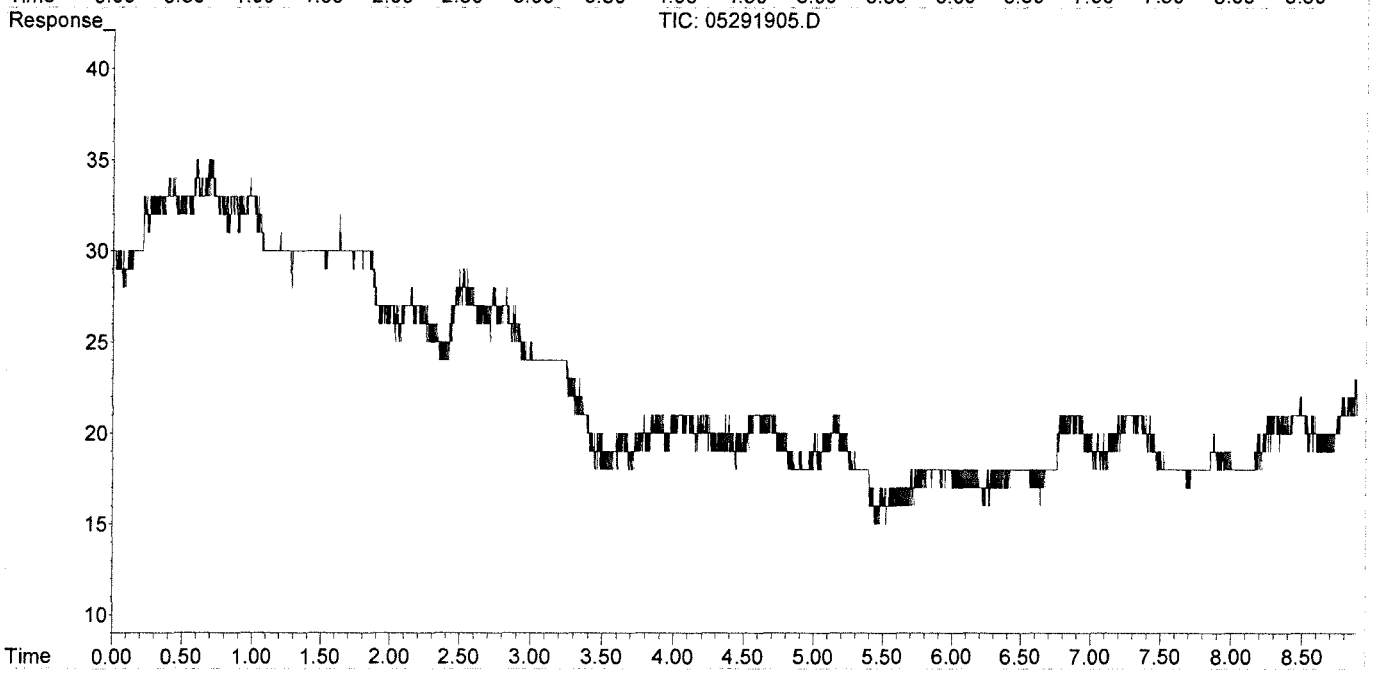
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:46:24
Operator : WH
Sample : lcsd tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 12:04:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



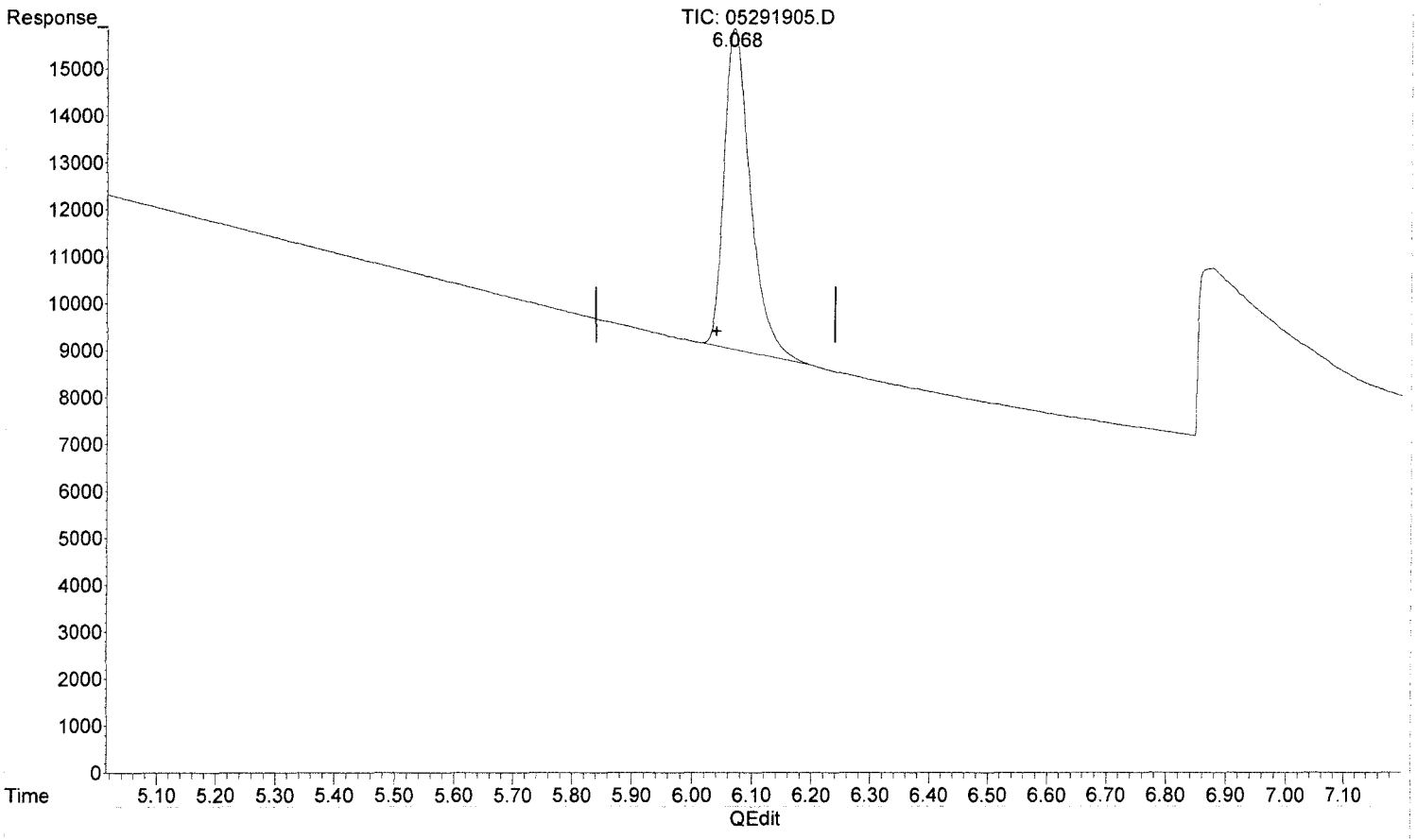


00956606

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 11:46:24
Operator : WH
Sample : lcsd tcd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 12:04:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.068min 891.287 ppm m

response 209211

Lm 5/29/19
BLC
w/ previous

(+) = Expected Retention Time

Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

dit Compounds -- Compound #4 -- Carbon dioxide

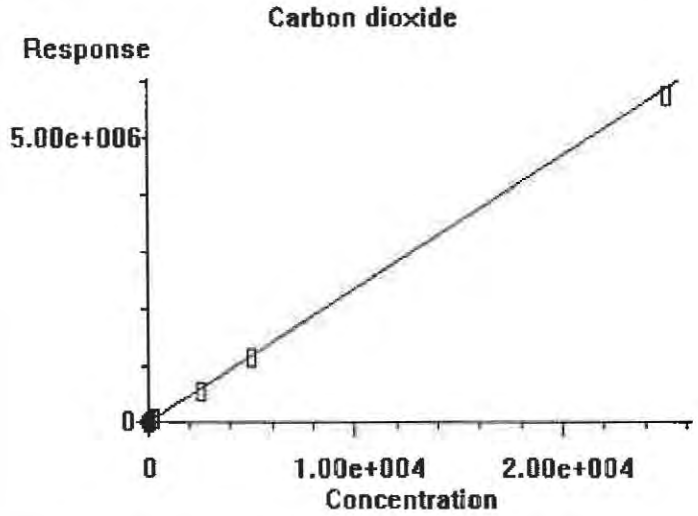
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

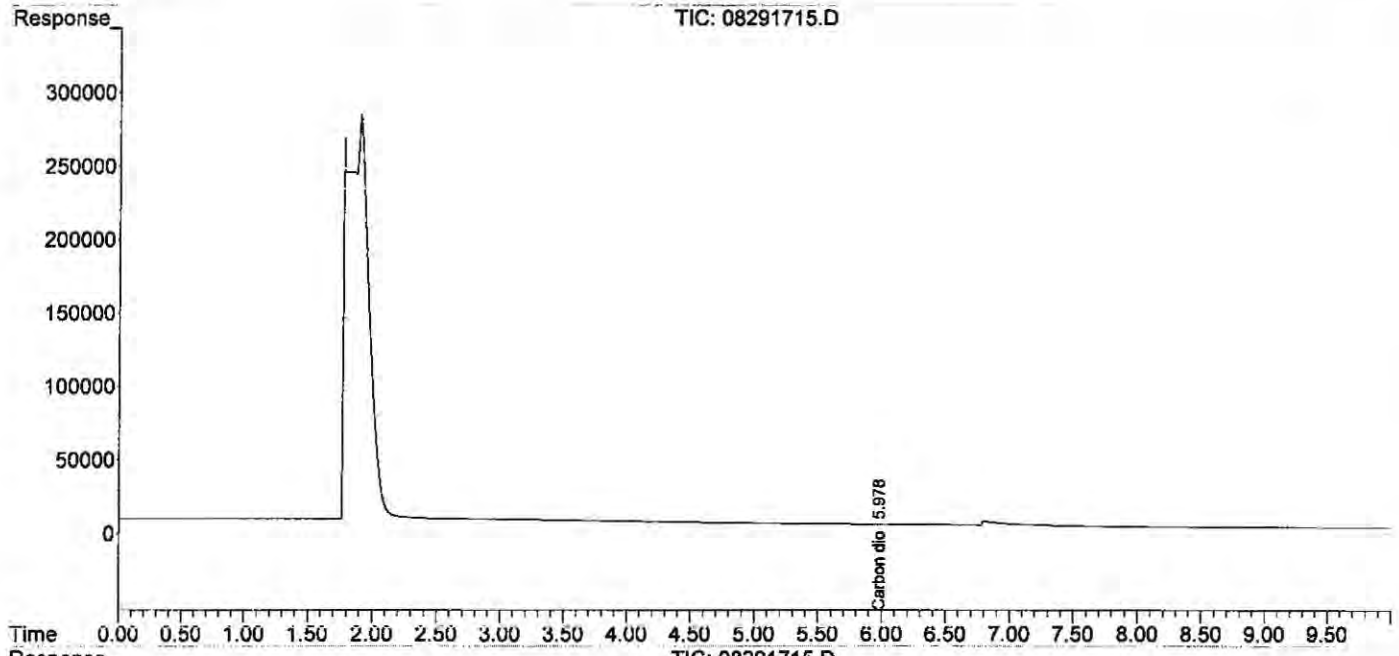
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

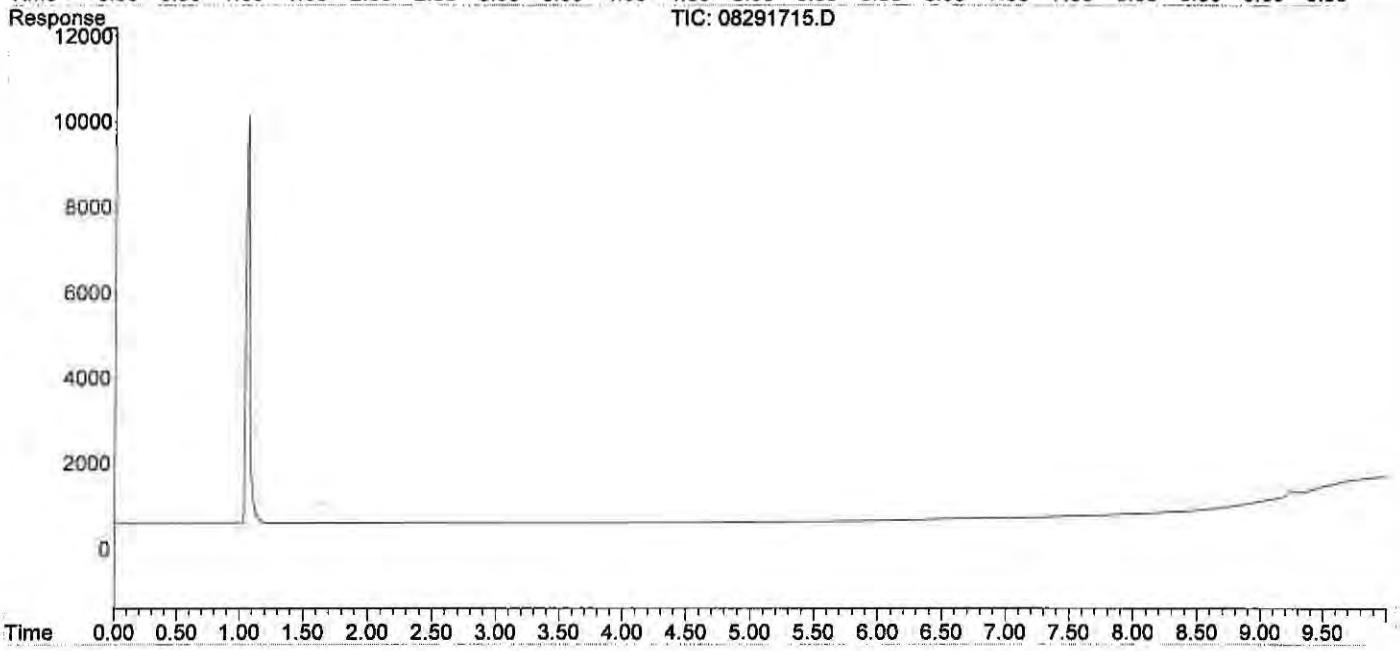
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

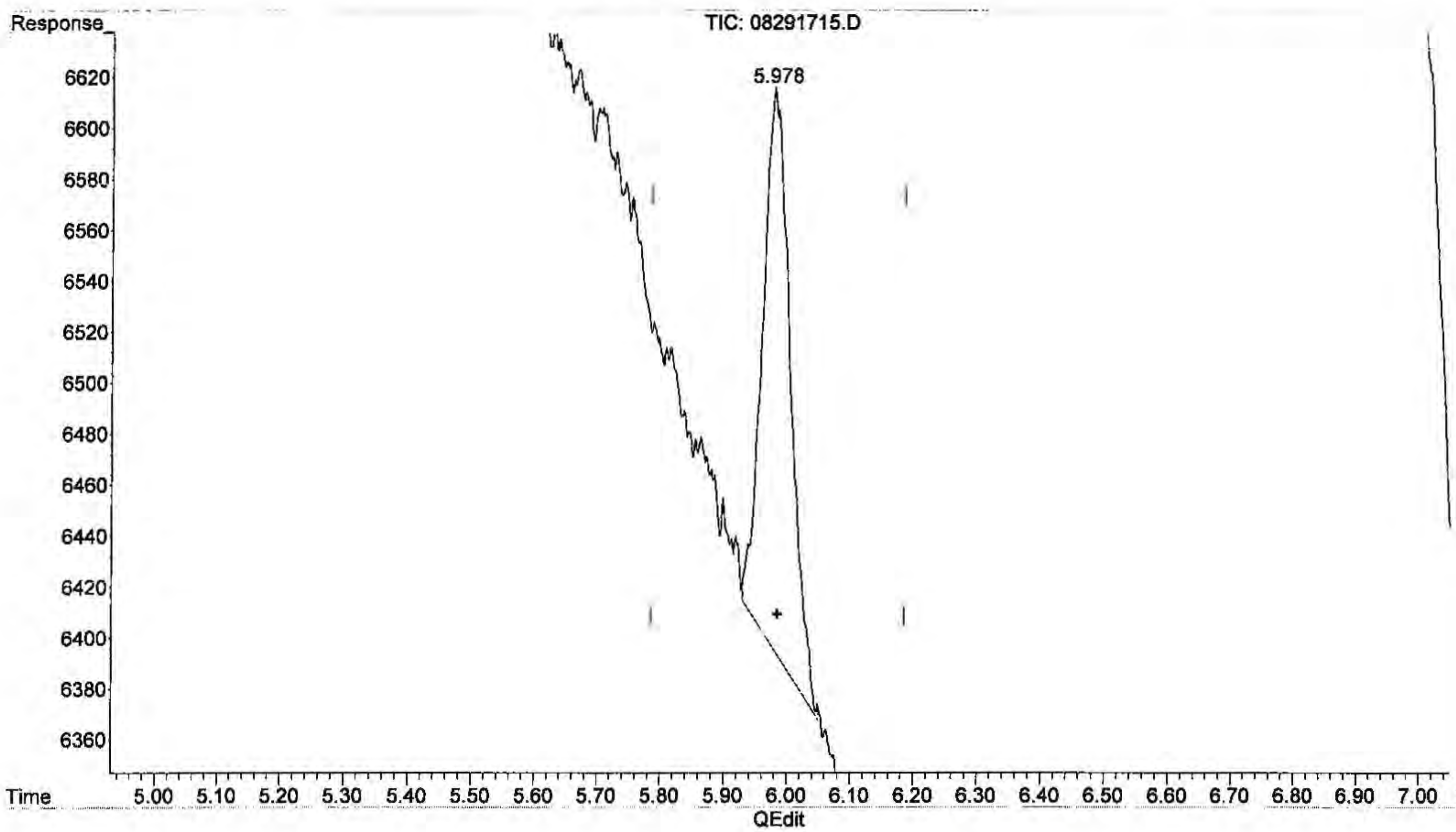




```
Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On    : 29-Aug-2017, 14:07
Operator  : MC
Sample    : 25ppm s32-08291701 0.25ml
Misc      :
ALS Vial  : 1   Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title  : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj.      :
Signal #1 Phase  :                 Signal #2 Phase:
Signal #1 Info   :                 Signal #2 Info :
```



(4) Carbon dioxide

5.978min 27.870 ppm m

response 6794

MC 8/30/17
BW
M
prism

MC 9/4/17

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

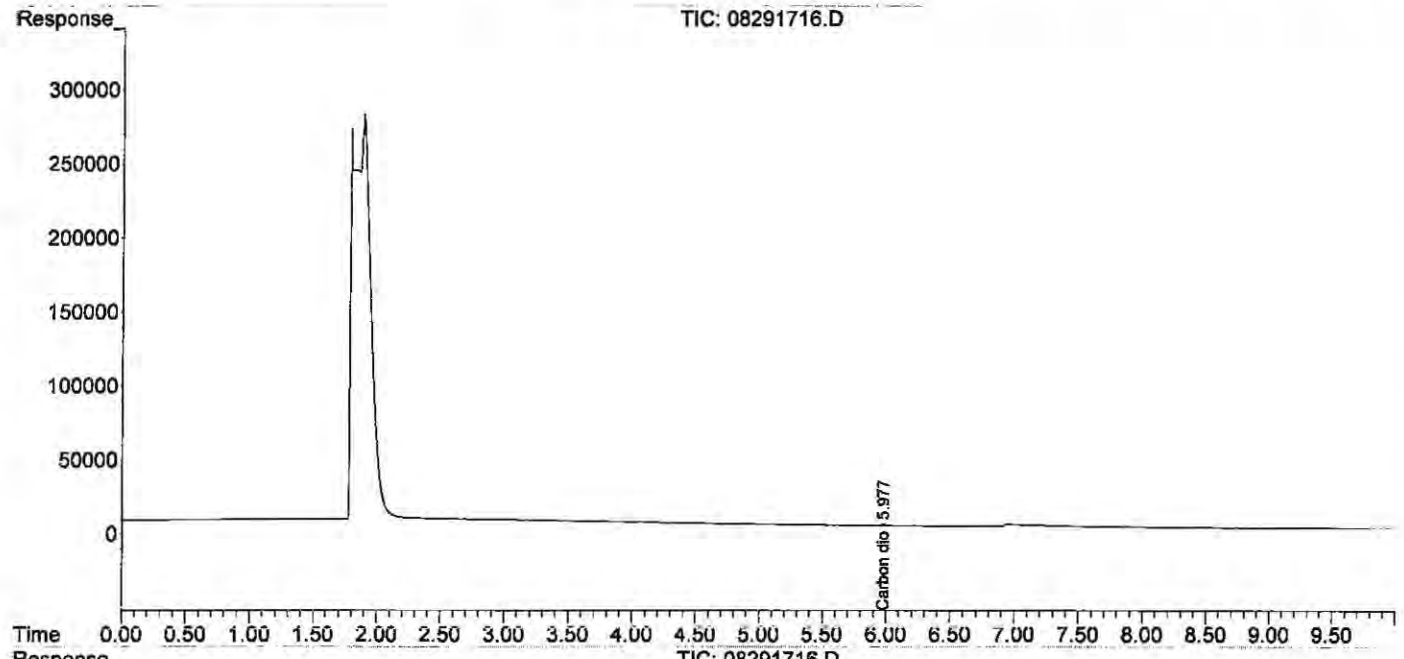
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

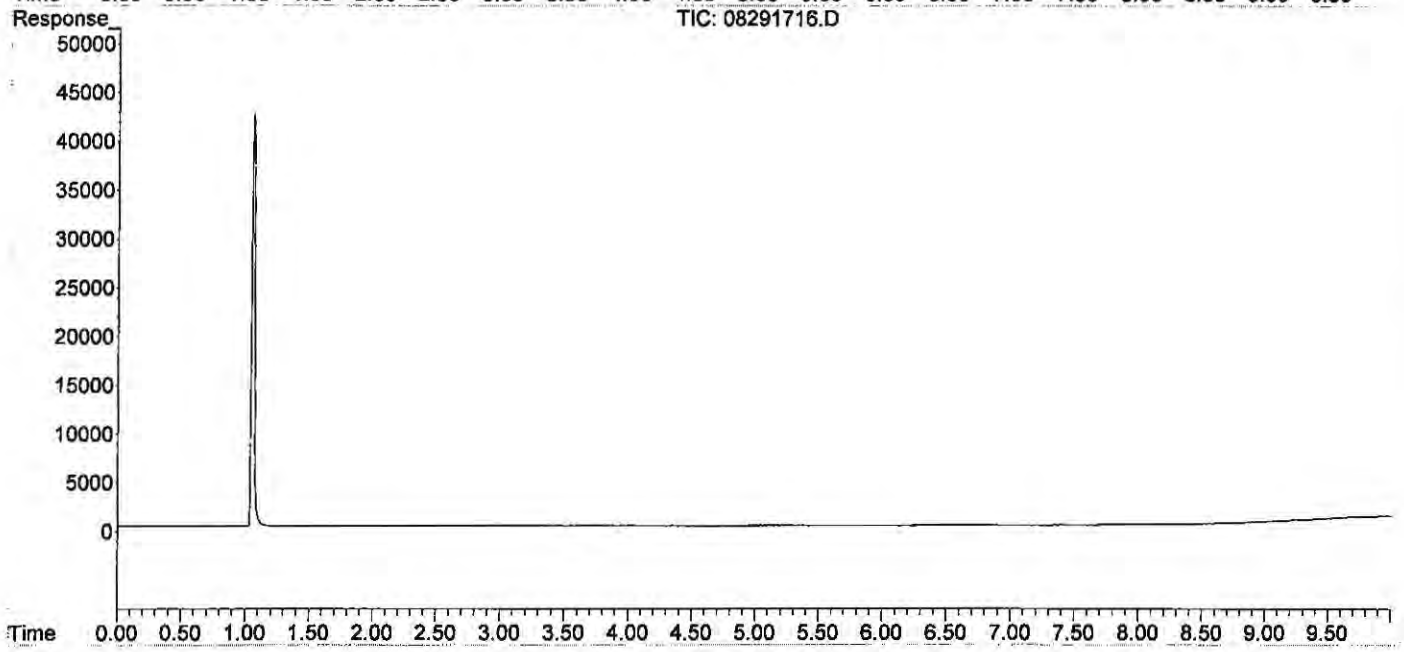
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

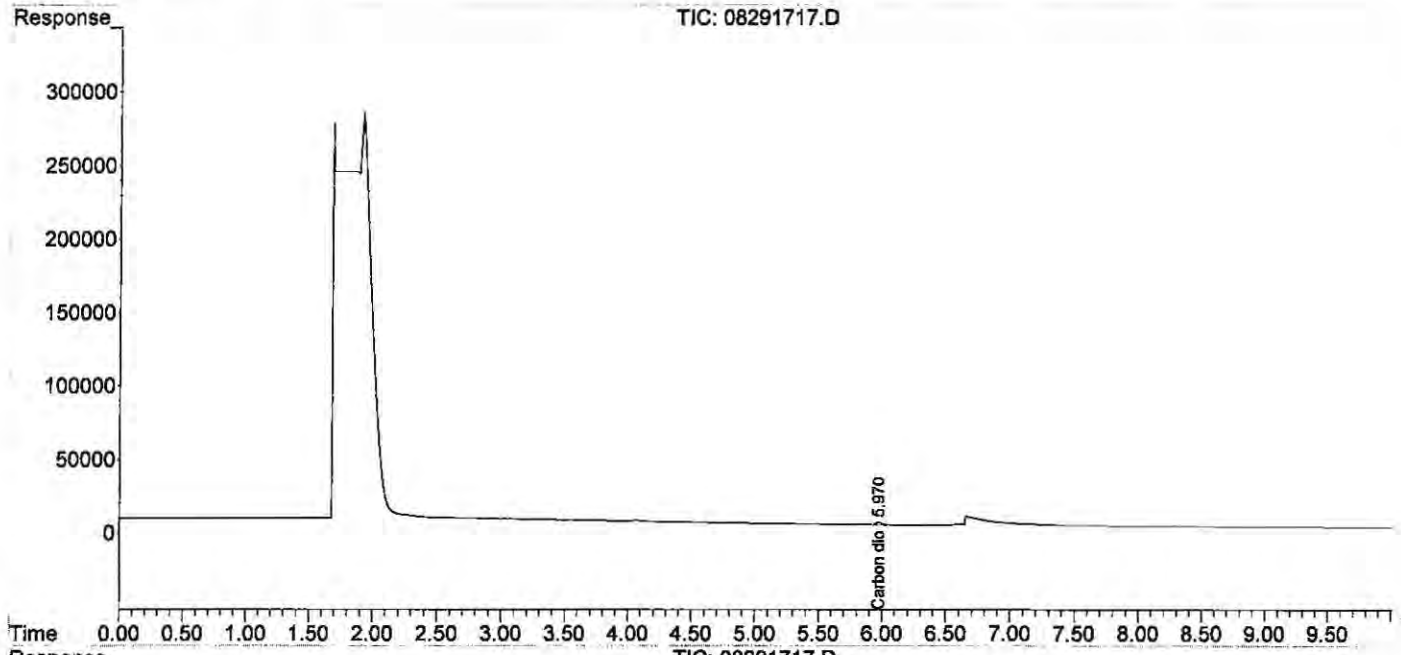
(f)=RT Delta > 1/2 Window (m)=manual int.

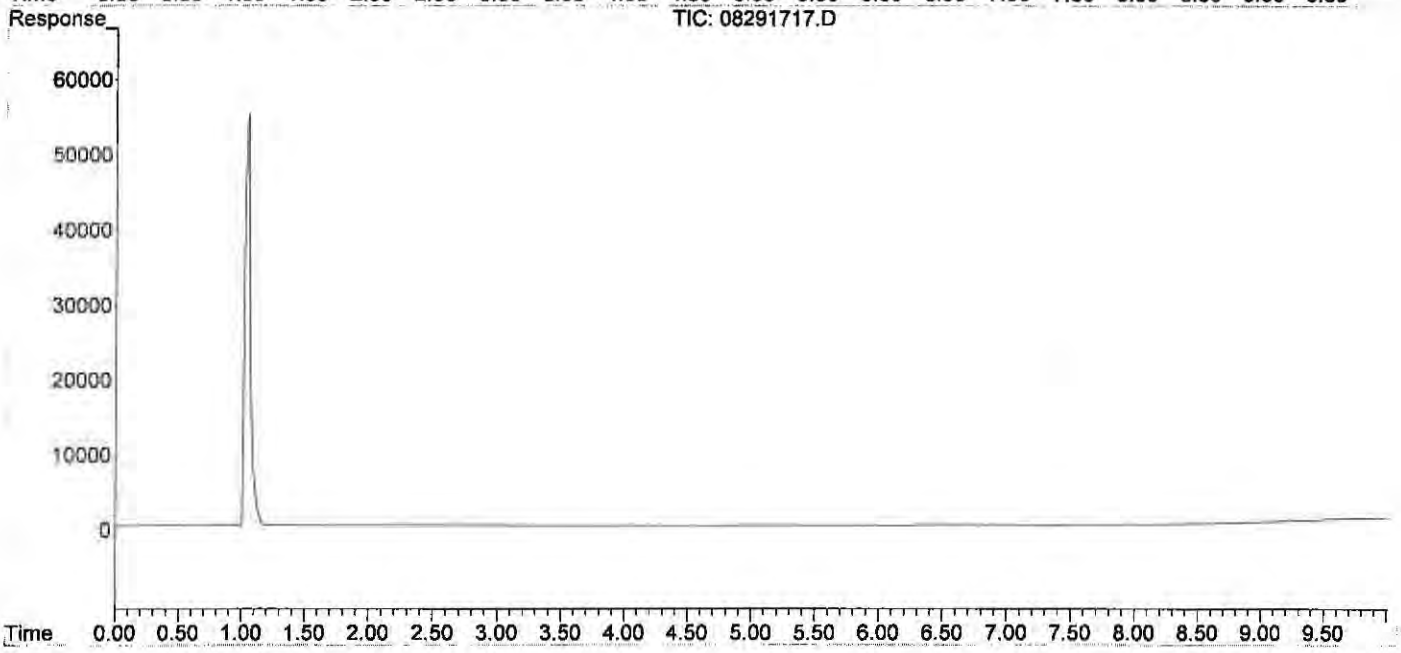
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



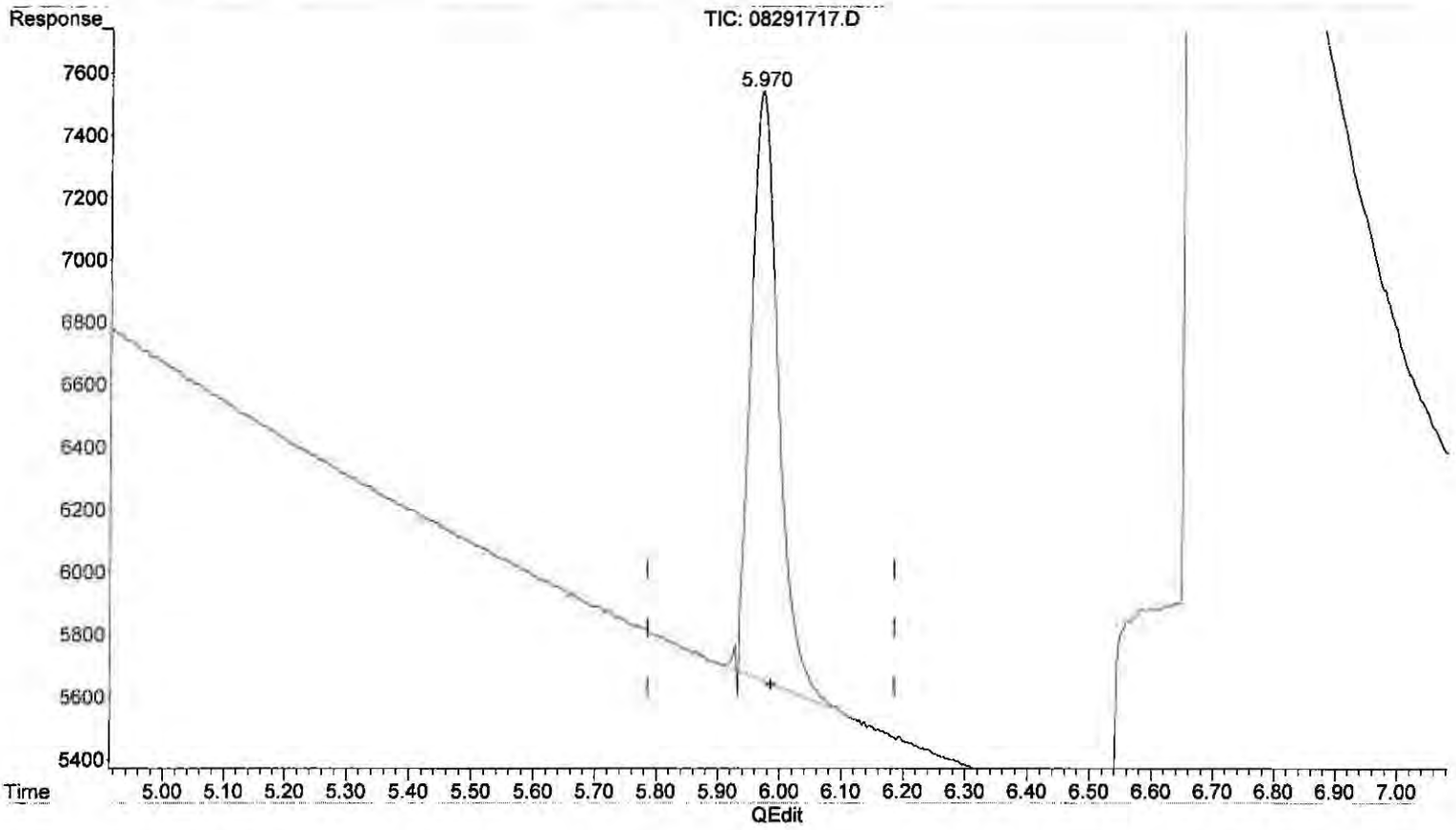


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

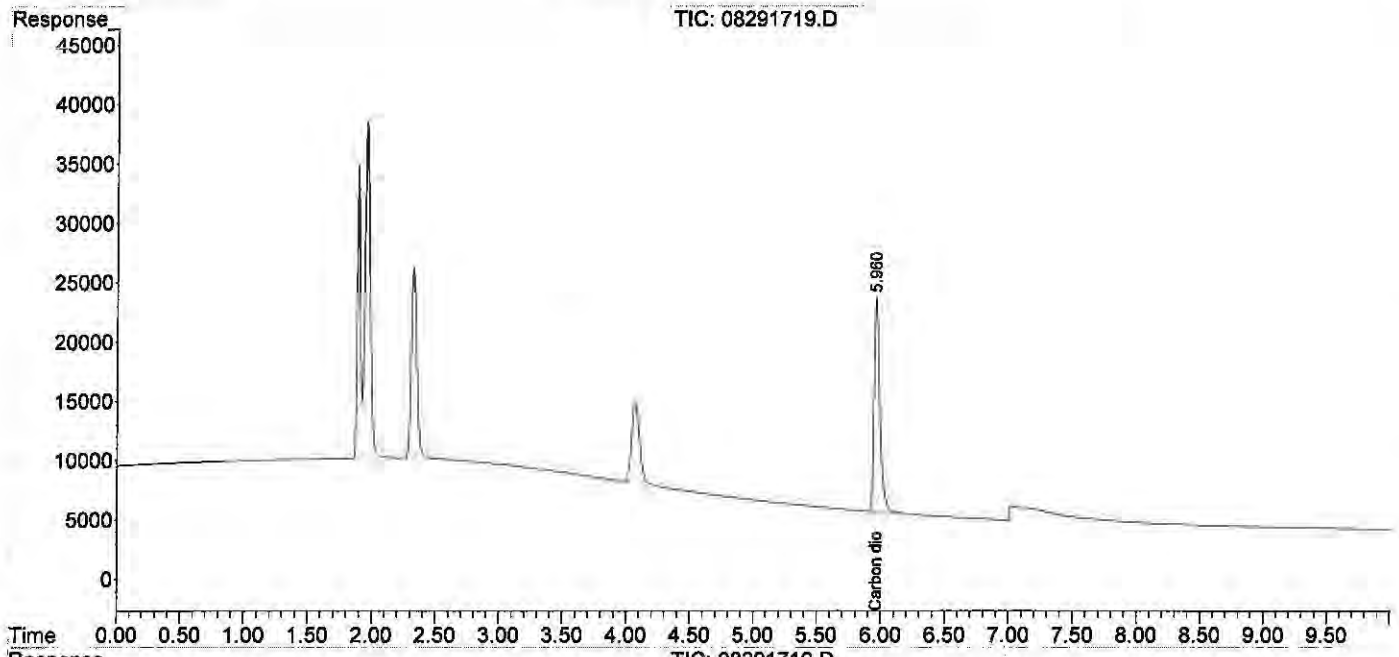
(f)=RT Delta > 1/2 Window (m)=manual int.

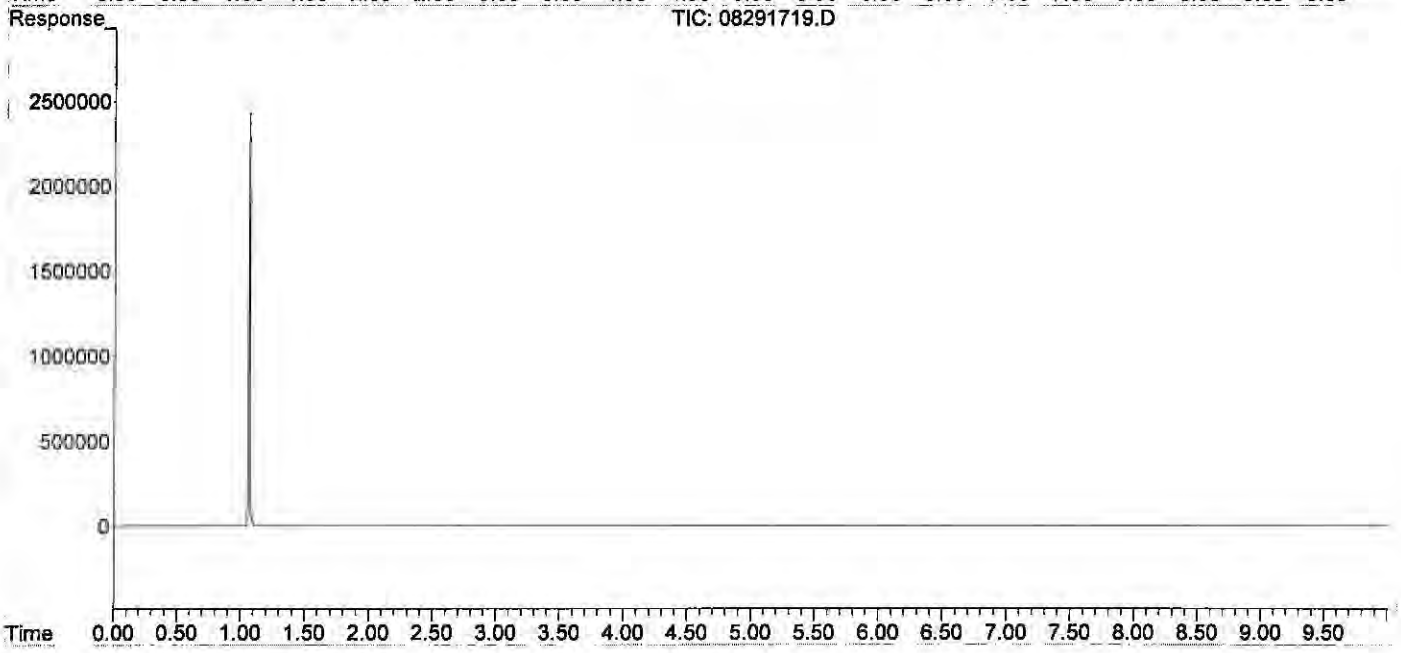
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

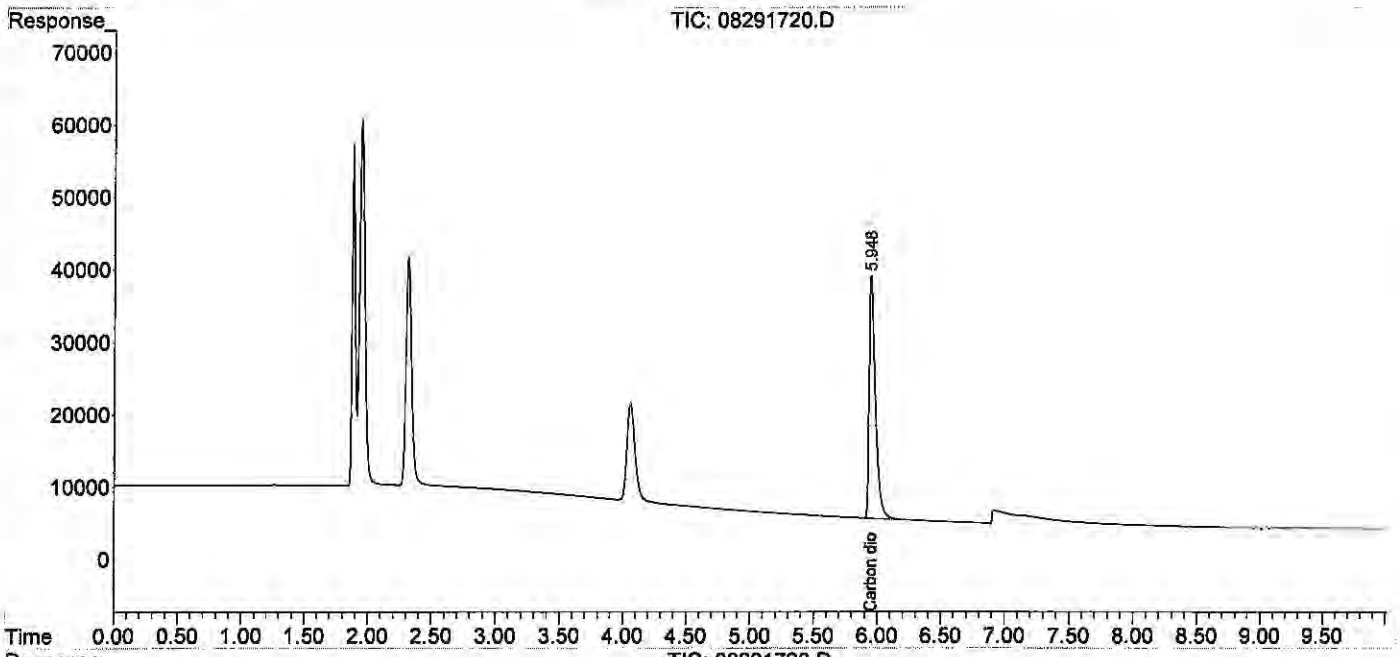
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

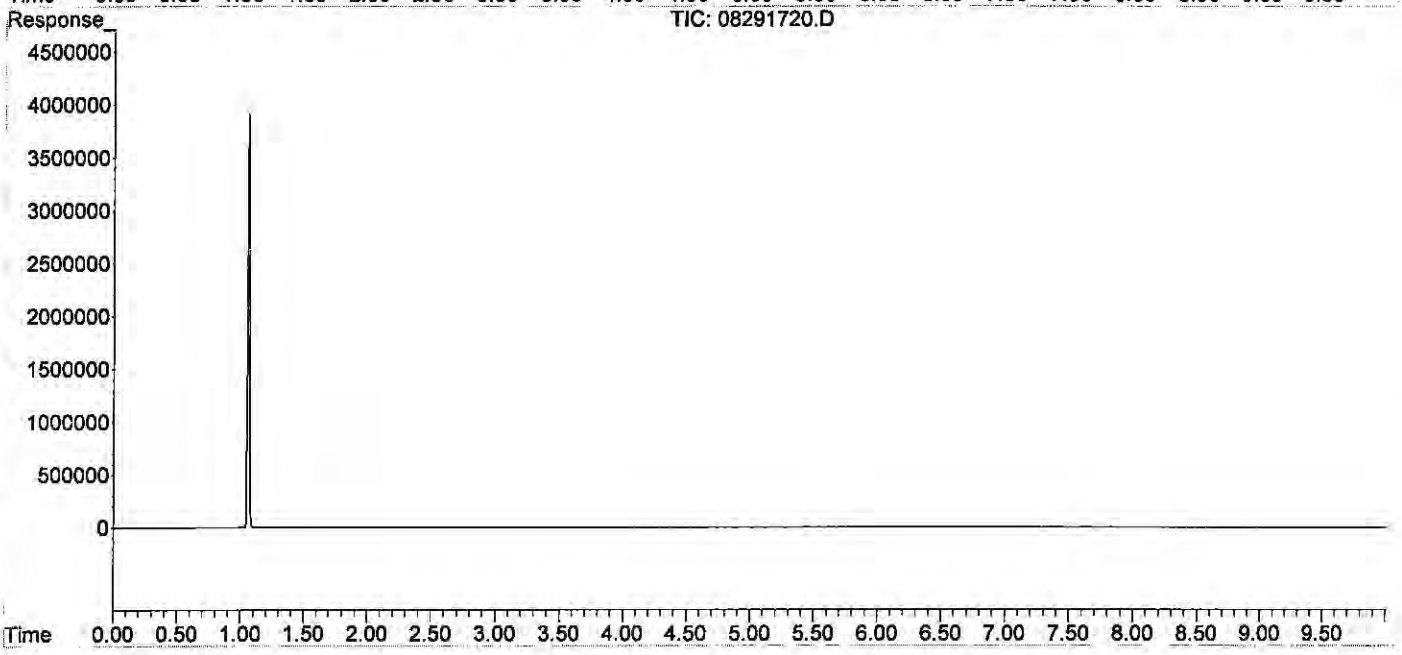
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

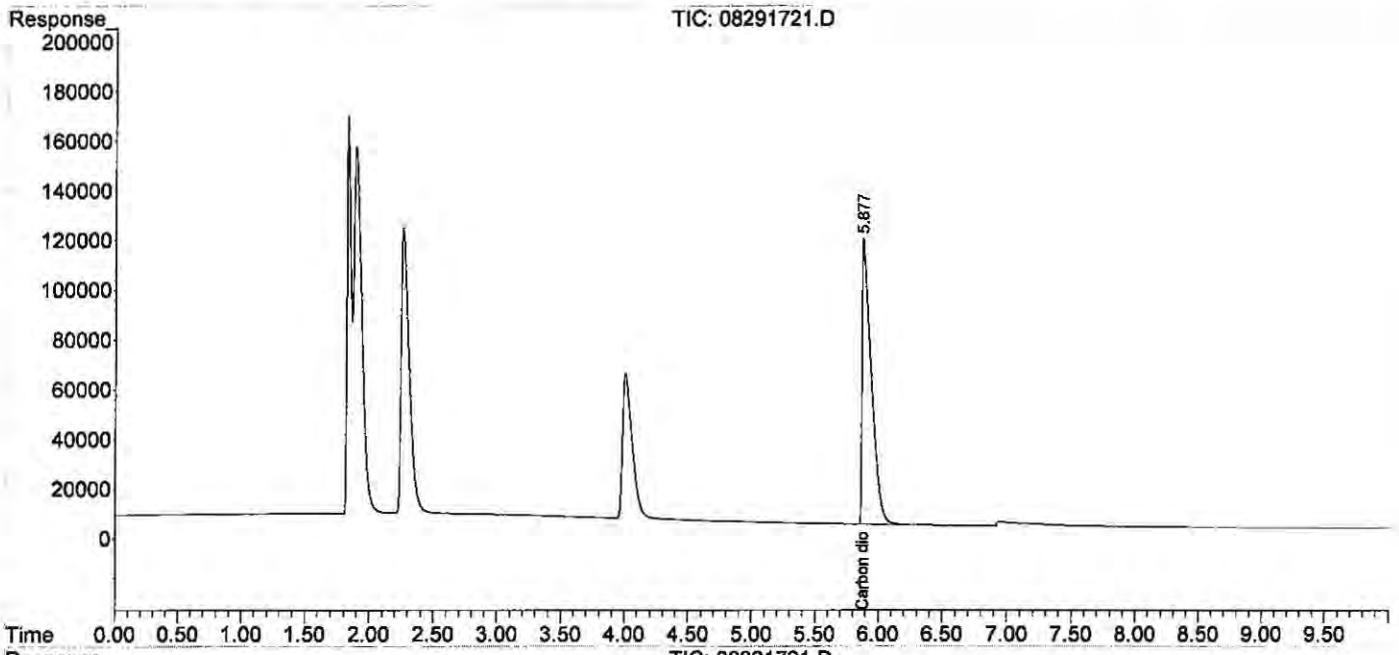
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

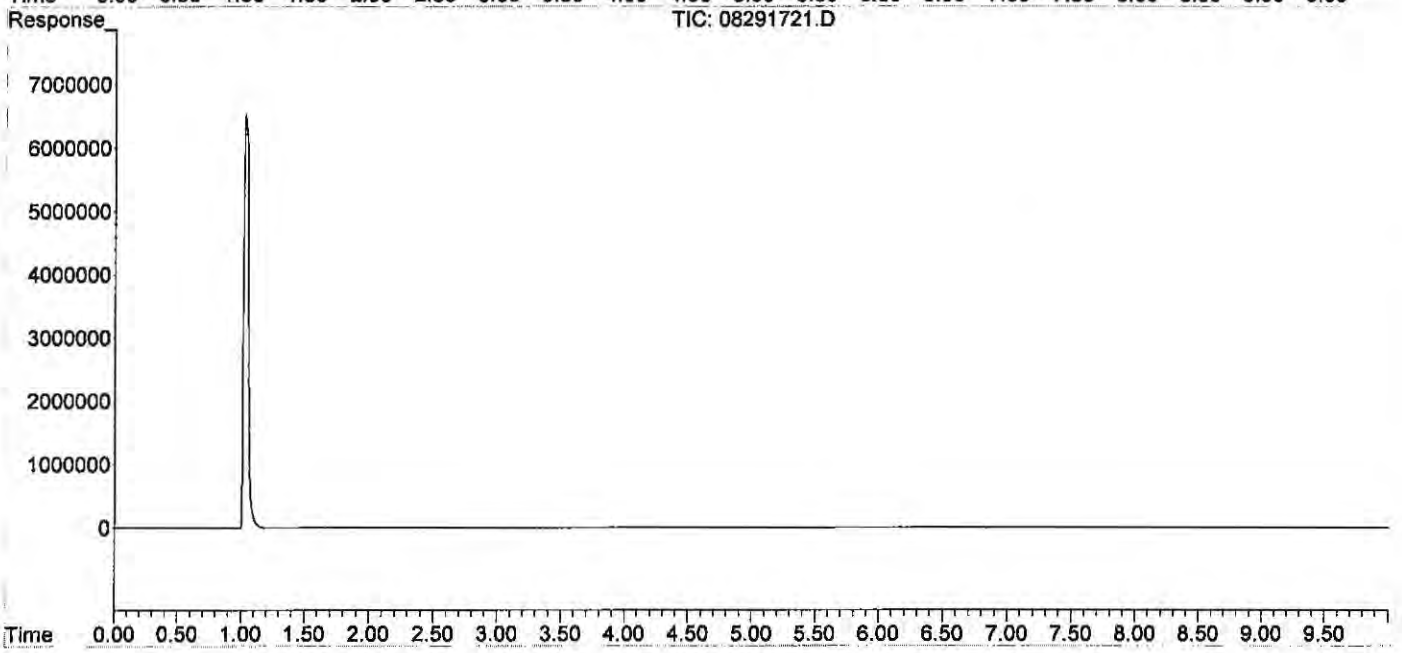
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.886	536422	0.113	ppm	actual %D
2)	Carbon monoxide	1.886	536422	N.D.	ppm	
3)	Methane (TCD)	4.059f	626500	66244.710	ppm	
4)	Carbon dioxide	5.947	1163775	4957.948	ppm	5000 99.16
6)	Methane (FID)	1.062	37290742	3947.023	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

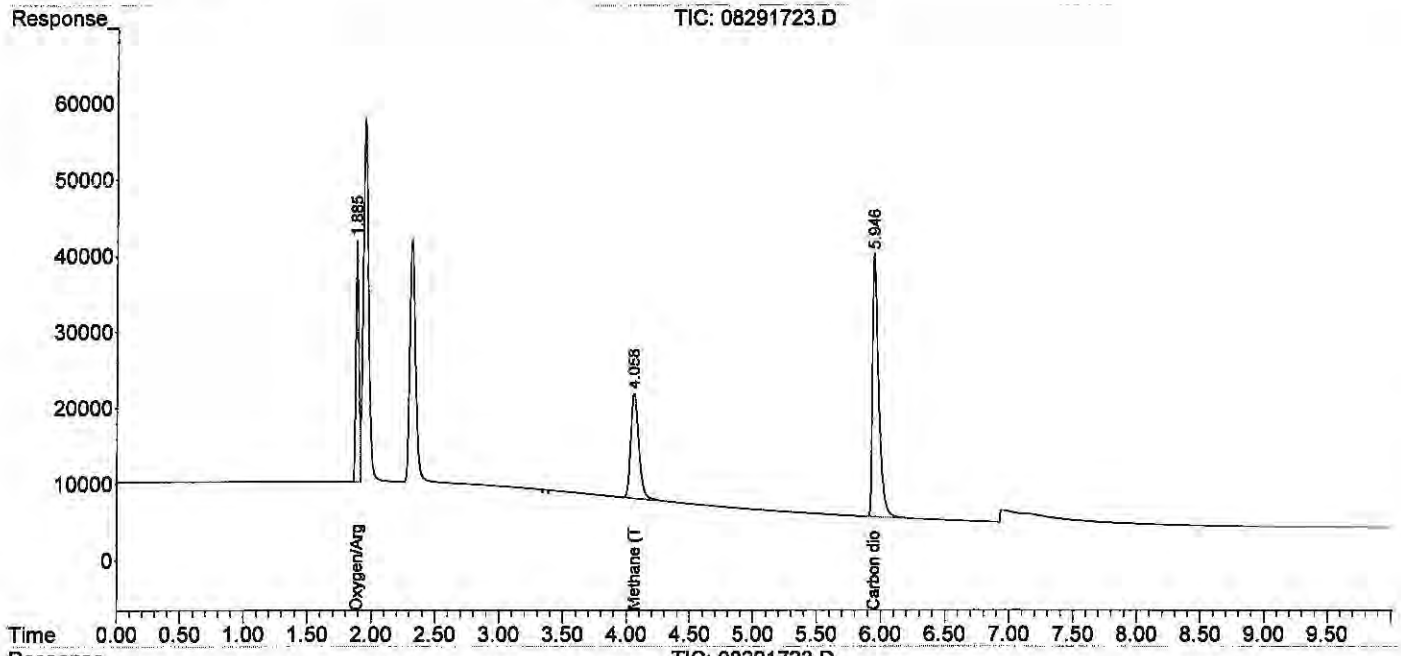
(f)=RT Delta > 1/2 Window (m)=manual int.

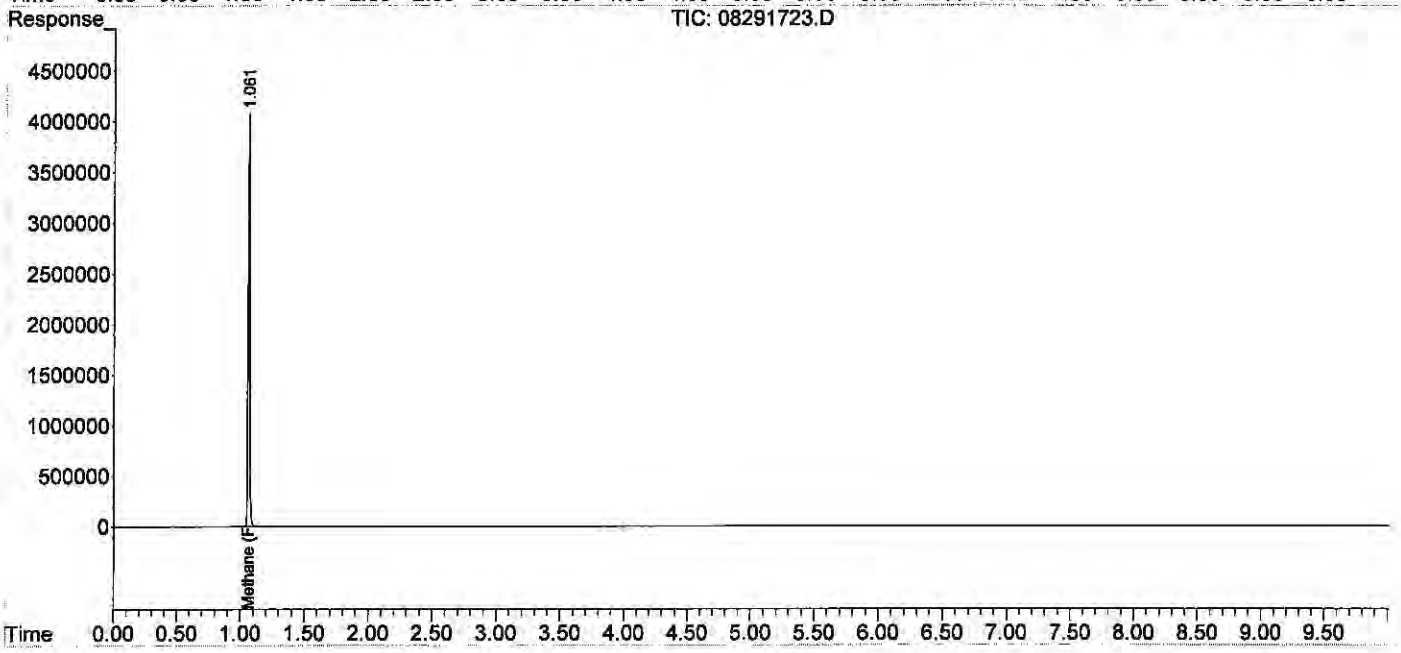
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : WH | Instrument : GC#10
Service Request: P1902951 | Date Analysis : 05/29/19 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-04251903	0.100	4400.220
ACTUAL		5000.00
%Difference		12.0%
mcs 0.1ml	0.100	11.184
rb 0.1ml	0.100	0.000
lcs tcd 0.1ml	0.100	919.758
lcsd tcd 0.1ml	0.100	891.287
P1902951-001 50ul	0.050	13484.57
P1902951-002 50ul	0.050	13232.46
P1902951-003 0.1ml	0.100	7216.43
P1902951-004 50ul	0.050	16681.76

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	111.840
lcs tcd 0.1ml	9197.580
lcsd tcd 0.1ml	8912.870
P1902951-001 50ul	269691.44
P1902951-002 50ul	264649.22
P1902951-003 0.1ml	72164.34
P1902951-004 50ul	333635.28

std s32-04251903	4563.367
ACTUAL	5000.00
%Difference	8.7%

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:17:35
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 10:32:31 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

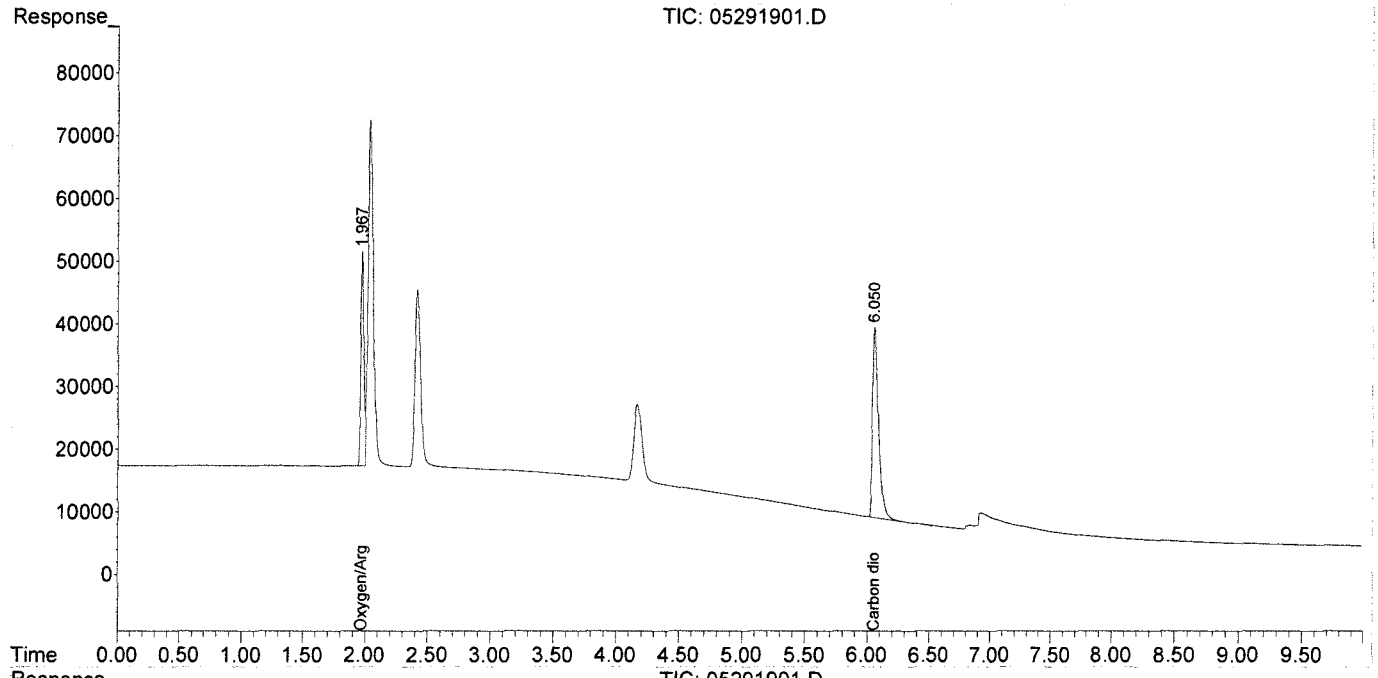
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.968f	597274	0.125	ppm
2)	Carbon monoxide	1.968f	597274	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.051	1032860	4400.220	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

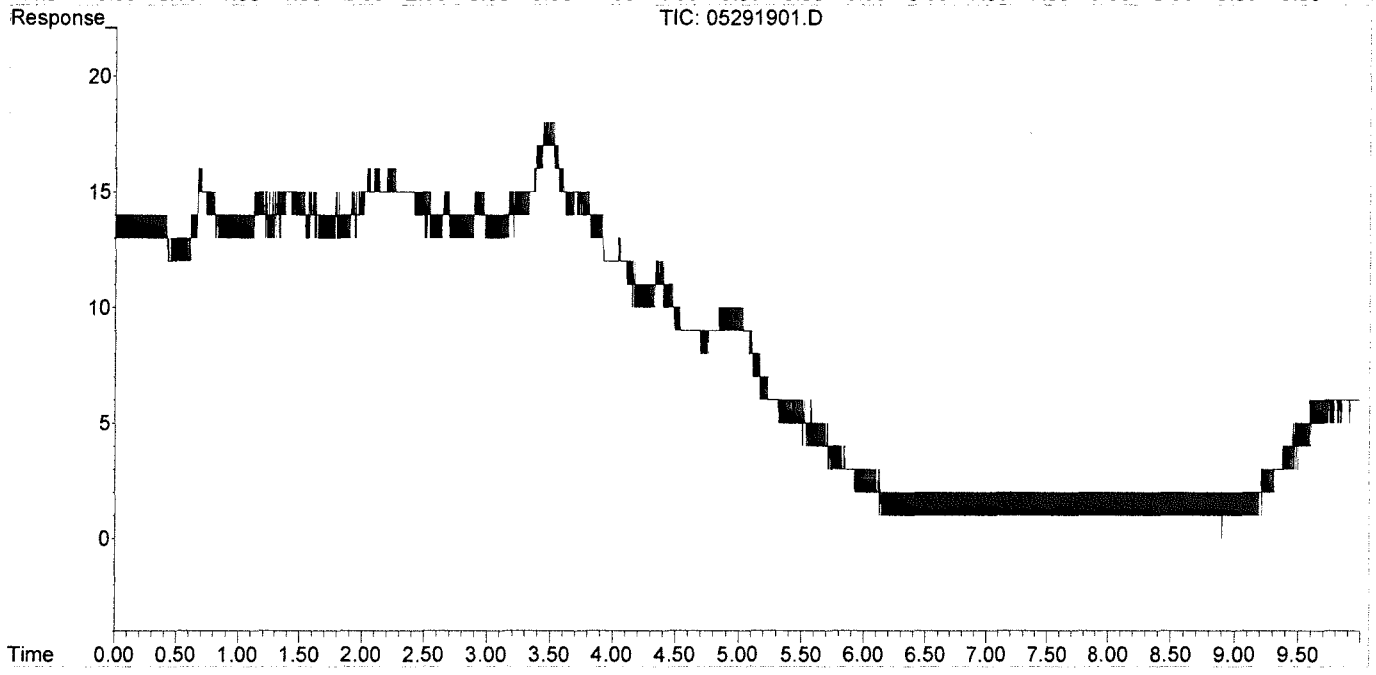
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 10:17:35
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 10:32:31 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 15:12:45
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:35:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

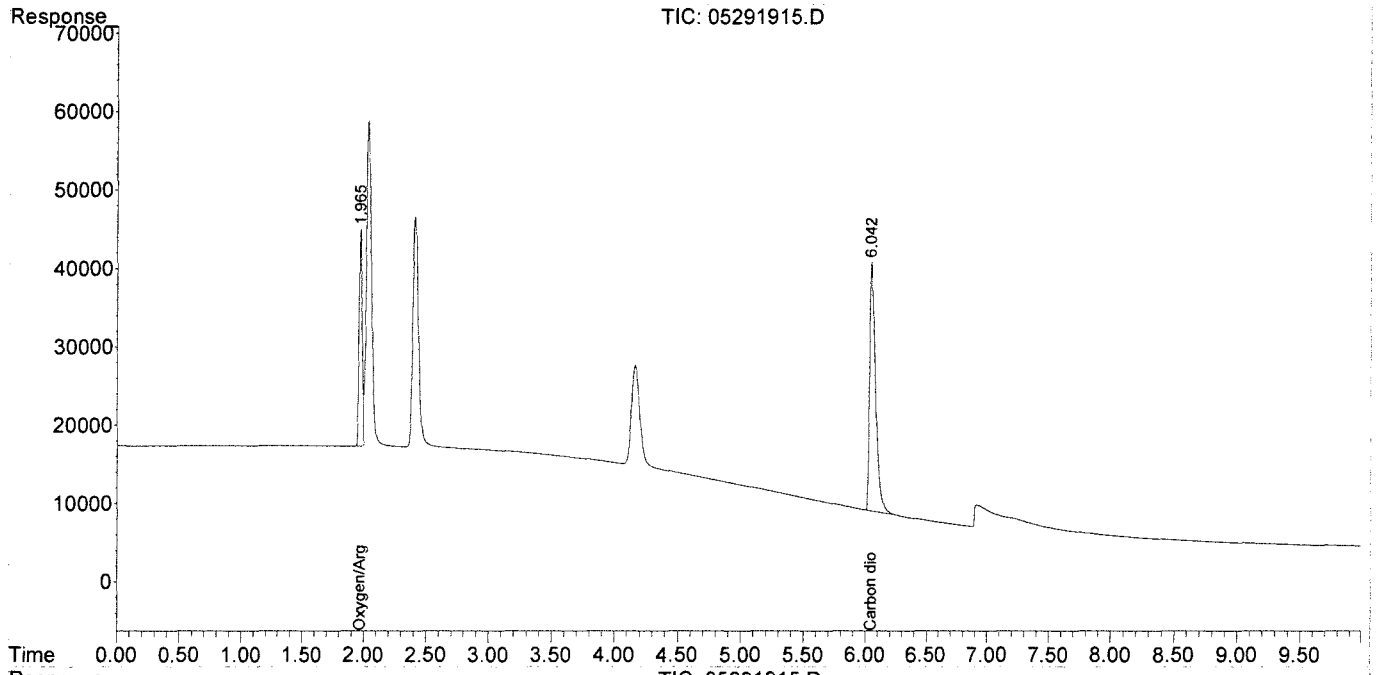
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.965f	488432	0.103	ppm	
2)	Carbon monoxide	1.965f	488432	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	6.042	1071155	4563.367	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

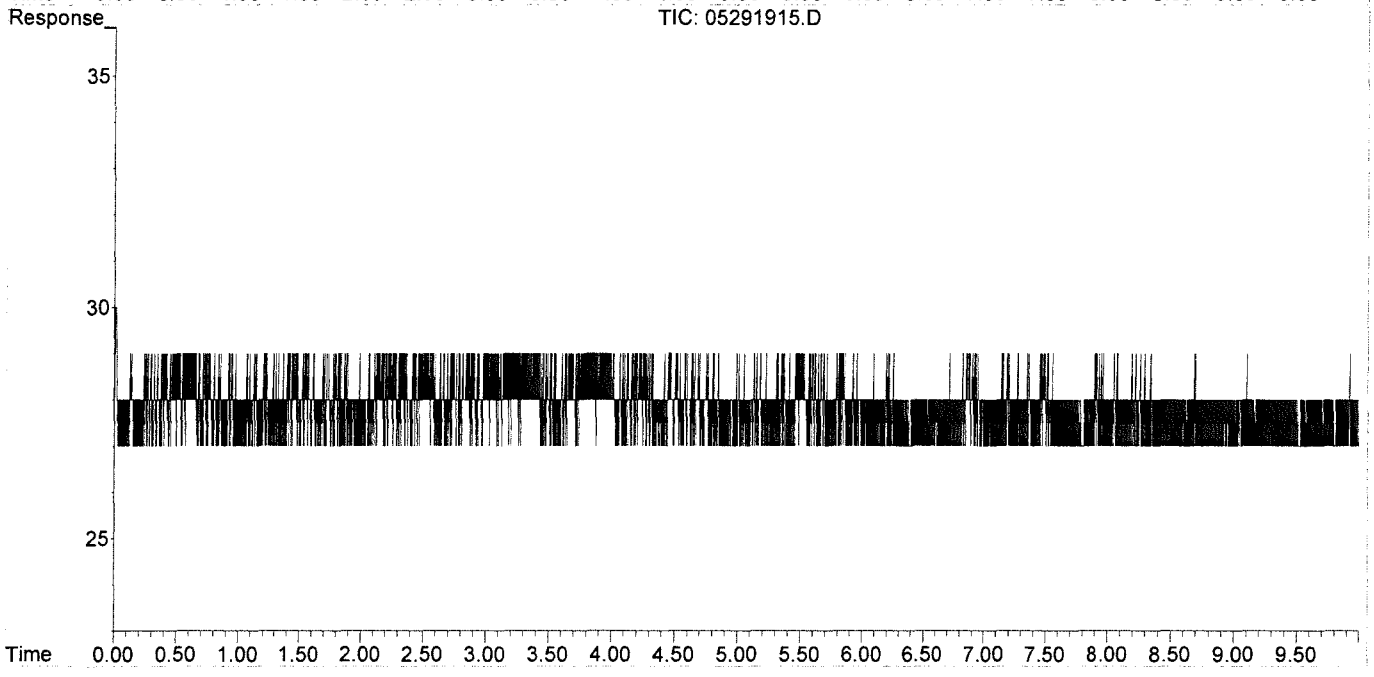
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 15:12:45
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:35:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

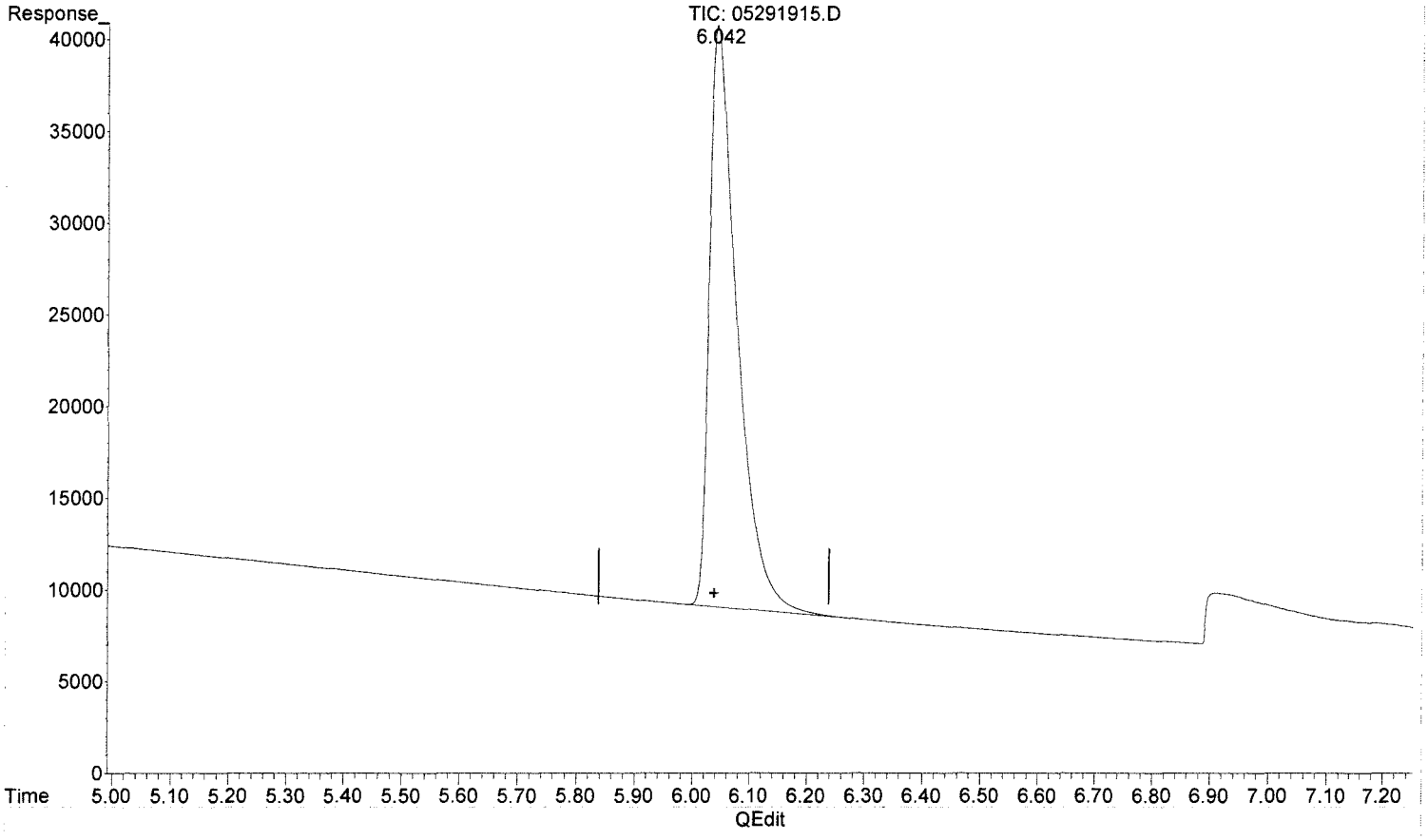




Data Path : J:\GC10\DATA\RSK_TCD\2019_05\29\
Data File : 05291915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-May-2019, 15:12:45
Operator : WH
Sample : std s32-04251903
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 29 15:35:04 2019
Quant Method : J:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

6.042min 4563.367 ppm m

response 1071155

(+) = Expected Retention Time

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2019_05\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-May-19, 10:17:35	05291901.D	std s32-04251903		WH	RSKBOTH.M	pass
2	29-May-19, 10:43:41	05291902.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	29-May-19, 10:59:04	05291903.D	mcs 0.1ml		WH	RSKBOTH.M	pass
4	29-May-19, 11:28:16	05291904.D	lcs tcd 0.1ml		WH	RSKBOTH.M	pass
5	29-May-19, 11:46:24	05291905.D	lcsd tcd 0.1ml		WH	RSKBOTH.M	pass
6	29-May-19, 12:09:16	05291906.D	P1902951-001 0.1		WH	RSKBOTH.M	need dilution
7	29-May-19, 12:21:58	05291907.D	P1902951-002 0.1		WH	RSKBOTH.M	need dilution
8	29-May-19, 12:41:52	05291908.D	P1902951-003 0.1ml		WH	RSKBOTH.M	
9	29-May-19, 13:17:18	05291909.D	P1902951-004 50ul		WH	RSKBOTH.M	
10	29-May-19, 13:32:53	05291910.D	P1902951-001 50ul		WH	RSKBOTH.M	
11	29-May-19, 13:51:51	05291911.D	P1902951-002 50ul		WH	RSKBOTH.M	
12	29-May-19, 14:06:25	05291912.D	P1902949-001 50ul		WH	RSKBOTH.M	
13	29-May-19, 14:29:19	05291913.D	P1902949-002 50ul		WH	RSKBOTH.M	
14	29-May-19, 14:47:19	05291914.D	P1902949-003 50ul		WH	RSKBOTH.M	
15	29-May-19, 15:12:45	05291915.D	std s32-04251903		WH	RSKBOTH.M	pass

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:54:17
Operator : WH
Sample : P1902951-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:50:17 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

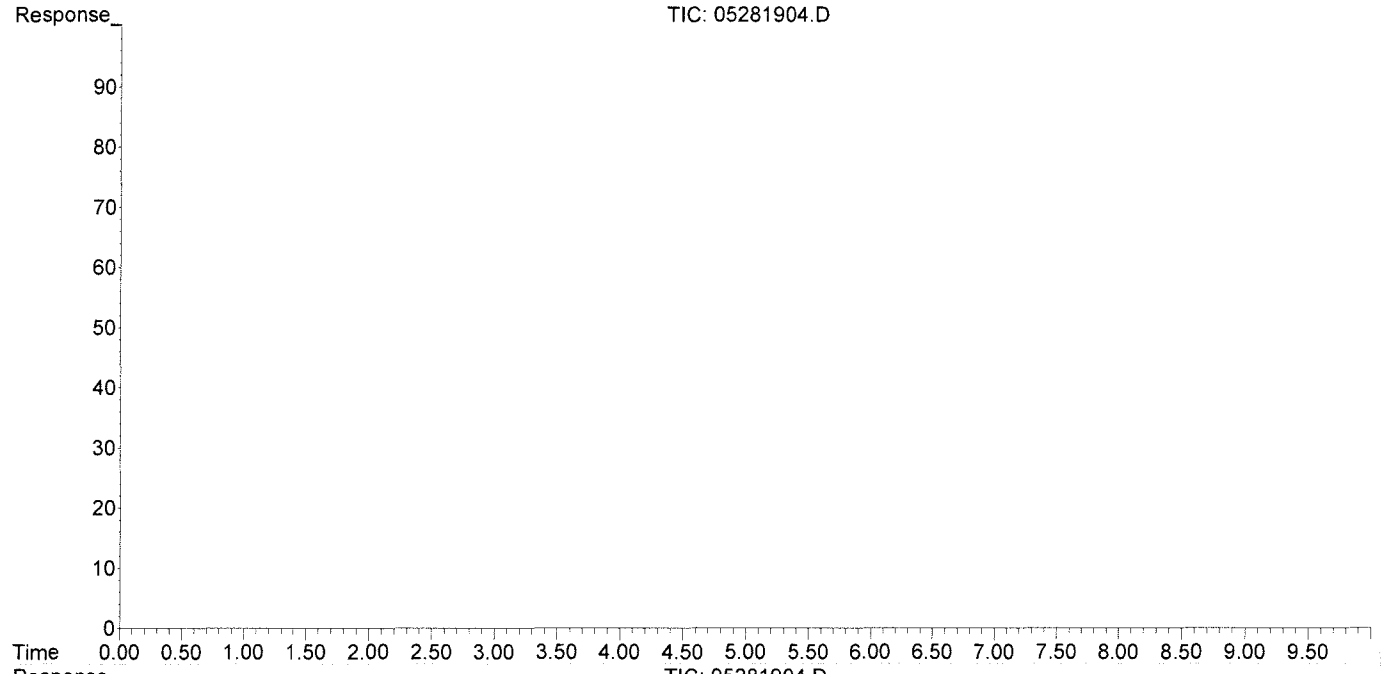
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.112	1392	0.153	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

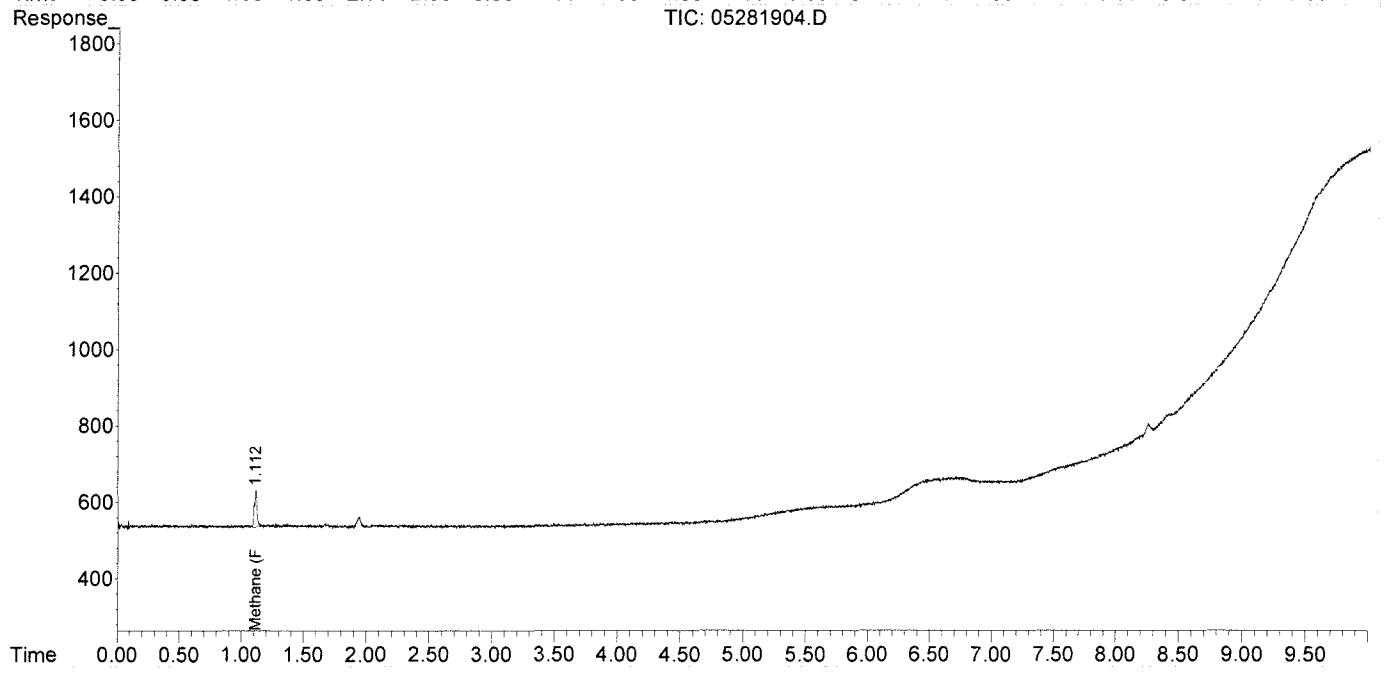
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:54:17
Operator : WH
Sample : P1902951-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:50:17 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

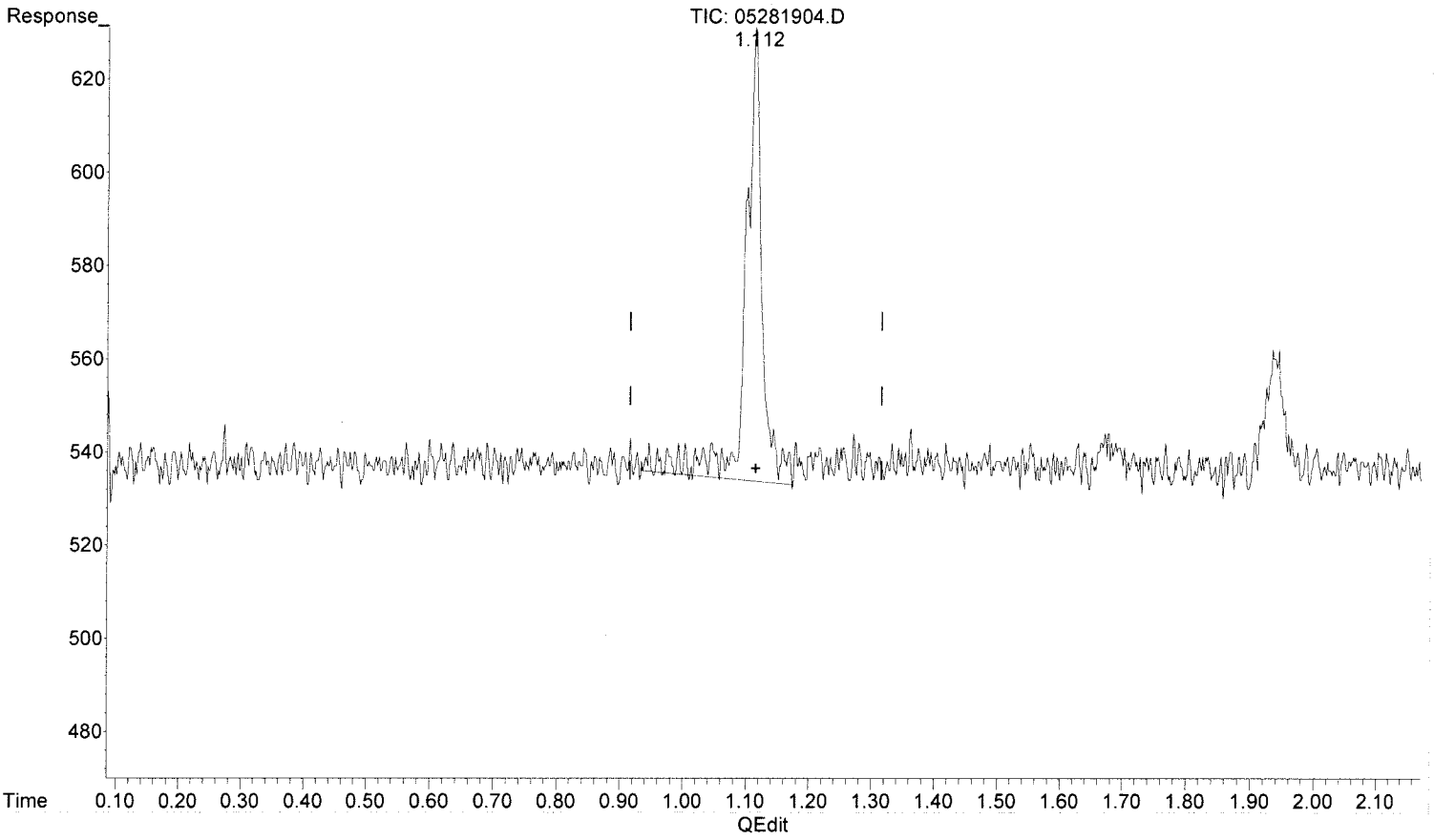




Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:54:17
Operator : WH
Sample : P1902951-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:50:17 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.113min 0.198 ppm

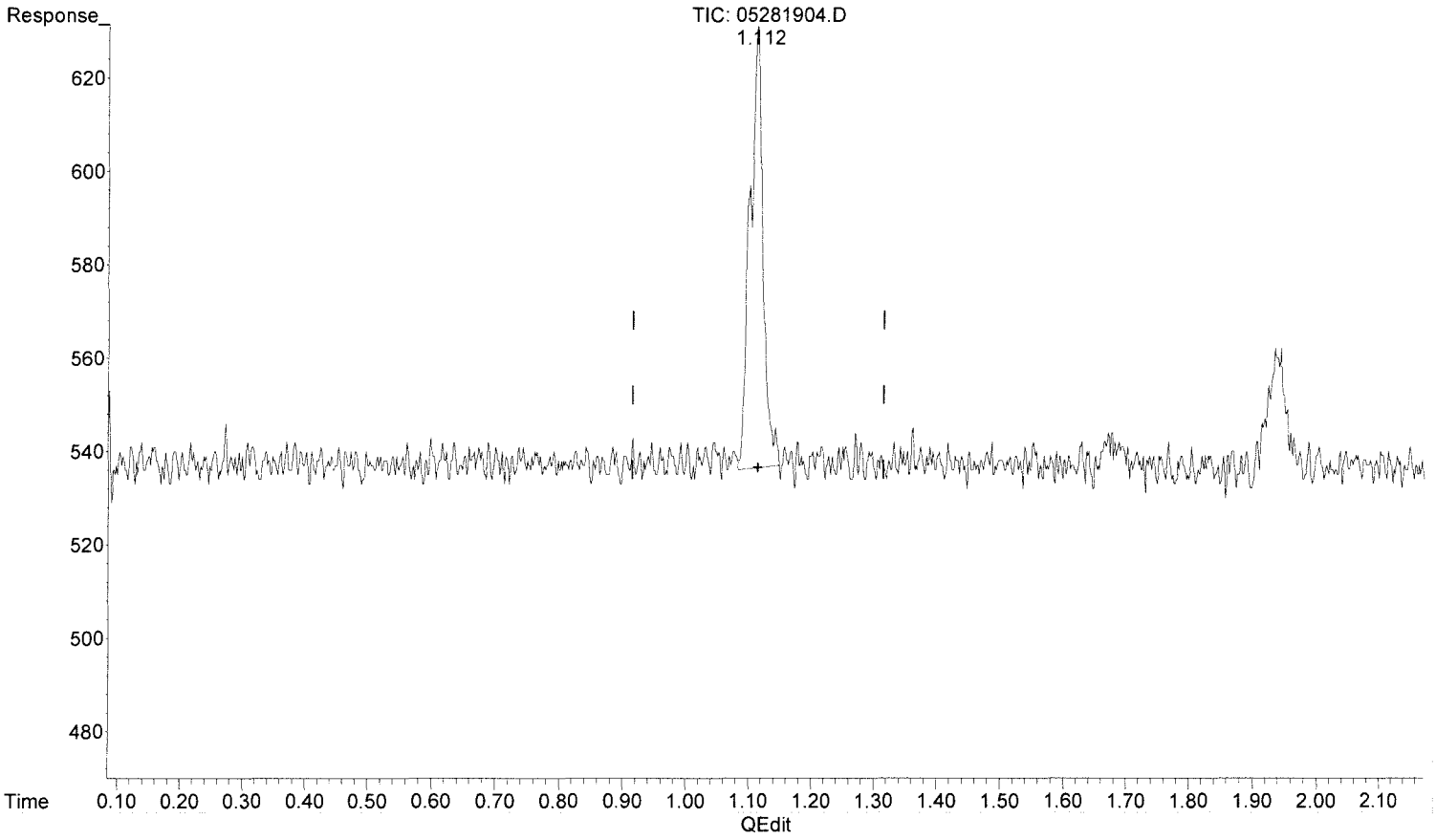
response 1798

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:54:17
Operator : WH
Sample : P1902951-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:50:17 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.112min 0.153 ppm m

response 1392

MR 5/29/19

5/28/19 BLC

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 12:07:09
Operator : WH
Sample : P1902951-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:51:10 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

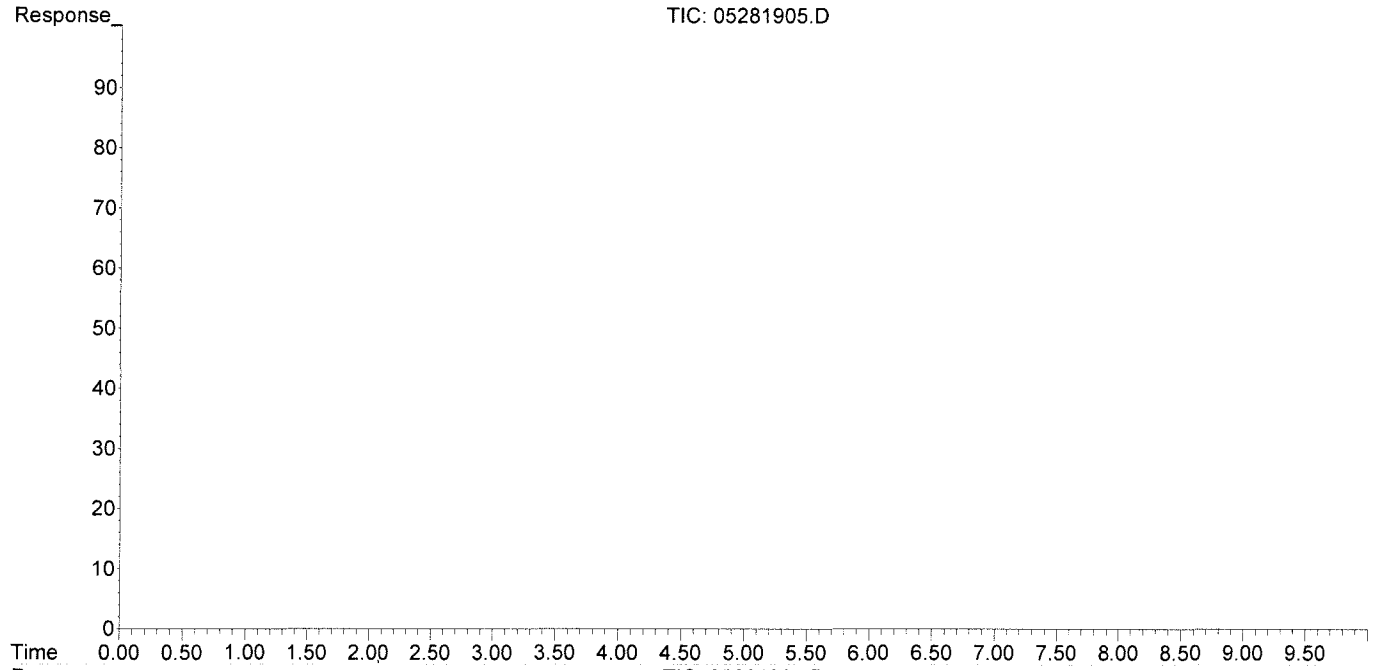
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.112	1111	0.122	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

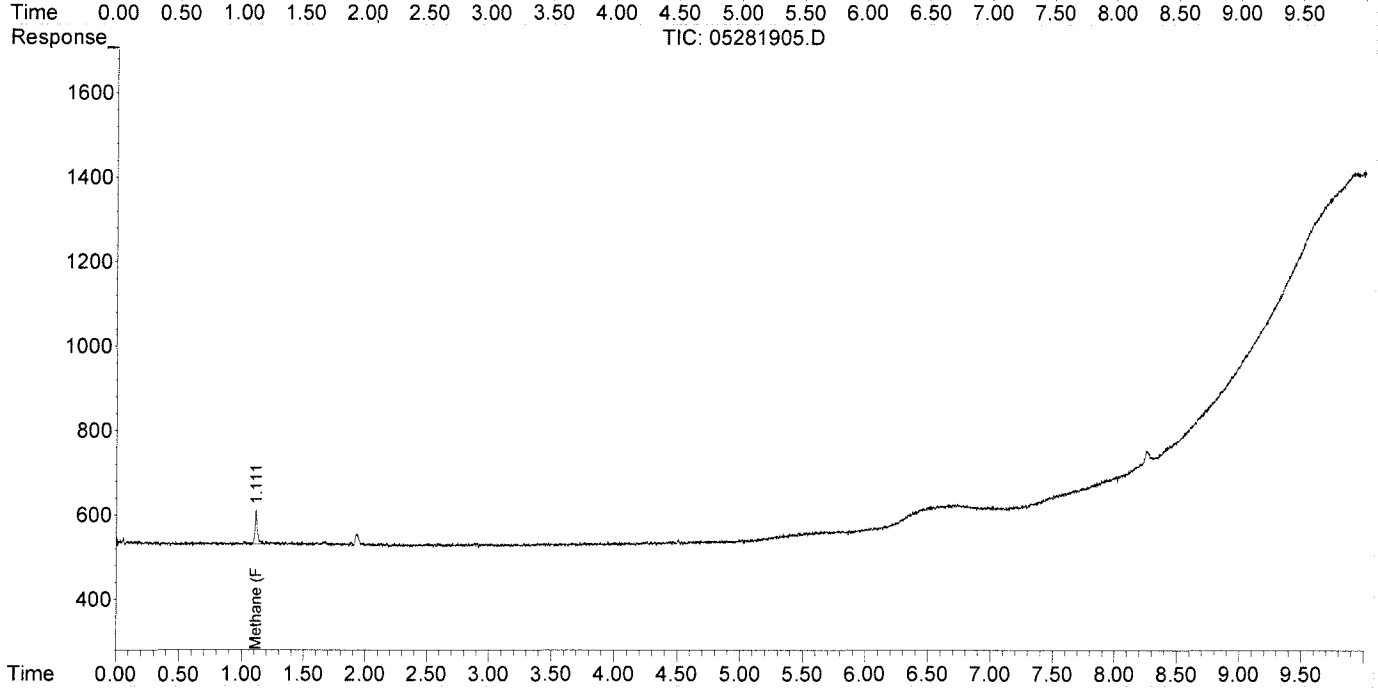
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 12:07:09
Operator : WH
Sample : P1902951-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:51:10 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 12:27:20
Operator : WH
Sample : P1902951-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:51:34 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

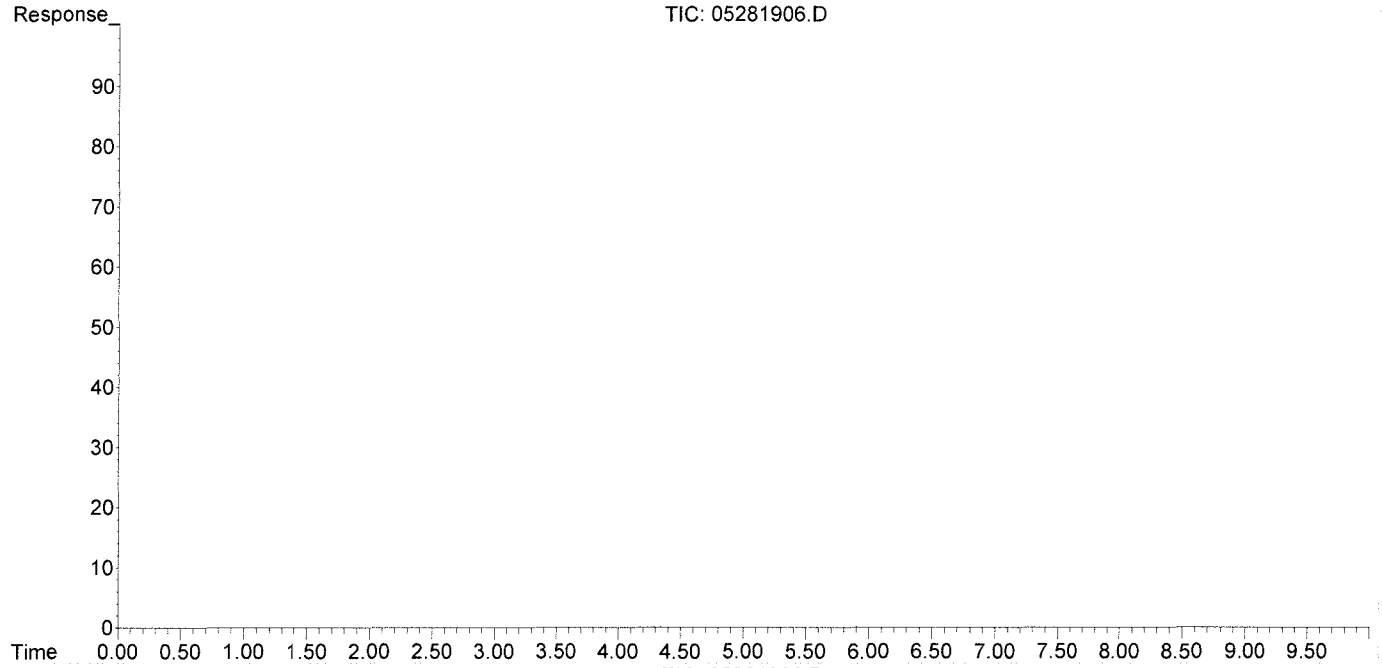
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.114	1403	0.155	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

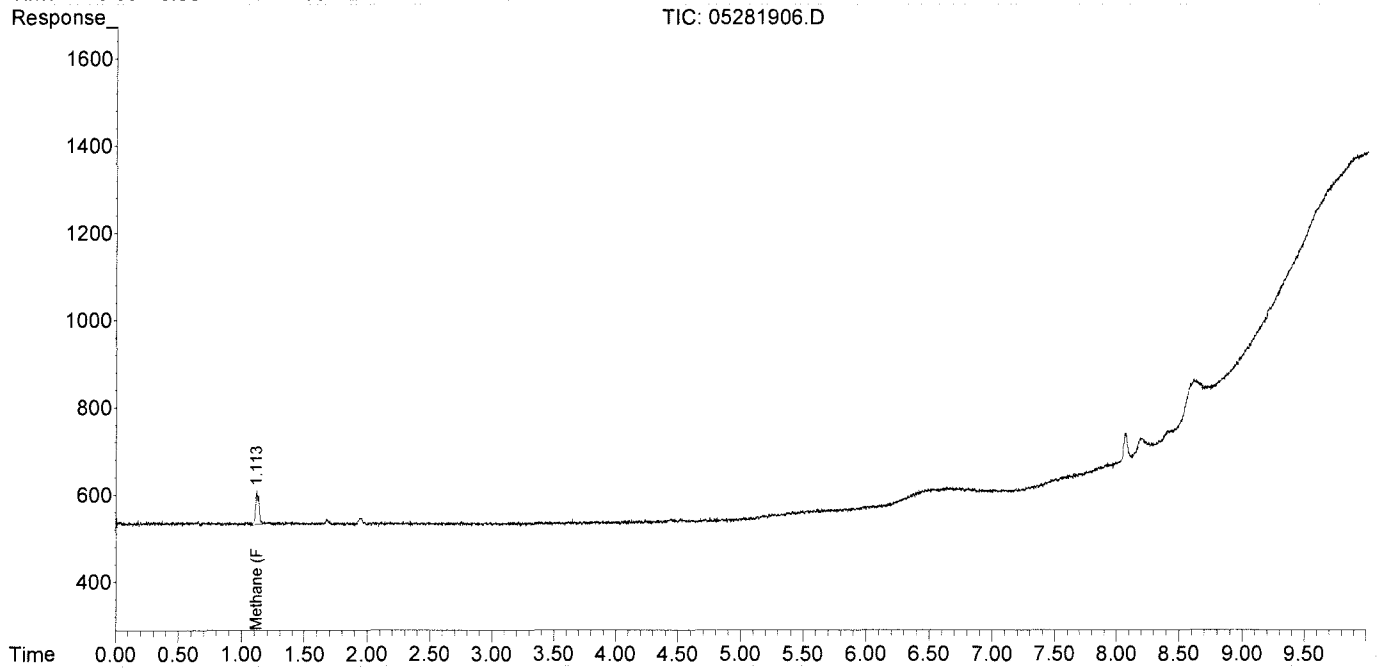
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 12:27:20
Operator : WH
Sample : P1902951-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:51:34 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:03:55
Operator : WH
Sample : P1902951-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:51:54 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

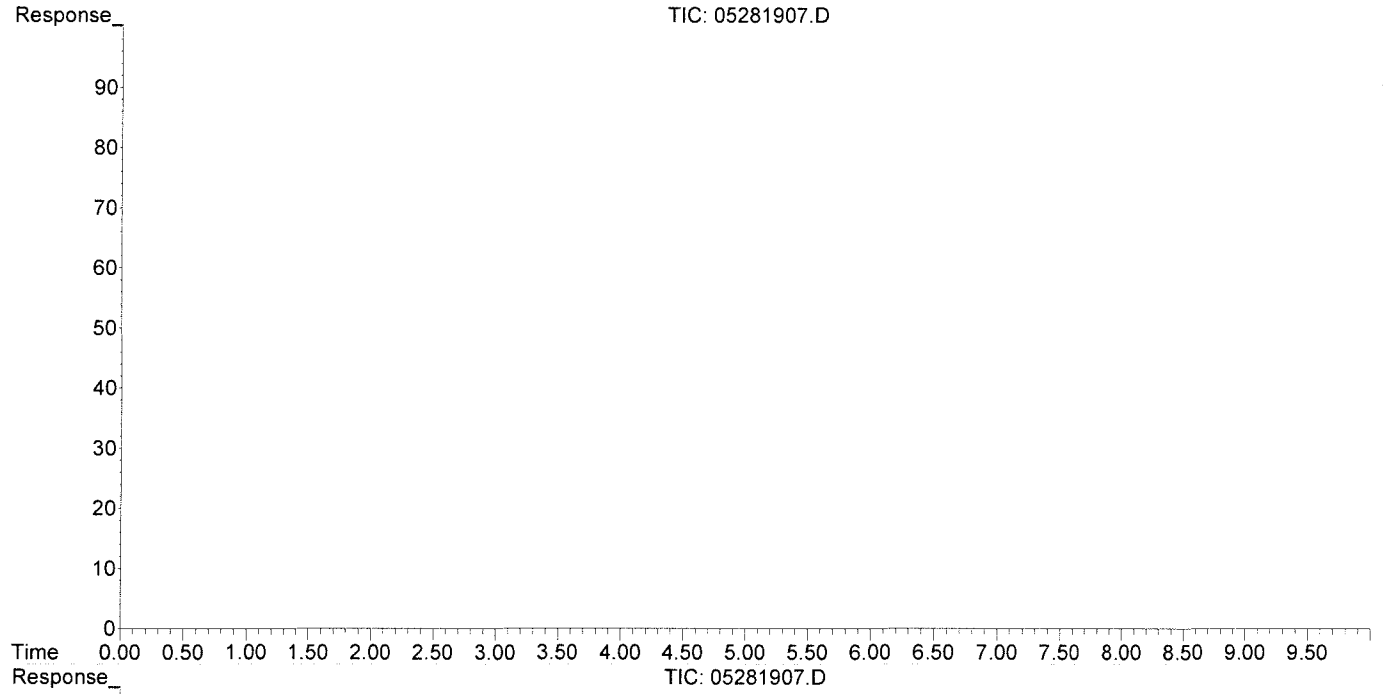
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.112	931	0.103	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

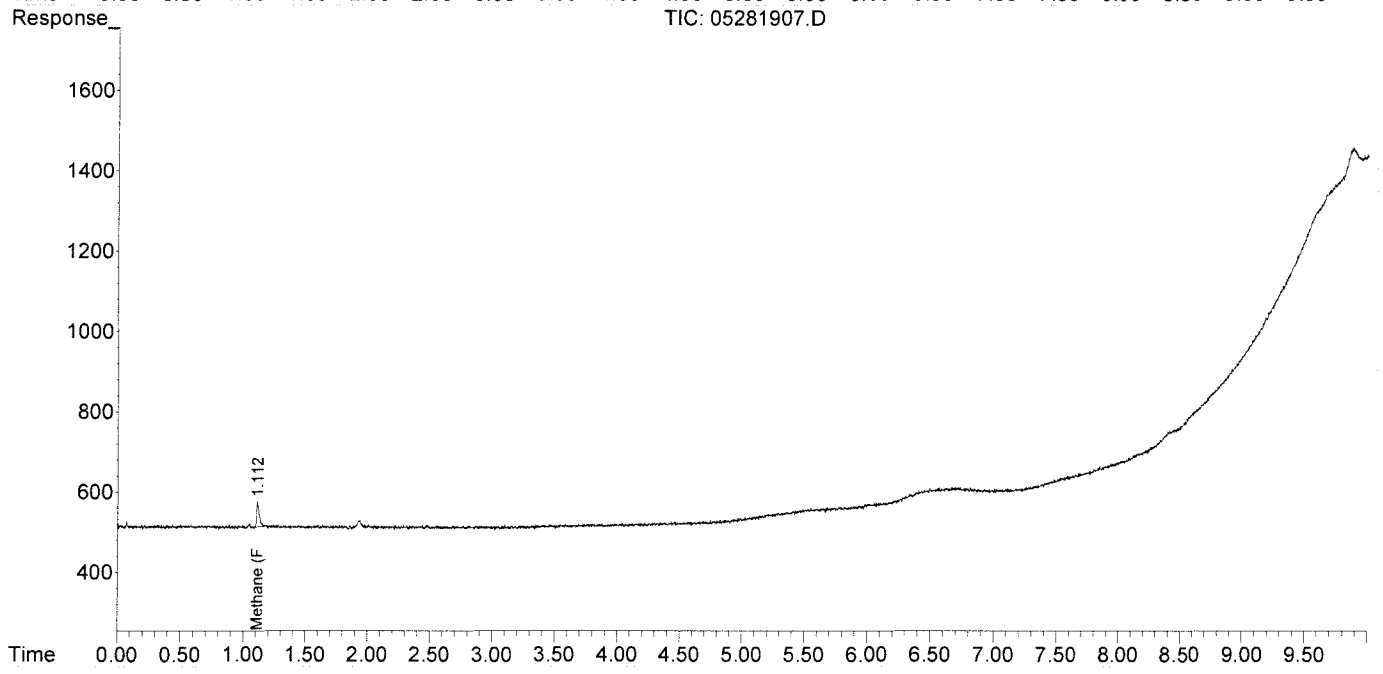
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:03:55
Operator : WH
Sample : P1902951-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:51:54 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

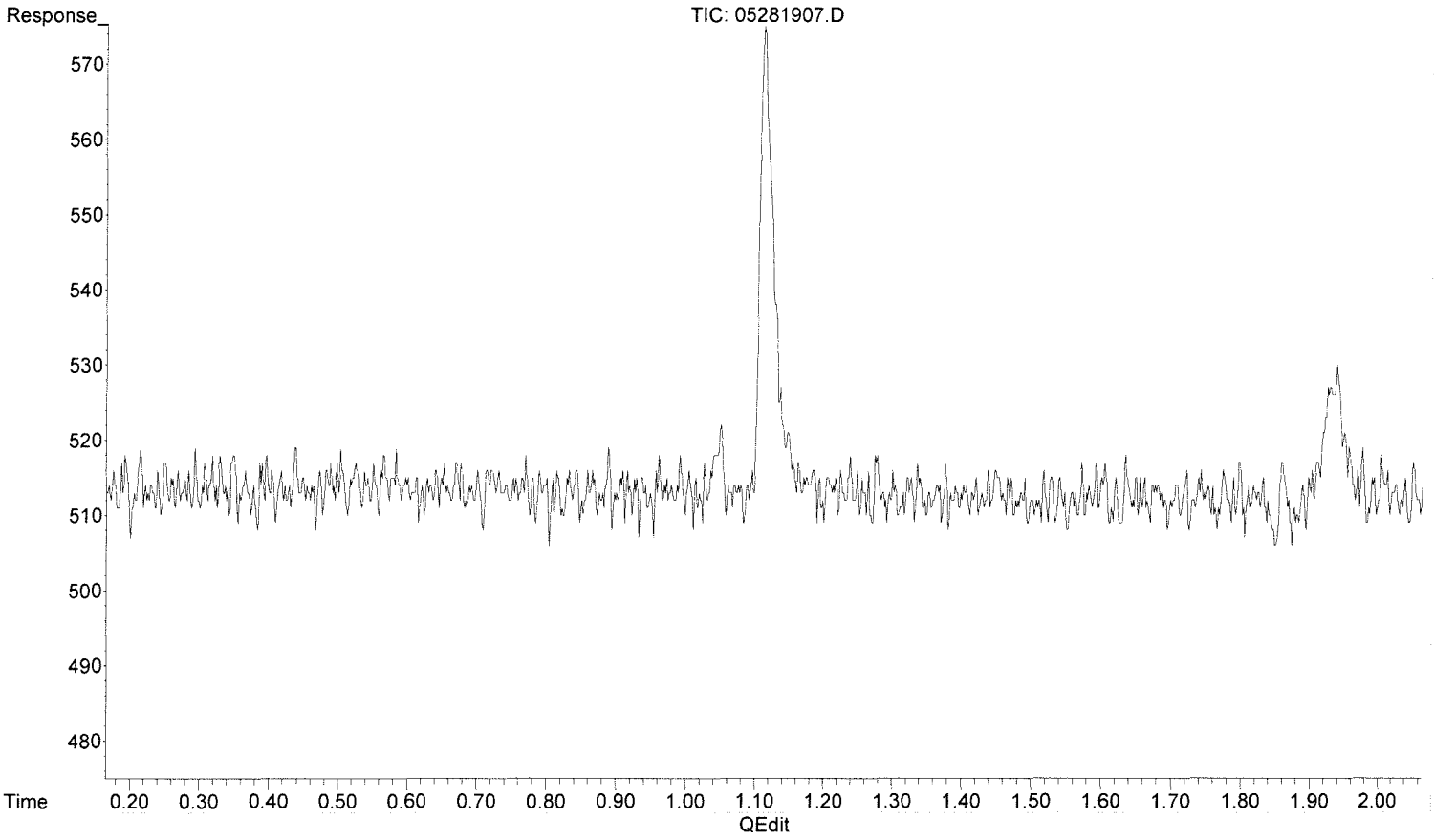




Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:03:55
Operator : WH
Sample : P1902951-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:51:54 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.115min 0.000 ppm

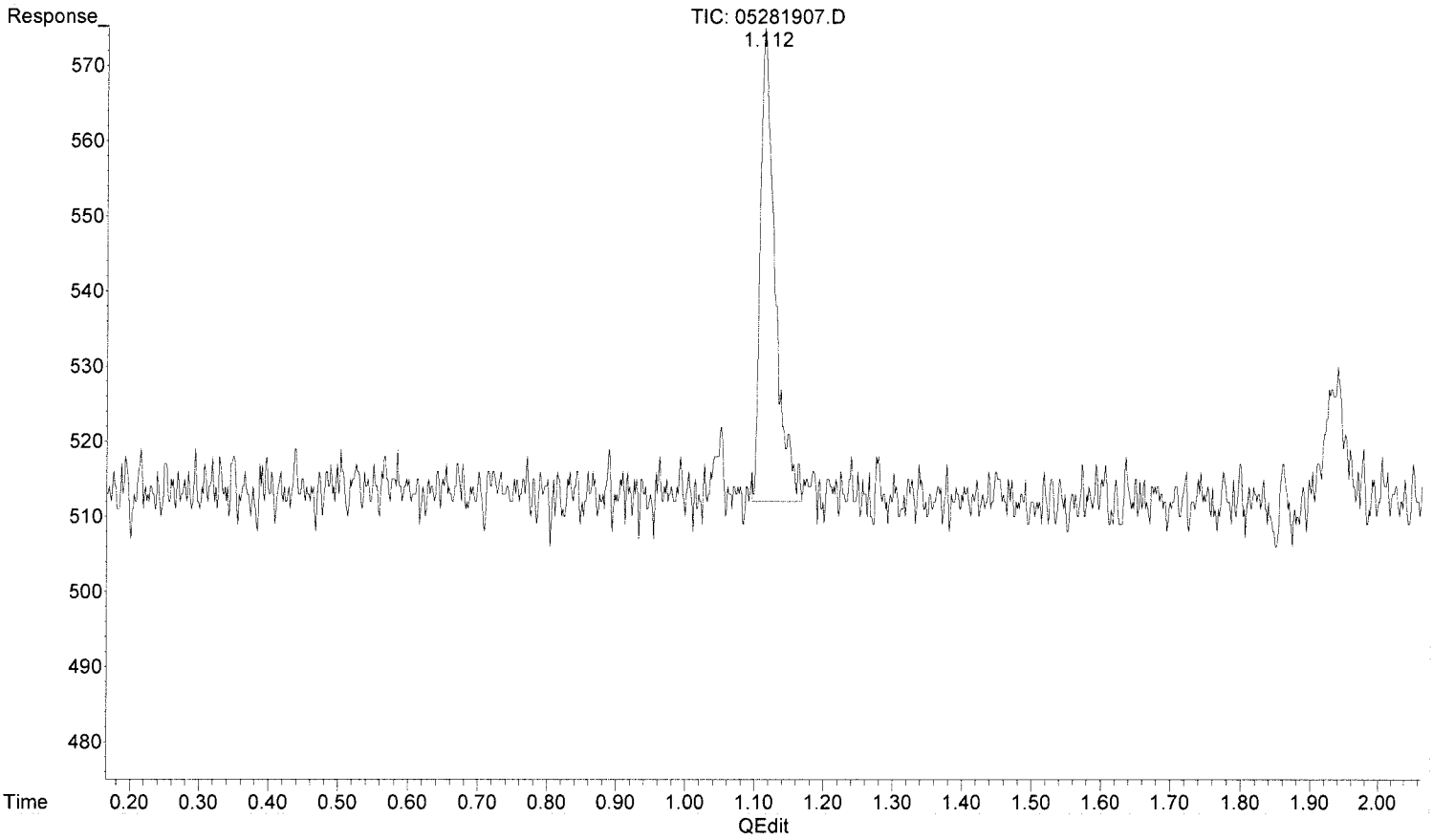
response 0

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:03:55
Operator : WH
Sample : P1902951-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 16:51:54 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.112min 0.103 ppm m

response 931

MR 5/29/19

WH 5/28/19 MD

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:21:43
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:49:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

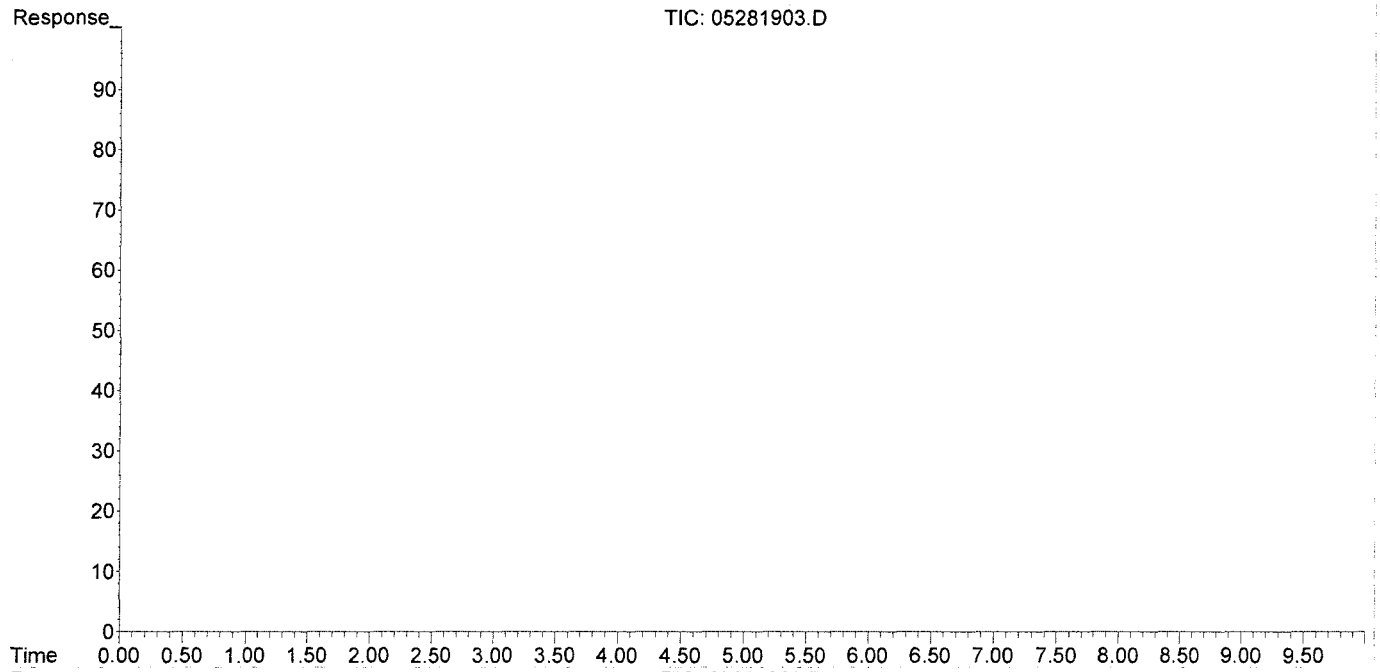
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.104	725	0.080	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

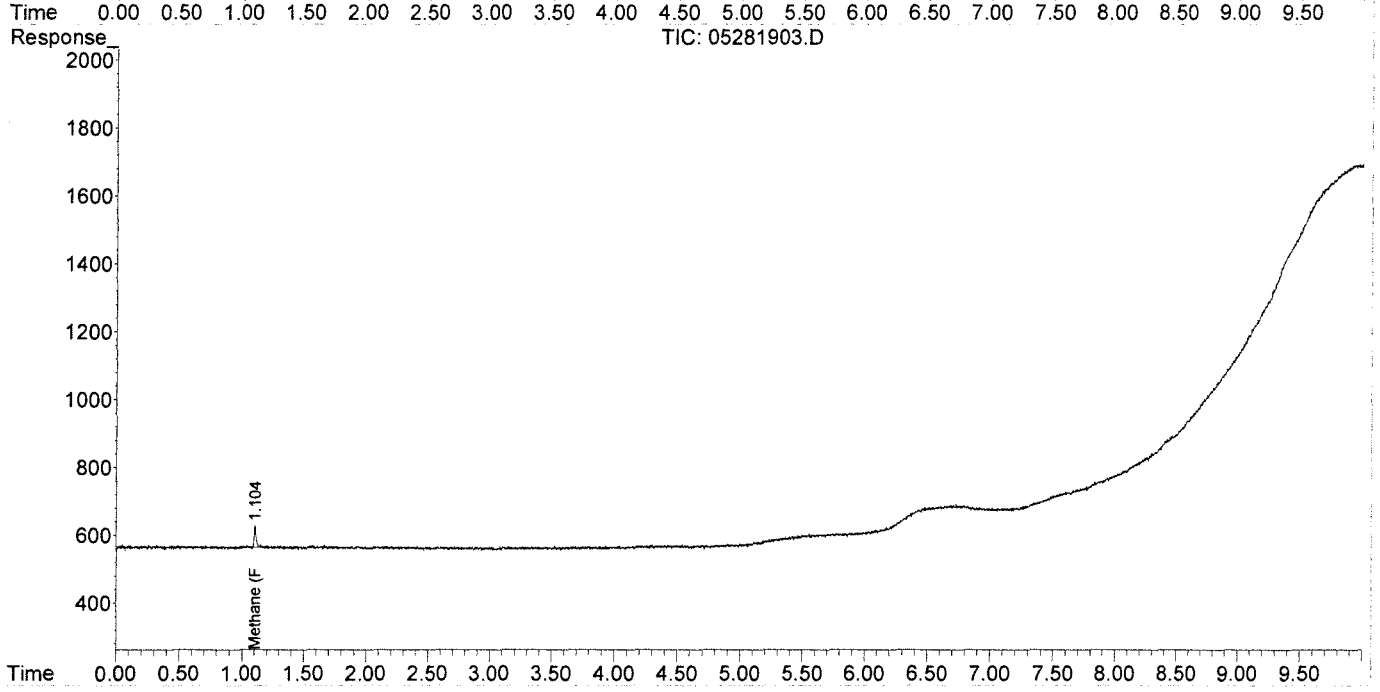
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:21:43
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:49:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

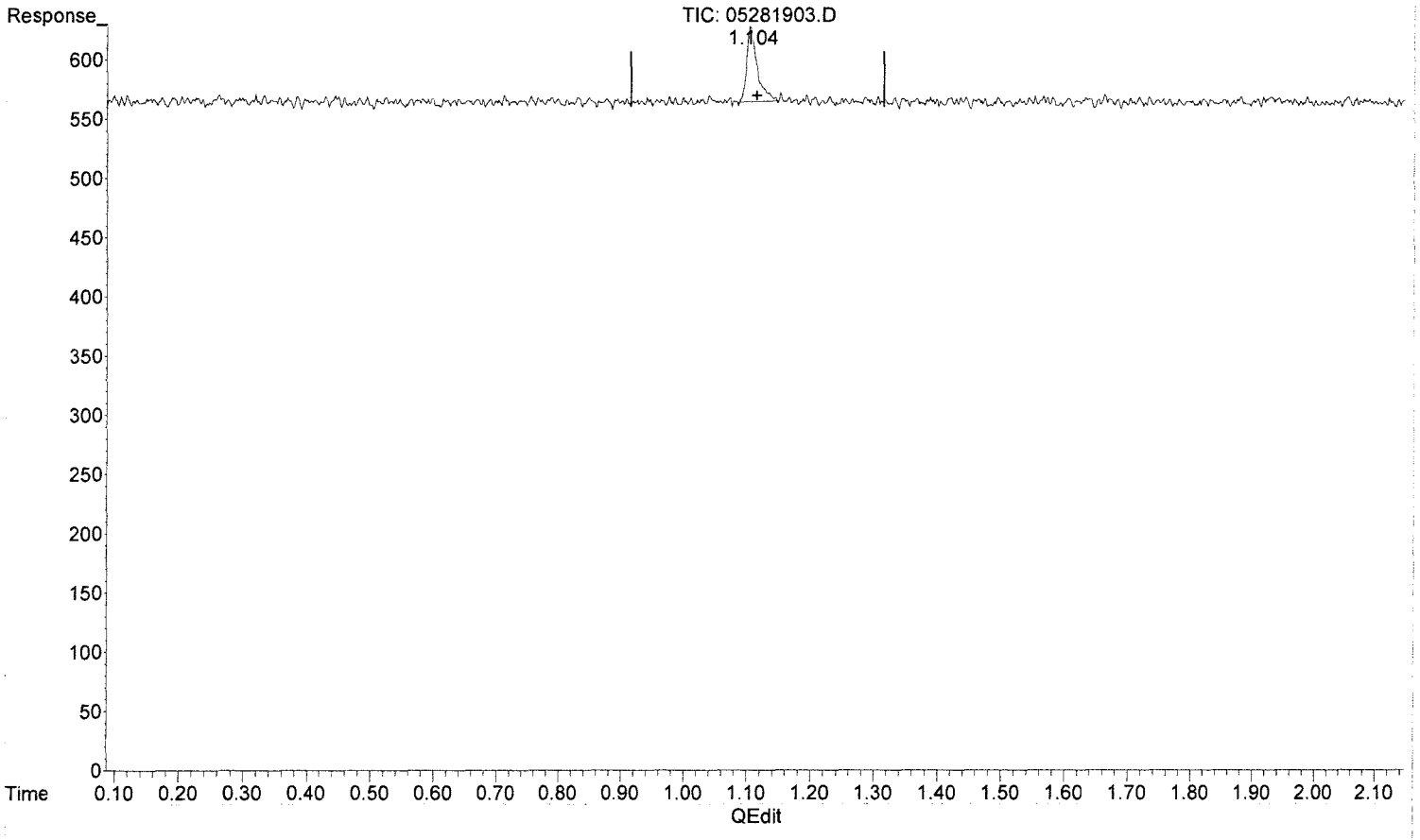




Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 11:21:43
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:49:24 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.104min 0.080 ppm m

response 725

ME 5/28/19

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:19:30
Operator : WH
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 13:37:58 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

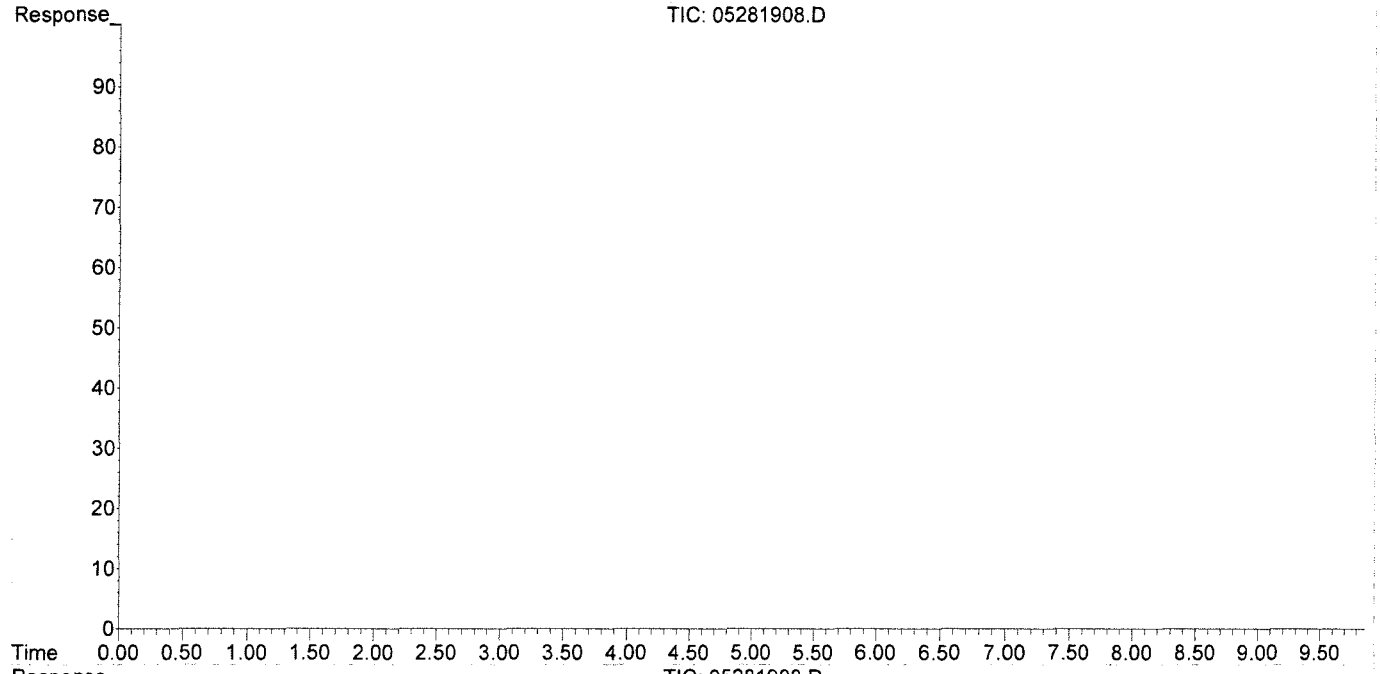
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	11888	1.311	ppm
7)	Ethylene	1.671	19086	1.141	ppm
8)	Ethane	1.934	21088	1.244	ppm
9)	Propylene	4.312	26900	1.148	ppm
10)	Propane	4.435	32060	1.289	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.650	43149	1.621	ppm
13)	n-Butane	6.650	43149	1.621	ppm

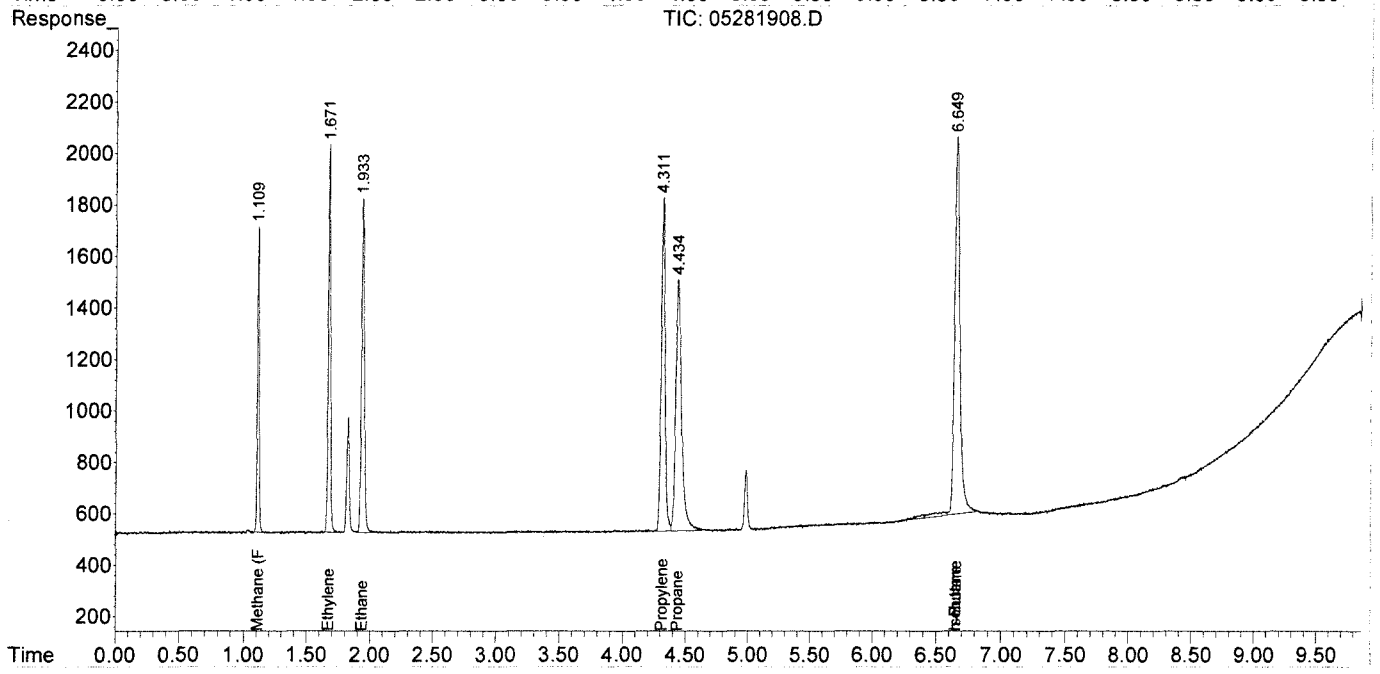
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:19:30
Operator : WH
Sample : lcs fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 13:37:58 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:36:35
Operator : WH
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 13:53:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

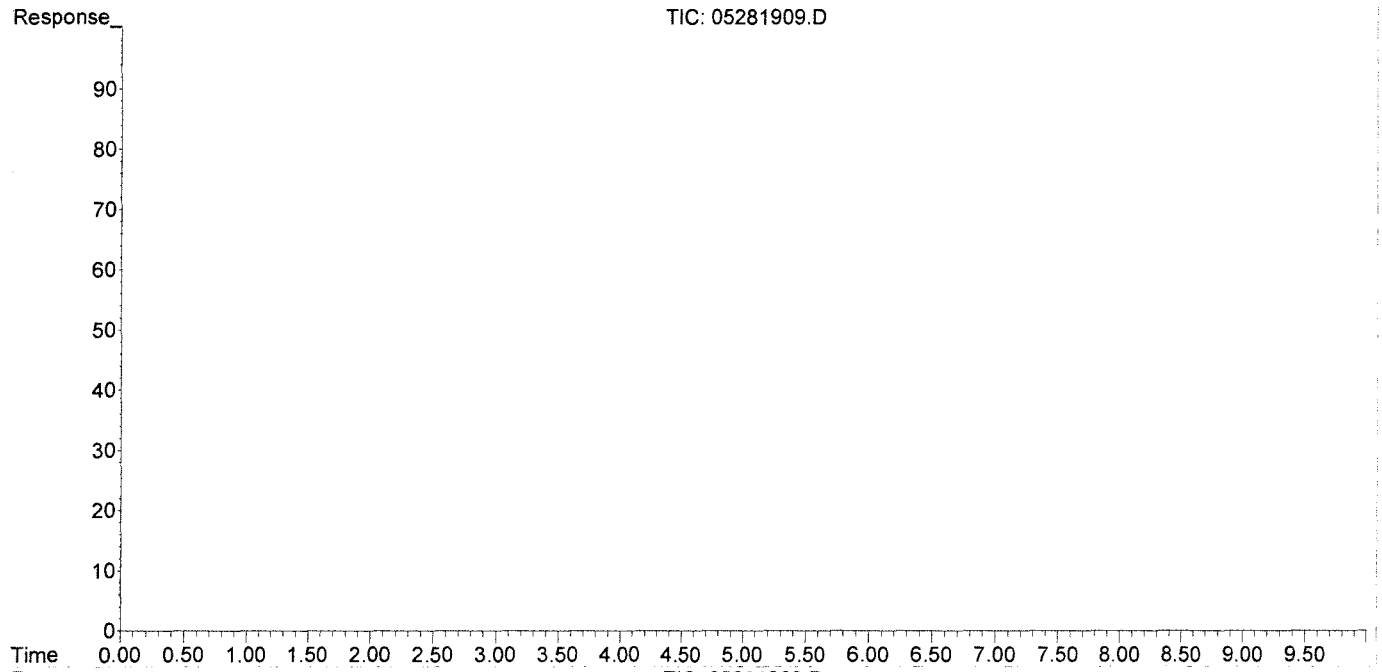
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.111	11951	1.318	ppm
7)	Ethylene	1.673	19489	1.165	ppm
8)	Ethane	1.935	21688	1.279	ppm
9)	Propylene	4.311	27528	1.175	ppm
10)	Propane	4.434	32790	1.318	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.648	43062	1.618	ppm
13)	n-Butane	6.648	43062	1.618	ppm

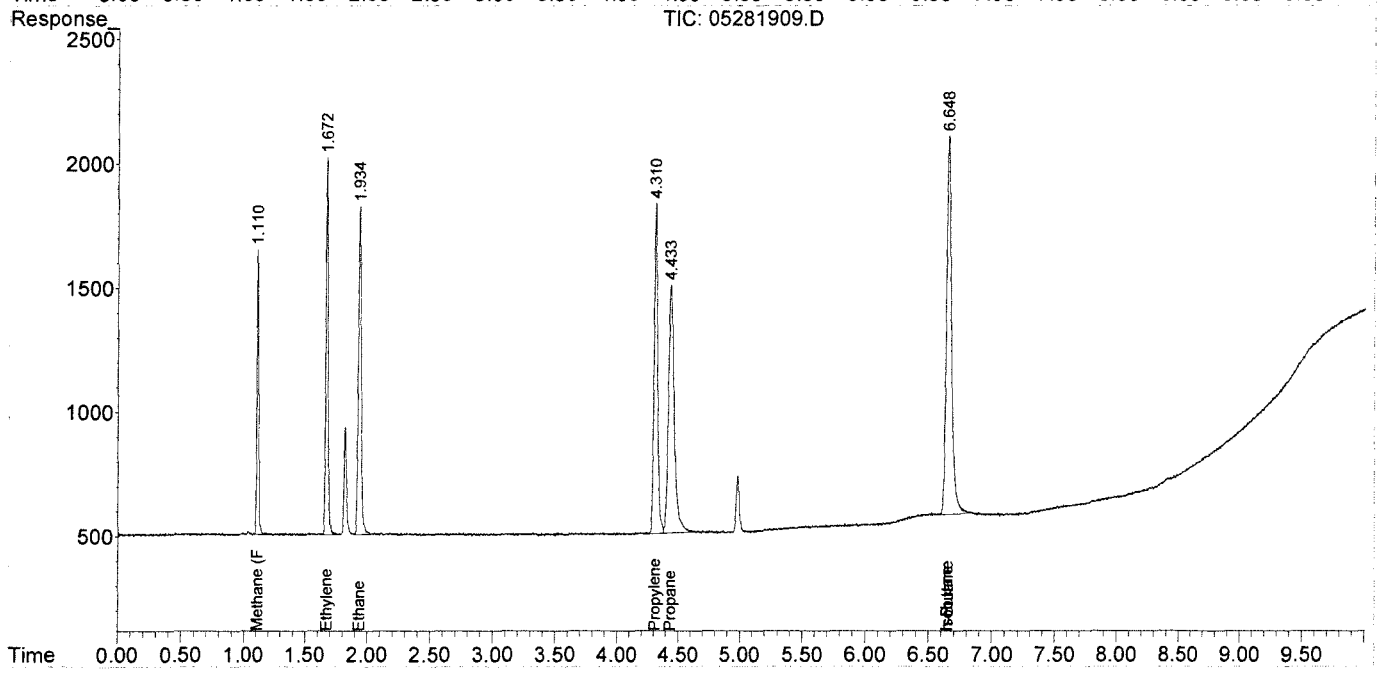
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 13:36:35
Operator : WH
Sample : lcsd fid 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 13:53:53 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

dit Compounds -- Compound #4 -- Carbon dioxide

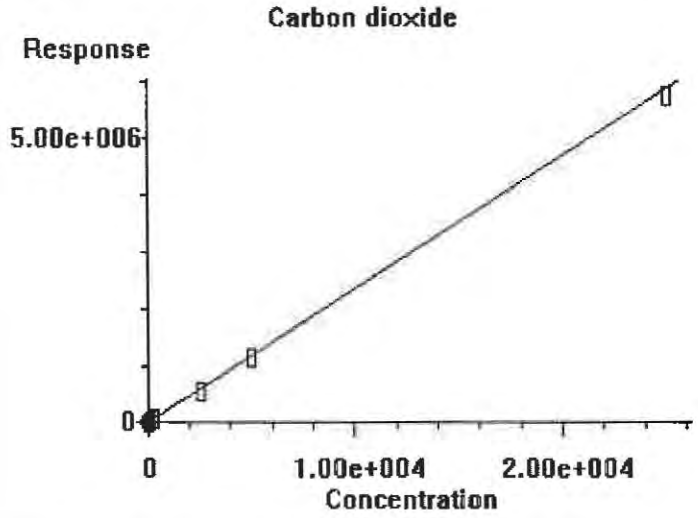
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

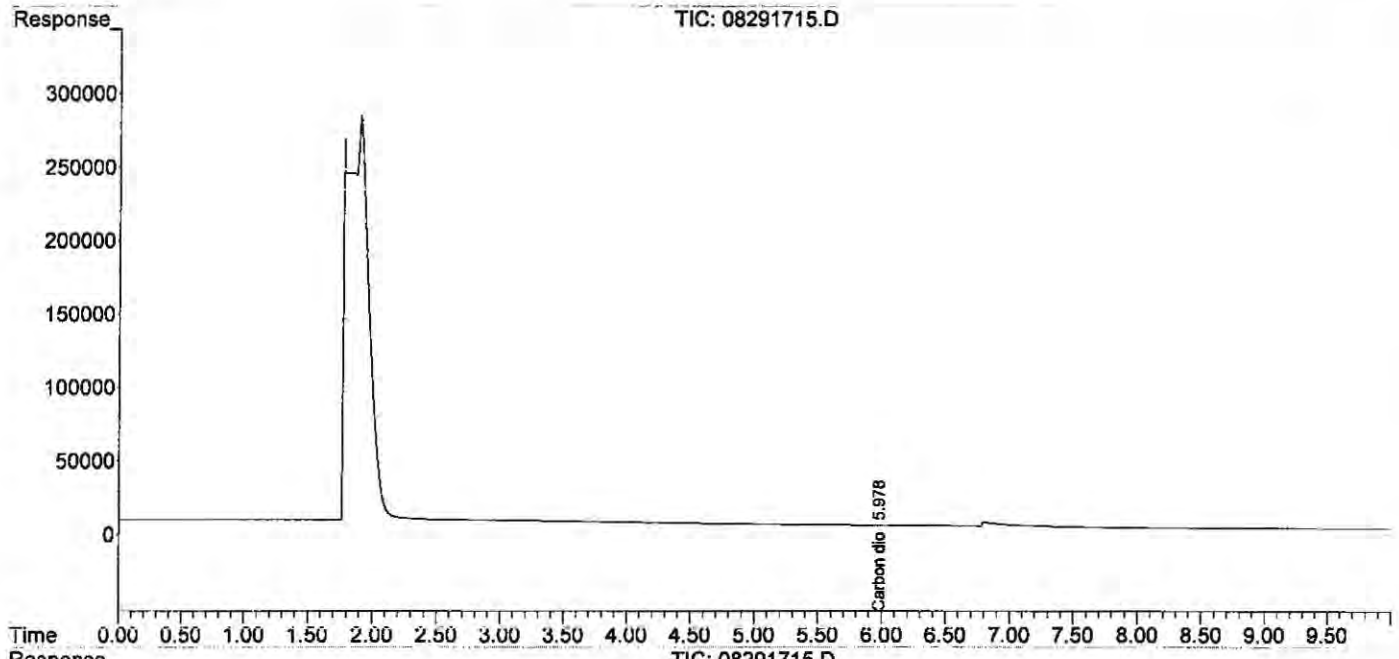
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

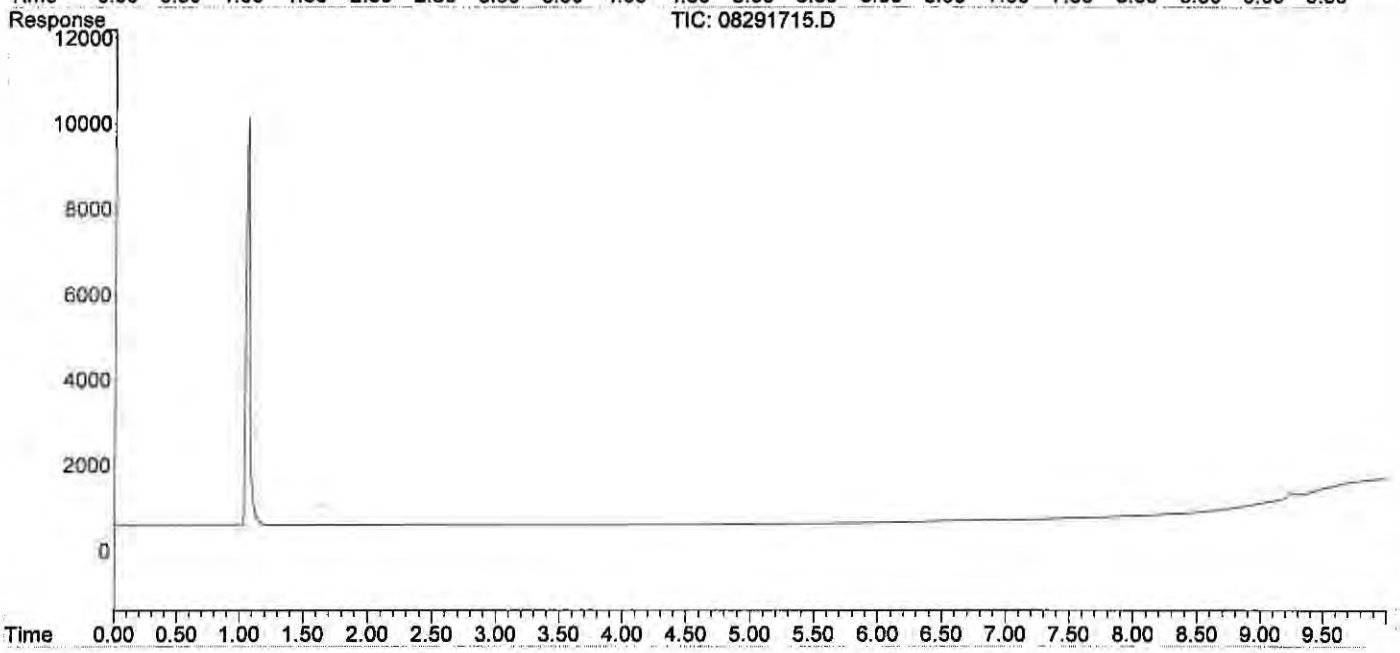
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





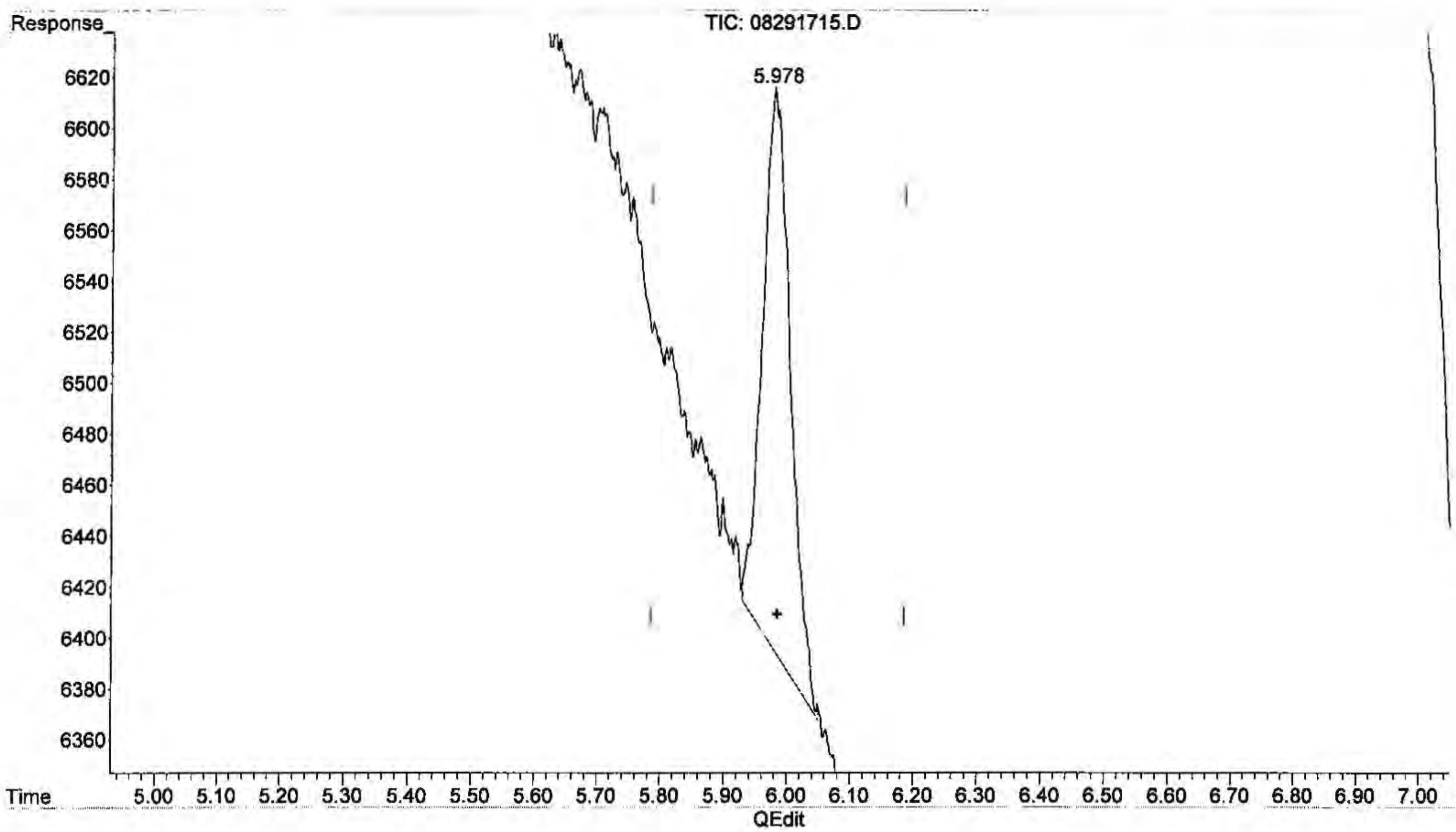
Quantitation Report (Qedit)

00956658

```
Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On    : 29-Aug-2017, 14:07
Operator  : MC
Sample    : 25ppm s32-08291701 0.25ml
Misc      :
ALS Vial  : 1   Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title  : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj.      :
Signal #1 Phase :                  Signal #2 Phase:
Signal #1 Info  :                  Signal #2 Info :
```



(4) Carbon dioxide
5.978min 27.870 ppm m
response 6794

(+) = Expected Retention Time
RS082817_CO2.M Wed Aug 30 13:17:47 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

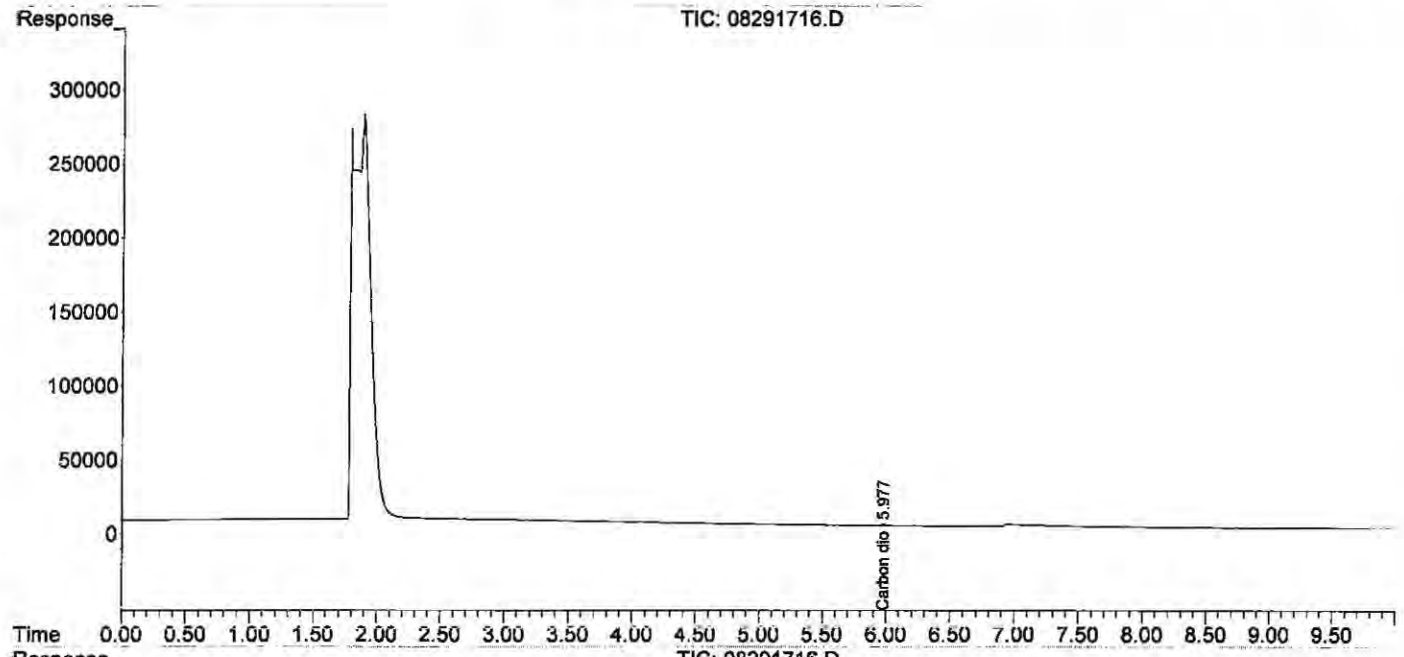
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

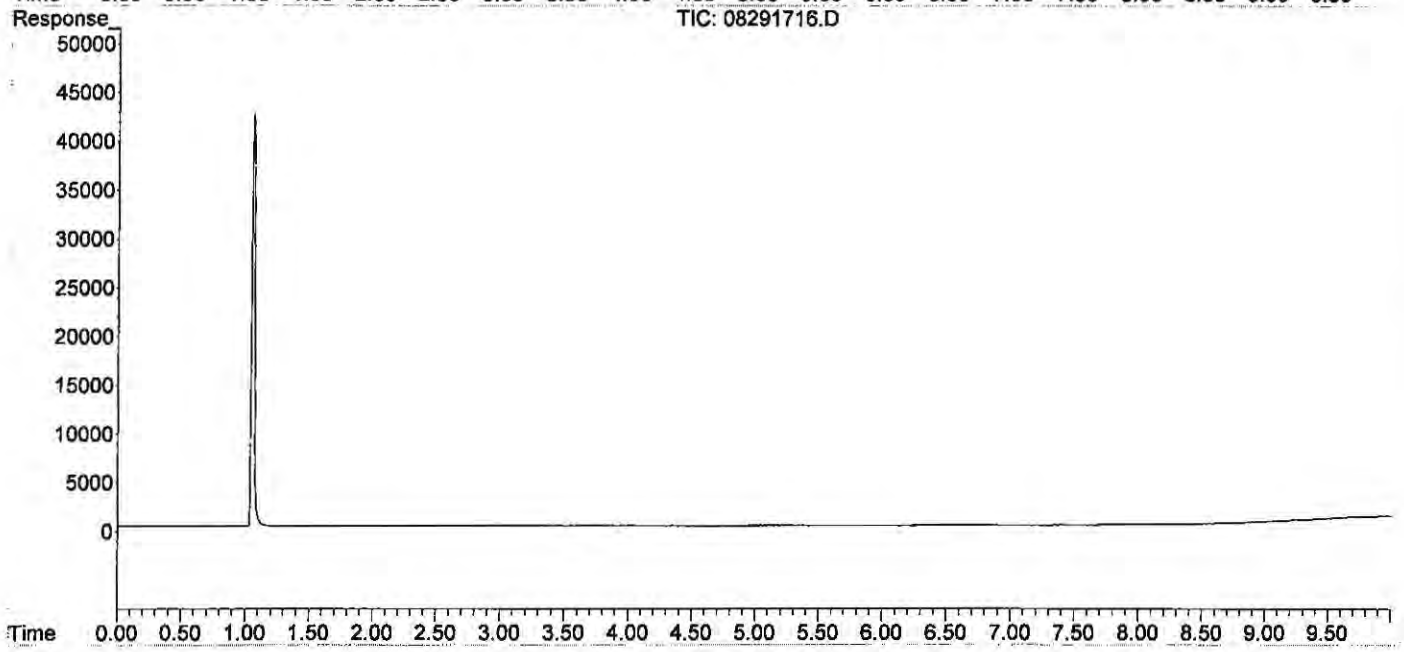
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

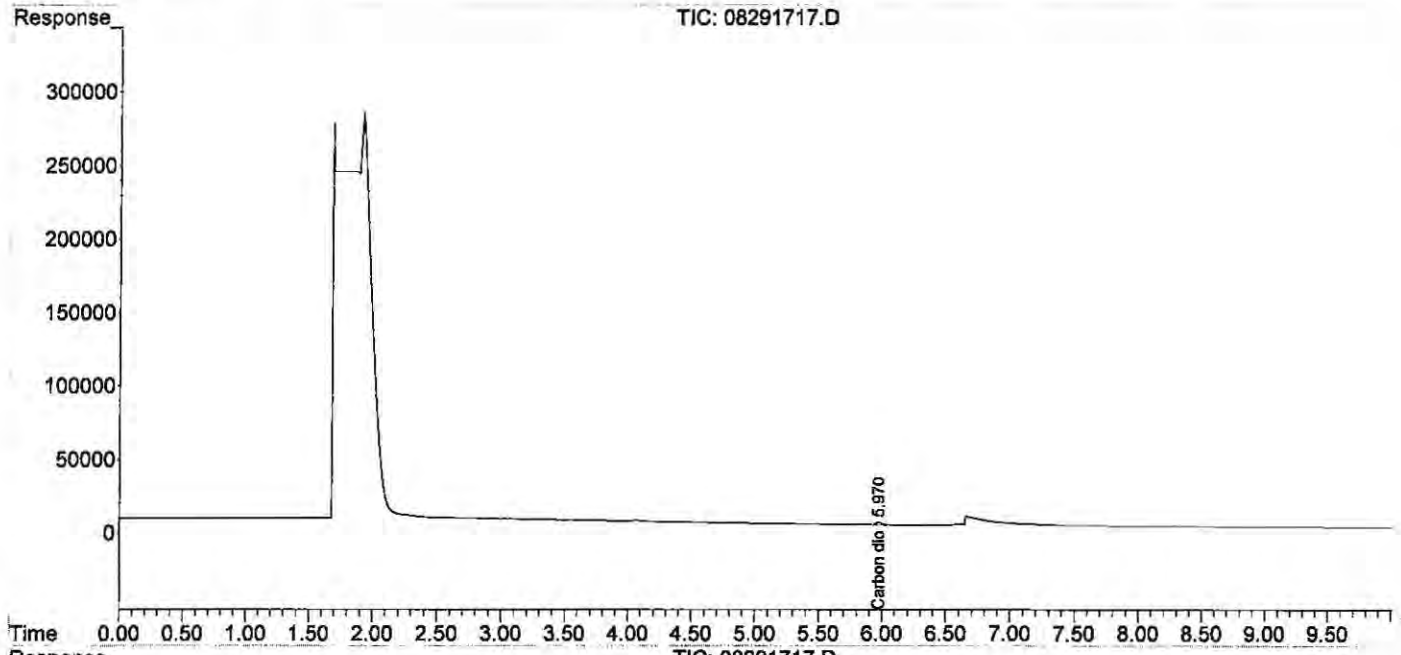
(f)=RT Delta > 1/2 Window (m)=manual int.

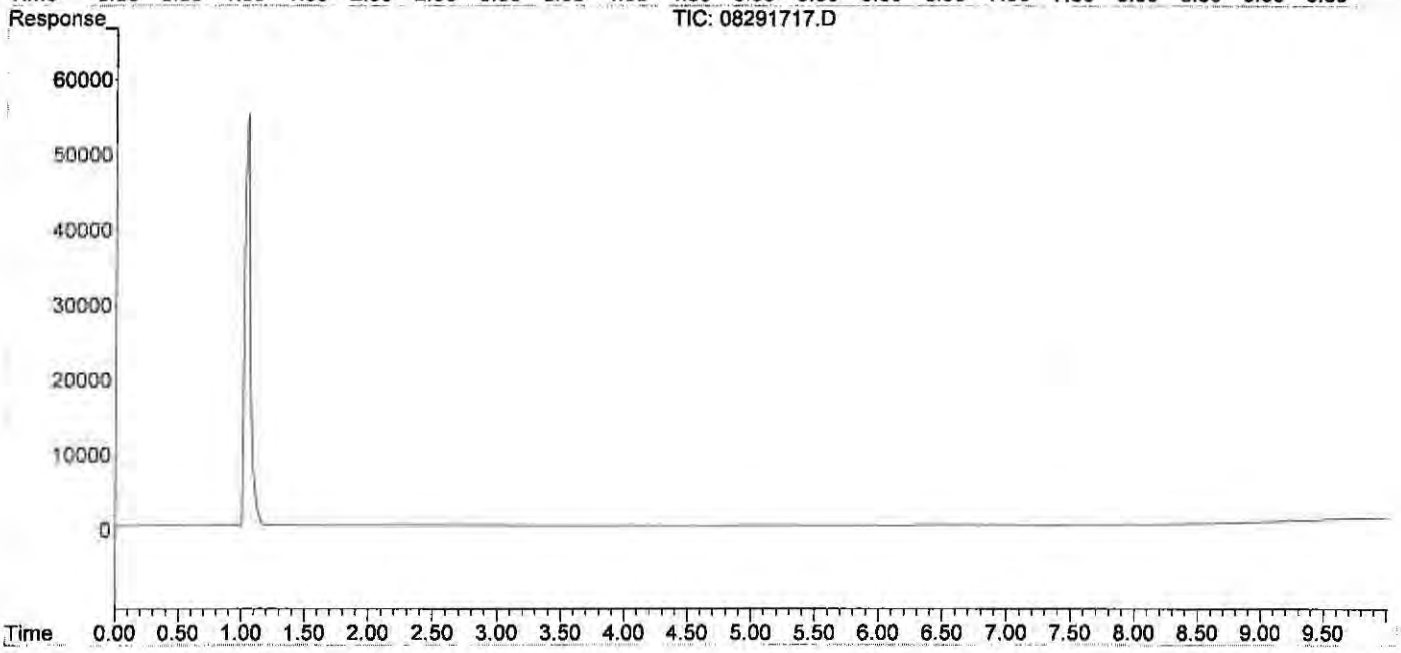
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



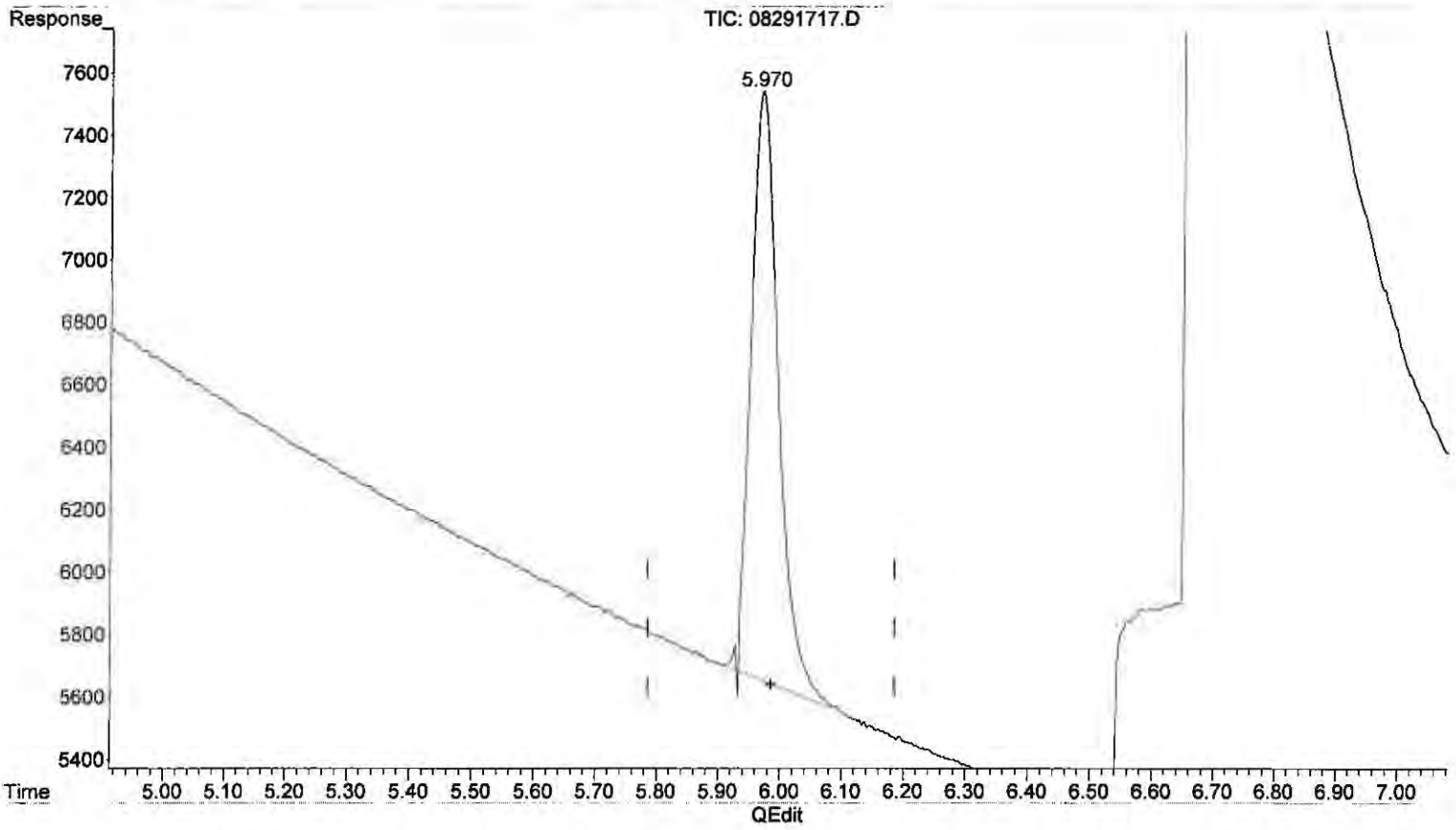


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

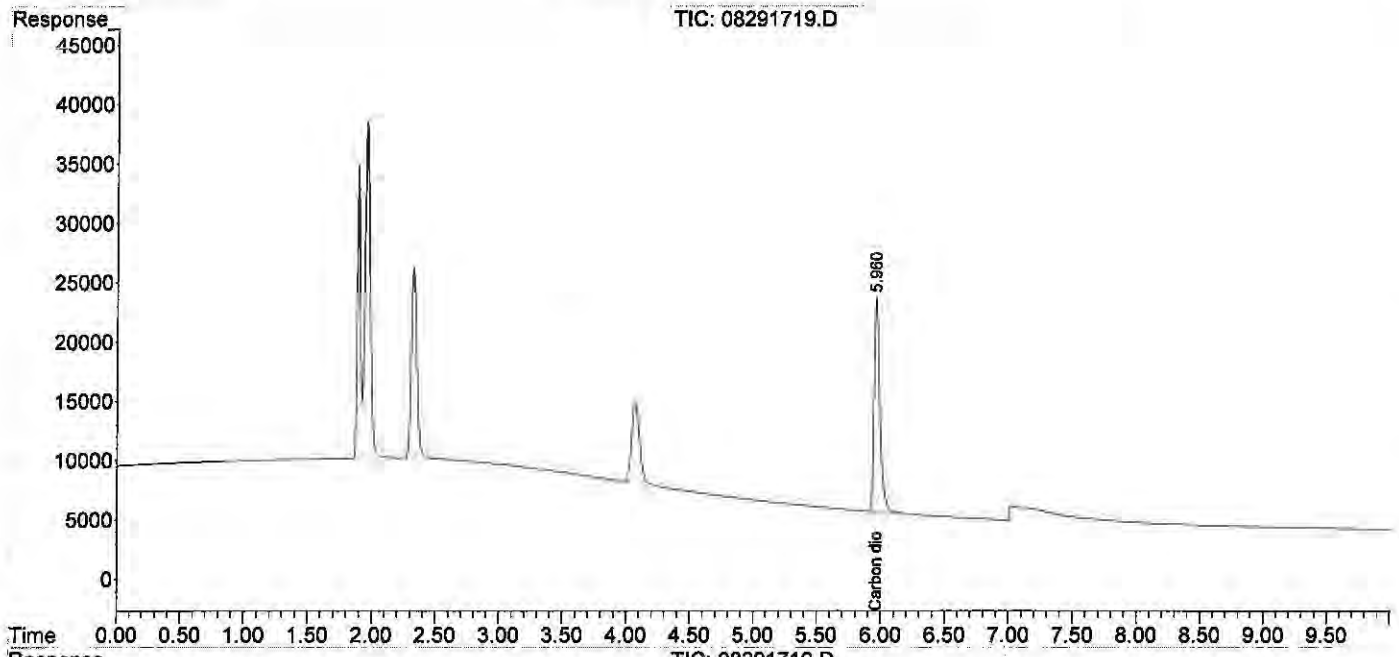
(f)=RT Delta > 1/2 Window (m)=manual int.

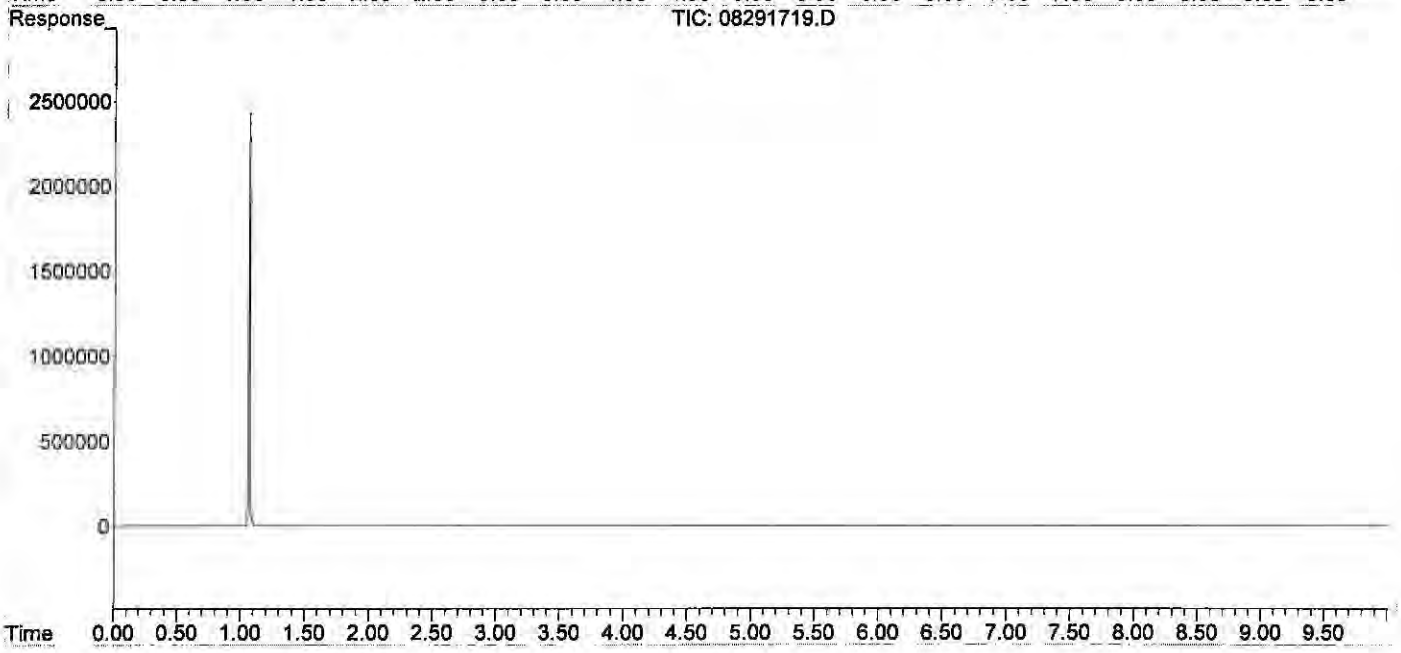
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

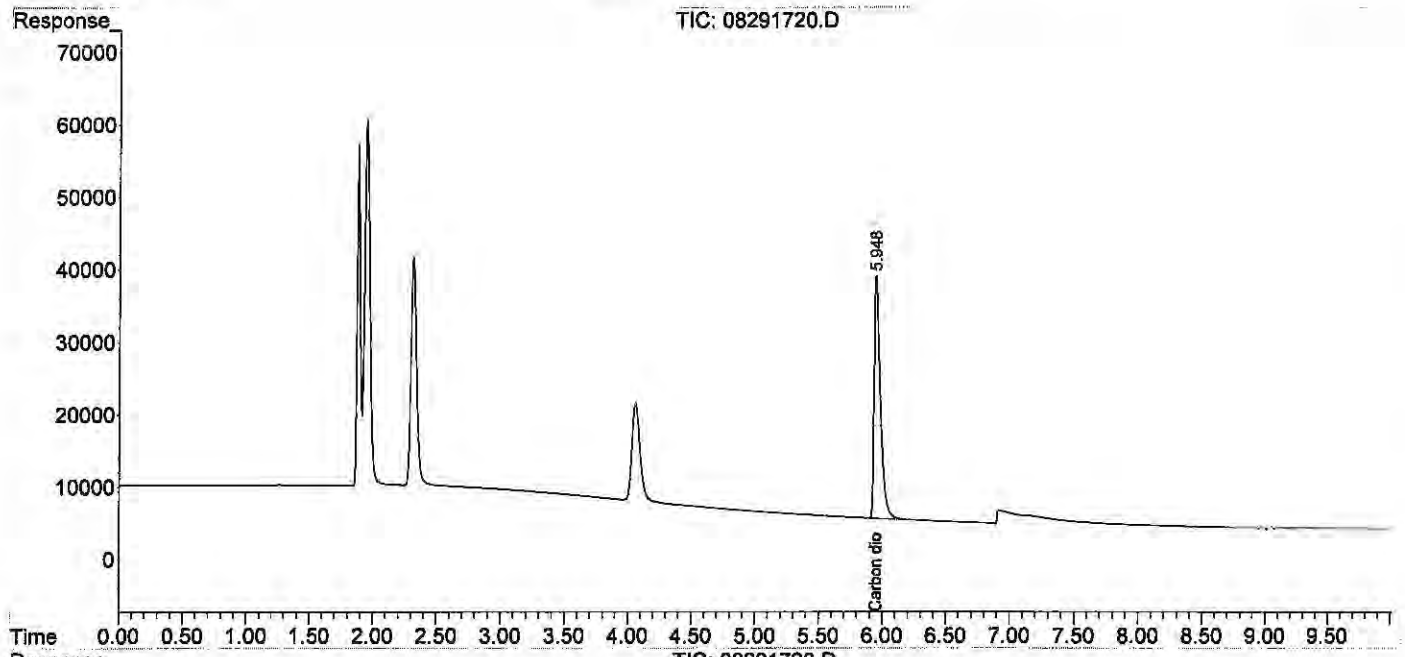
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

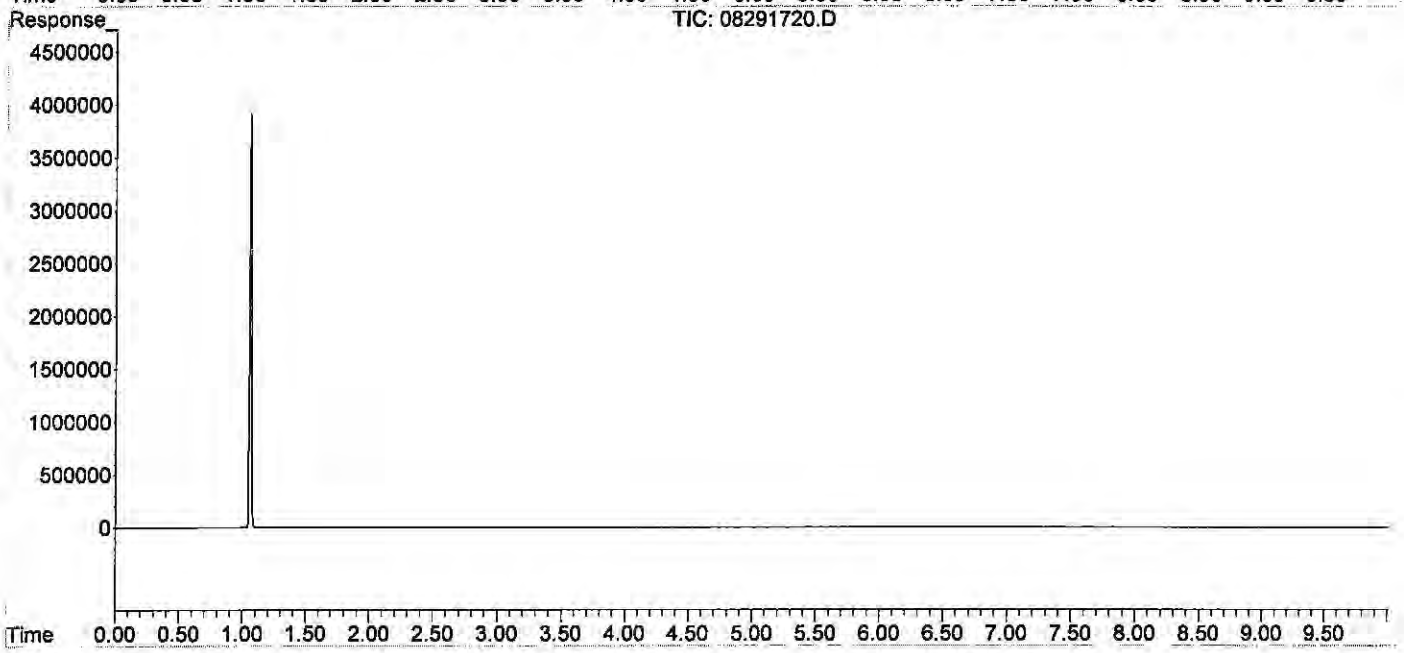
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

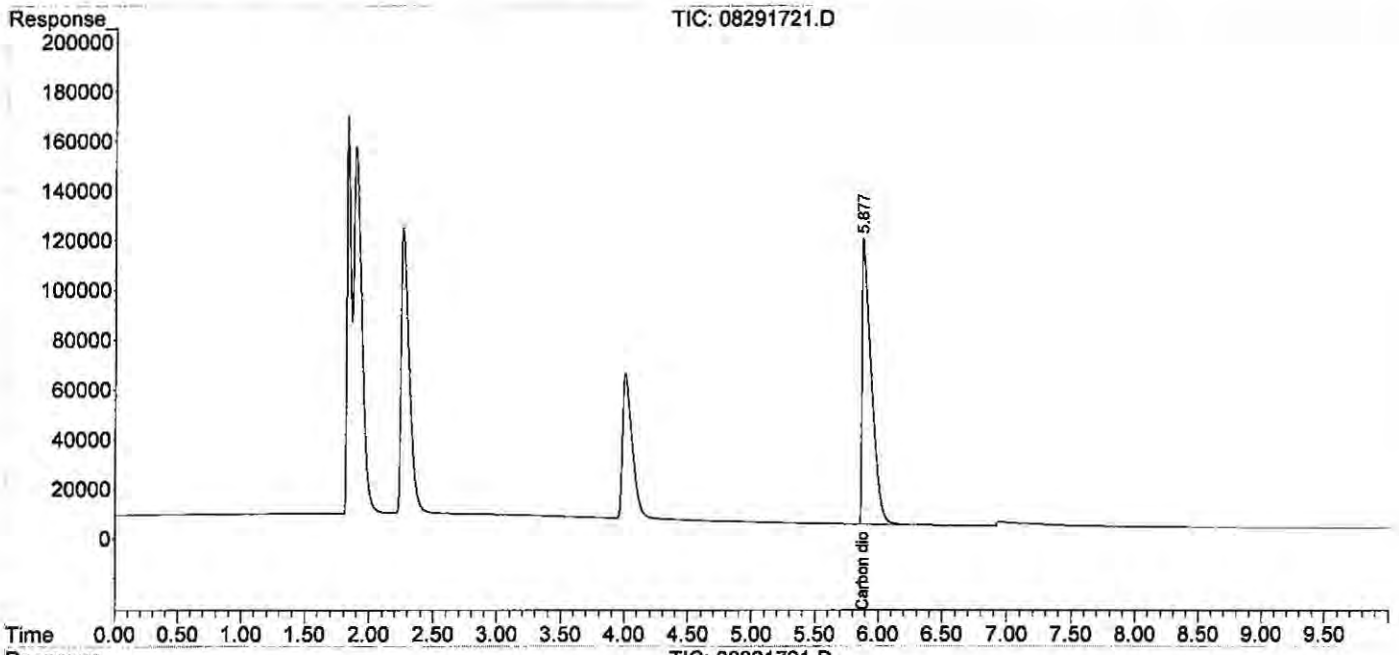
(f)=RT Delta > 1/2 Window (m)=manual int.

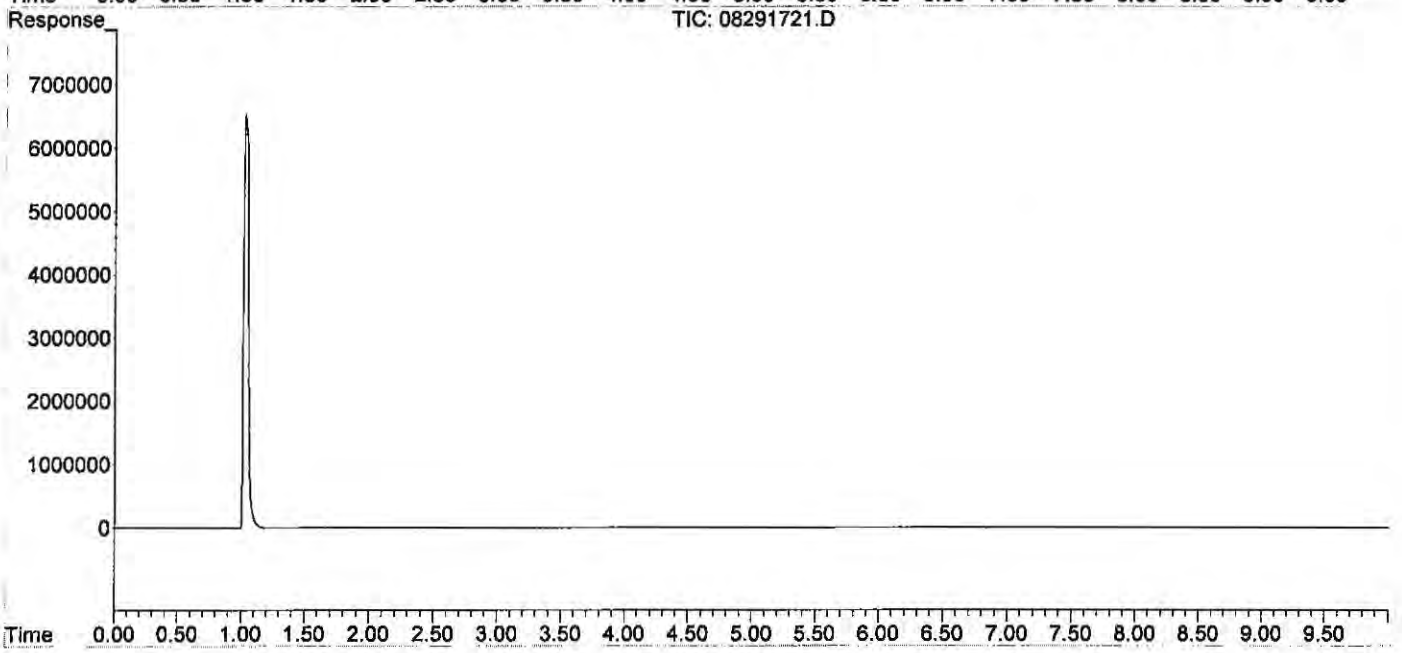
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.886	536422	0.113	ppm	actual %D
2)	Carbon monoxide	1.886	536422	N.D.	ppm	
3)	Methane (TCD)	4.059f	626500	66244.710	ppm	
4)	Carbon dioxide	5.947	1163775	4957.948	ppm	5000 99.16
6)	Methane (FID)	1.062	37290742	3947.023	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

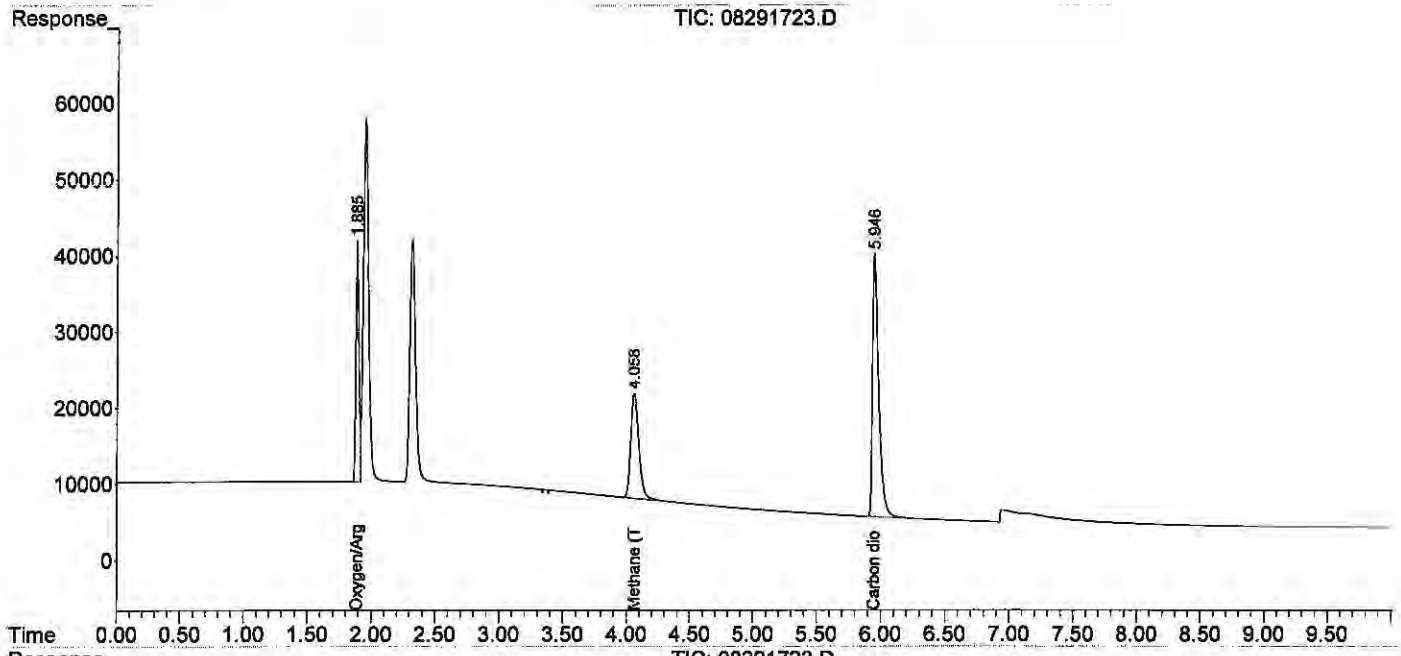
(f)=RT Delta > 1/2 Window (m)=manual int.

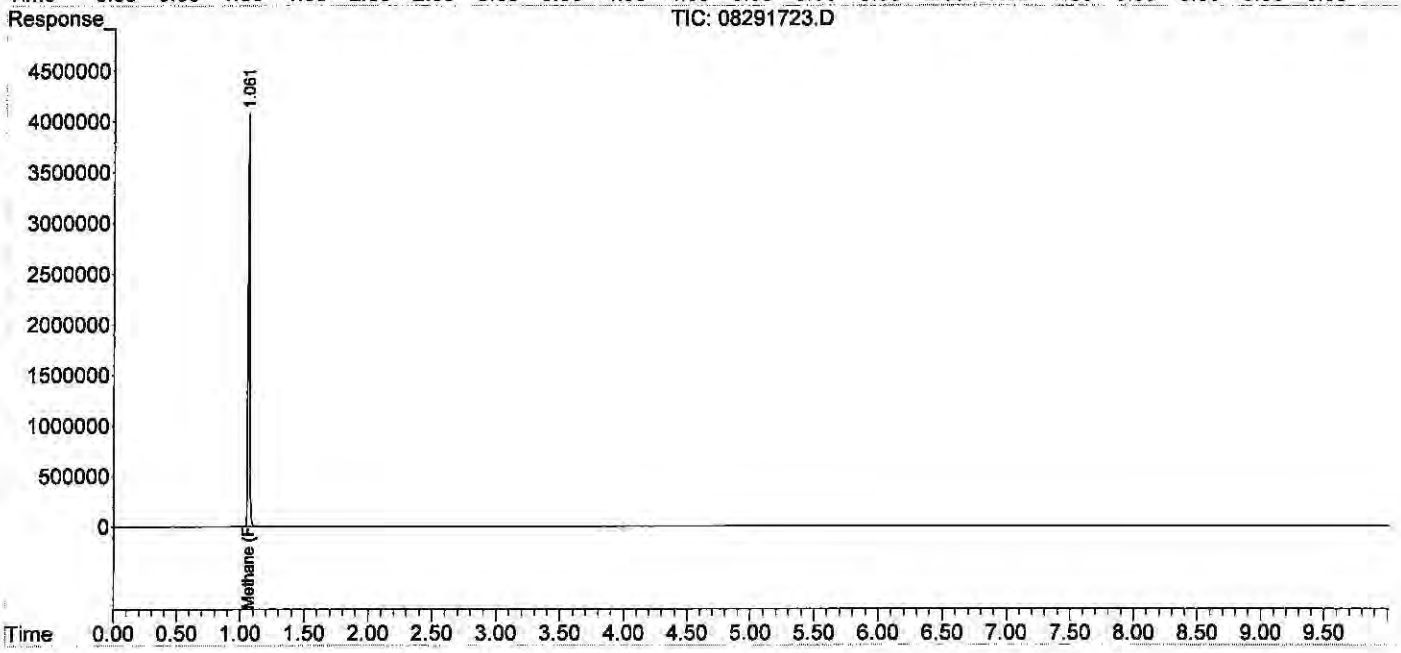
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1902951
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 05/28/19
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-05221901	0.100	93.832	100.036	99.060
ACTUAL		101.50	100.90	101.40
%Difference		7.6%	0.9%	2.3%
mcs 0.1ml	0.100	0.080	0.000	0.000
rb 0.1ml	0.100	0.000	0.000	0.000
lcs fid 0.1ml	0.100	1.311	1.141	1.244
lcsd fid 0.1ml	0.100	1.318	1.165	1.279
P1902951-001 0.1ml	0.100	0.153	0.000	0.000
P1902951-002 0.1ml	0.100	0.122	0.000	0.000
P1902951-003 0.1ml	0.100	0.155	0.000	0.000
P1902951-004 0.1ml	0.100	0.103	0.000	0.000

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	0.800	0.000	0.000
lcs fid 0.1ml	13.110	11.410	12.440
lcsd fid 0.1ml	13.180	11.650	12.790
P1902951-001 0.1ml	1.530	0.000	0.000
P1902951-002 0.1ml	1.220	0.000	0.000
P1902951-003 0.1ml	1.550	0.000	0.000
P1902951-004 0.1ml	1.030	0.000	0.000

std s32-05221901	89.426	95.448	94.840
ACTUAL	101.50	100.90	101.40
%Difference	11.9%	5.4%	6.5%

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 10:19:27
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:02:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

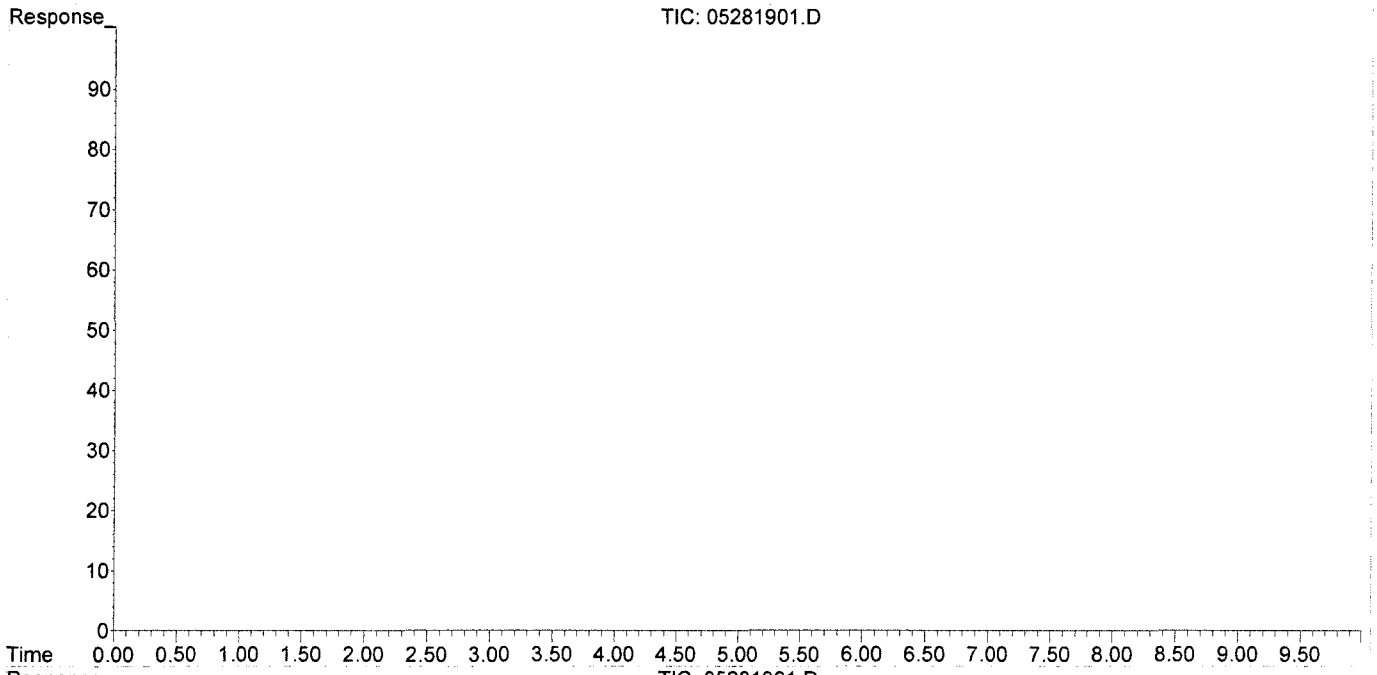
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.114	851117	93.832	ppm
7)	Ethylene	1.677	1674030	100.036	ppm
8)	Ethane	1.940	1679084	99.060	ppm
9)	Propylene	4.314	2465324	105.214	ppm
10)	Propane	4.438	2524970	101.485	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

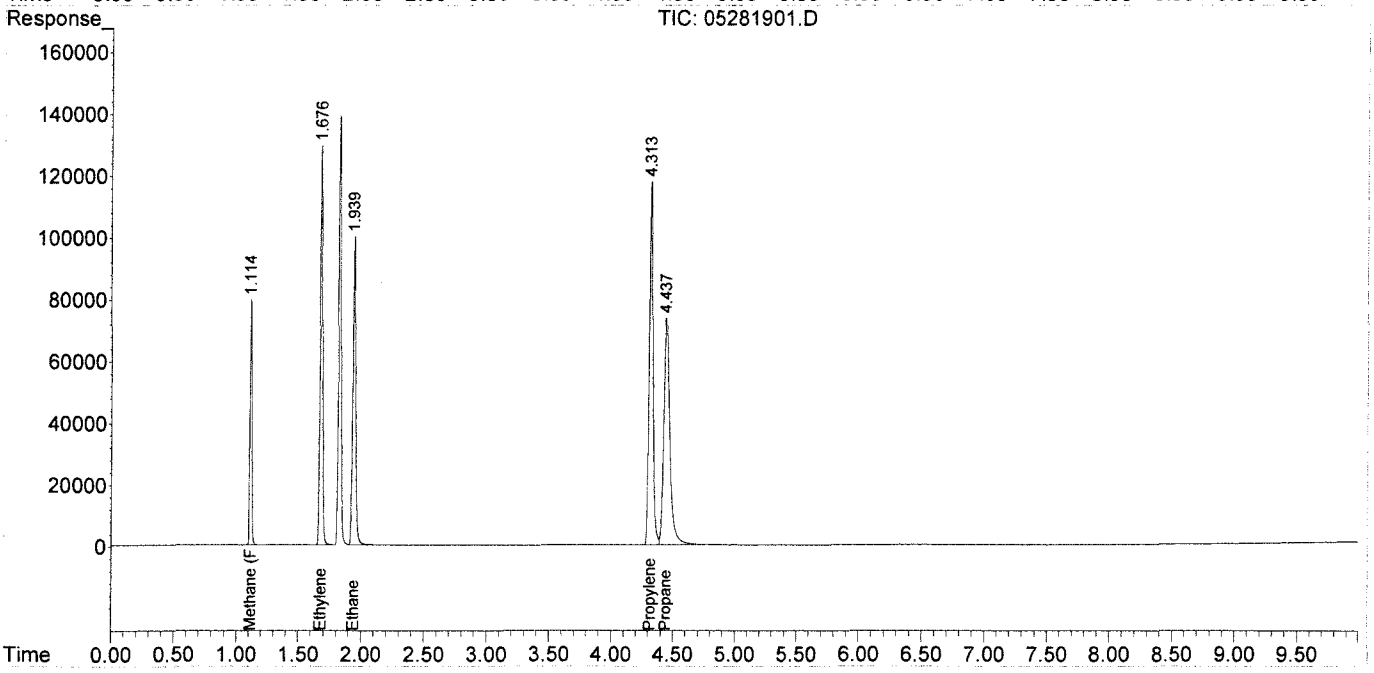
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 10:19:27
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 11:02:09 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 15:38:06
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 15:59:32 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

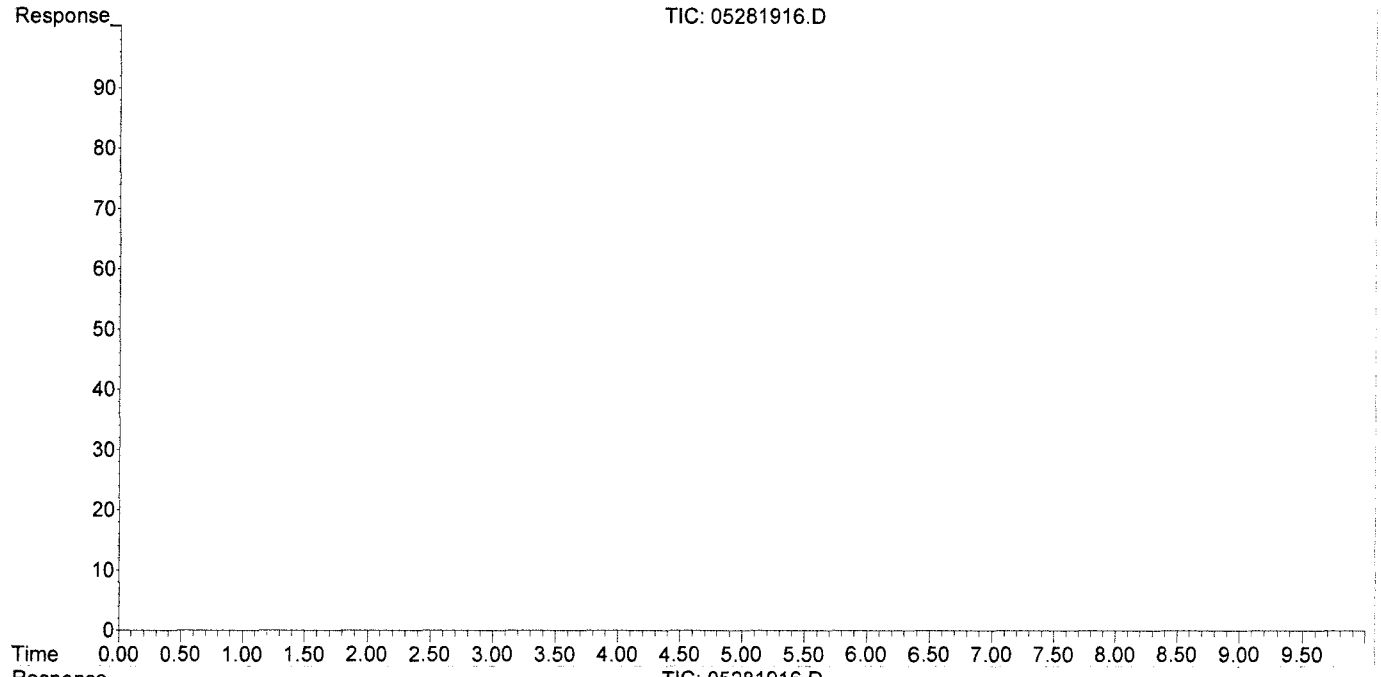
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	811155	89.426	ppm
7)	Ethylene	1.667	1597260	95.448	ppm
8)	Ethane	1.928	1607550	94.840	ppm
9)	Propylene	4.301	2352132	100.383	ppm
10)	Propane	4.425	2417670	97.172	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

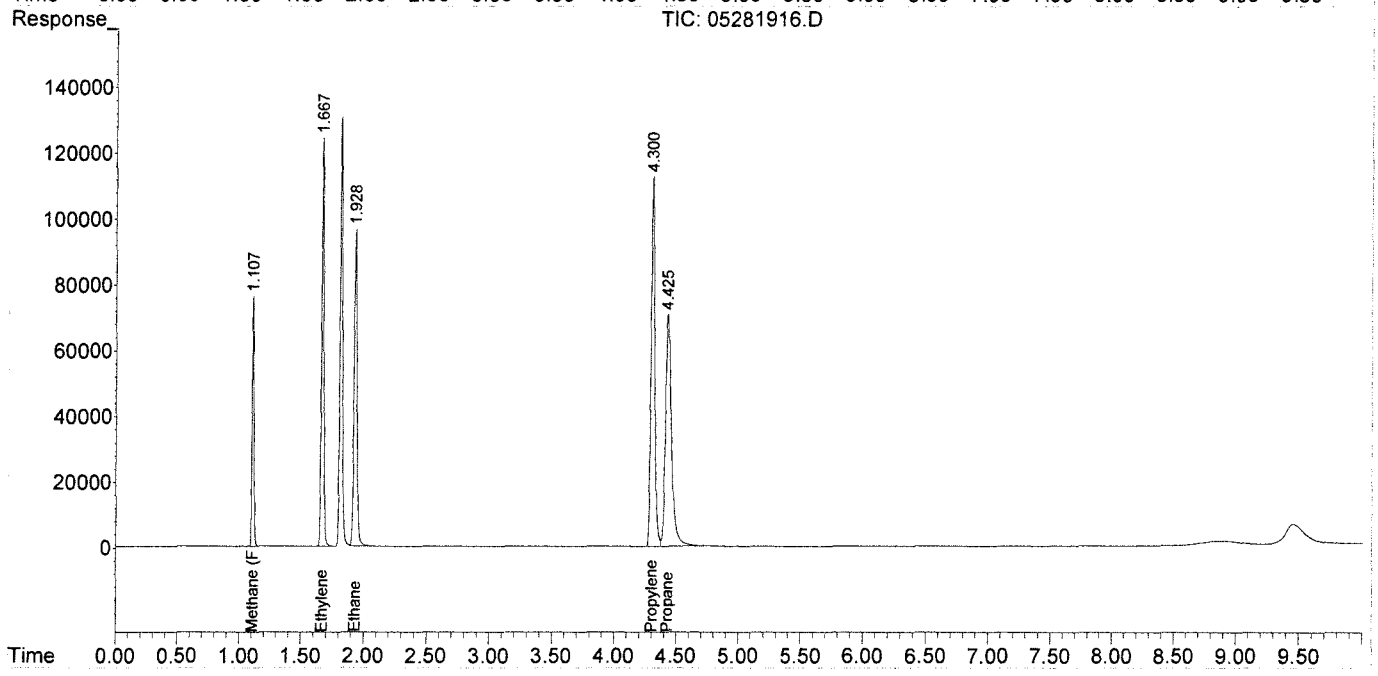
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_05\28\
Data File : 05281916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-May-2019, 15:38:06
Operator : WH
Sample : std s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 28 15:59:32 2019
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2019_05\28\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	28-May-19, 10:19:27	05281901.D	std s32-05221901		WH	RSKBOTH.M	pass
2	28-May-19, 11:03:07	05281902.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	28-May-19, 11:21:43	05281903.D	mcs 0.1ml		WH	RSKBOTH.M	pass
4	28-May-19, 11:54:17	05281904.D	P1902951-001 0.1ml		WH	RSKBOTH.M	
5	28-May-19, 12:07:09	05281905.D	P1902951-002 0.1ml		WH	RSKBOTH.M	
6	28-May-19, 12:27:20	05281906.D	P1902951-003 0.1ml		WH	RSKBOTH.M	
7	28-May-19, 13:03:55	05281907.D	P1902951-004 0.1ml		WH	RSKBOTH.M	
8	28-May-19, 13:19:30	05281908.D	lcs fid 0.1ml		WH	RSKBOTH.M	pass
9	28-May-19, 13:36:35	05281909.D	lcsd fid 0.1ml		WH	RSKBOTH.M	pass
10	28-May-19, 13:55:09	05281910.D	P1902949-001 0.1ml		WH	RSKBOTH.M	
11	28-May-19, 14:09:08	05281911.D	P1902949-002 0.1ml		WH	RSKBOTH.M	
12	28-May-19, 14:22:03	05281912.D	P1902949-003 0.1ml		WH	RSKBOTH.M	
13	28-May-19, 14:37:52	05281913.D	J1902773-005 0.1		WH	RSKBOTH.M	
14	28-May-19, 15:00:54	05281914.D	J1902773-006 0.1		WH	RSKBOTH.M	
15	28-May-19, 15:18:15	05281915.D	J1902792-010 0.1ml		WH	RSKBOTH.M	
16	28-May-19, 15:38:06	05281916.D	std s32-05221901		WH	RSKBOTH.M	pass

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

May 29, 2019

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

Work Order: **HS19051518**

Laboratory Results for: **LHAAP-37**

Dear Susan,

ALS Environmental received 11 sample(s) on May 24, 2019 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: 29-may-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Work Order: HS19051518

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19051518-01	35BWW20-190522	Water		22-May-2019 08:10	24-May-2019 09:00	☐
HS19051518-02	35BWW20-190522-FD	Water		22-May-2019 08:10	24-May-2019 09:00	☐
HS19051518-03	LHSMW58-190522	Water		22-May-2019 09:00	24-May-2019 09:00	☐
HS19051518-04	35BWW24-190522	Water		22-May-2019 09:55	24-May-2019 09:00	☐
HS19051518-05	35BWW25-190522	Water		22-May-2019 10:45	24-May-2019 09:00	☐
HS19051518-06	35BWW07-190522	Water		22-May-2019 11:35	24-May-2019 09:00	☐
HS19051518-07	35BWW13-190522	Water		22-May-2019 12:25	24-May-2019 09:00	☐
HS19051518-08	35BWW15-190522	Water		22-May-2019 13:10	24-May-2019 09:00	☐
HS19051518-09	35BWW17-190523	Water		22-May-2019 08:05	24-May-2019 09:00	☐
HS19051518-10	35BWW16-190523	Water		23-May-2019 09:00	24-May-2019 09:00	☐
HS19051518-11	Trip Blank-C&G-040119-154	Water		24-May-2019 08:15	24-May-2019 09:00	☐

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-37
Work Order: HS19051518

GCMS Volatiles by Method SW8260

Batch ID: R339360

Sample ID: CCV

- 2-Butanone exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: LHSMW58-190522 (HS19051518-03MS)

- 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.

Sample ID: 35BWW17-190523 (HS19051518-09MS)

- 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.

Sample ID: LHSMW58-190522 (HS19051518-03MSD)

- 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.

- The RPD between the MS and MSD was outside of the control limit

Sample ID: 35BWW17-190523 (HS19051518-09MSD)

- 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.

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW20-190522 Lab ID:HS19051518-01
Collection Date: 22-May-2019 08:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 15:44
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.6**		**0.50**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 15:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 15:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 15:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 15:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 15:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 15:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 15:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 15:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 15:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 15:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 15:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 15:44
Acetone	**9.7**		**0.40**	**1.0**	**2.0**	**UG/L**	1	28-May-2019 15:44
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 15:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 15:44
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 15:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 15:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 15:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW20-190522 Lab ID:HS19051518-01
Collection Date: 22-May-2019 08:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 15:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 15:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 15:44
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 15:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 15:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
Tetrachloroethene	**12**		**0.30**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 15:44
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
Trichloroethene	**2.8**		**0.20**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 15:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 15:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 15:44
Surr: 1,2-Dichloroethane-d4	*86.8*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 15:44*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 15:44*
Surr: Dibromofluoromethane	*89.7*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 15:44*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 15:44*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW20-190522-FD Lab ID:HS19051518-02
Collection Date: 22-May-2019 08:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:08
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.6**		**0.50**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 16:08
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:08
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:08
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:08
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:08
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:08
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:08
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:08
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 16:08
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 16:08
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:08
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 16:08
Acetone	**4.7**		**0.40**	**1.0**	**2.0**	**UG/L**	1	28-May-2019 16:08
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:08
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:08
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:08
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 16:08
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:08
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW20-190522-FD Lab ID:HS19051518-02
Collection Date: 22-May-2019 08:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 16:08
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 16:08
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 16:08
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 16:08
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:08
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
Tetrachloroethene	**12**		**0.30**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 16:08
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
Trichloroethene	**2.9**		**0.20**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 16:08
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:08
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:08
Surr: 1,2-Dichloroethane-d4	*87.2*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 16:08*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 16:08*
Surr: Dibromofluoromethane	*90.5*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 16:08*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 16:08*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: LHSMW58-190522 Lab ID:HS19051518-03
Collection Date: 22-May-2019 09:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:32
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:32
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:32
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:32
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:32
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:32
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:32
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:32
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:32
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 16:32
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 16:32
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:32
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 16:32
Acetone	**9.7**		**0.40**	**1.0**	**2.0**	**UG/L**	1	28-May-2019 16:32
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:32
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:32
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:32
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 16:32
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:32
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: LHSMW58-190522 Lab ID:HS19051518-03
Collection Date: 22-May-2019 09:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 16:32
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 16:32
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 16:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 16:32
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:32
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
Tetrachloroethene	**3.6**		**0.30**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 16:32
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:32
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:32
Surr: 1,2-Dichloroethane-d4	*86.9*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 16:32*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 16:32*
Surr: Dibromofluoromethane	*90.4*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 16:32*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 16:32*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW24-190522 Lab ID:HS19051518-04
Collection Date: 22-May-2019 09:55 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:56
1,1,2-Trichlor-1,2,2-trifluoroethane	**4.0**		**0.50**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 16:56
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:56
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:56
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:56
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:56
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:56
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:56
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:56
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 16:56
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 16:56
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:56
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 16:56
Acetone	**6.7**		**0.40**	**1.0**	**2.0**	**UG/L**	1	28-May-2019 16:56
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:56
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:56
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 16:56
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 16:56
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW24-190522 Lab ID:HS19051518-04
Collection Date: 22-May-2019 09:55 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 16:56
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 16:56
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 16:56
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 16:56
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 16:56
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
Trichloroethene	**1.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 16:56
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 16:56
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 16:56
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 16:56*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 16:56*
Surr: Dibromofluoromethane	*91.4*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 16:56*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 16:56*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW25-190522 Lab ID:HS19051518-05
Collection Date: 22-May-2019 10:45 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:20
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:20
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:20
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:20
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:20
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:20
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:20
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 17:20
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 17:20
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:20
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 17:20
Acetone	**8.8**		**0.40**	**1.0**	**2.0**	**UG/L**	1	28-May-2019 17:20
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:20
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 17:20
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:20
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW25-190522 Lab ID:HS19051518-05
Collection Date: 22-May-2019 10:45 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 17:20
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 17:20
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 17:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 17:20
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:20
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
Trichloroethene	**6.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 17:20
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:20
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 17:20*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 17:20*
Surr: Dibromofluoromethane	*89.5*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 17:20*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 17:20*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW07-190522 Lab ID:HS19051518-06
Collection Date: 22-May-2019 11:35 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:44
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 17:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 17:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 17:44
Acetone	**7.9**		**0.40**	**1.0**	**2.0**	**UG/L**	1	28-May-2019 17:44
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:44
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 17:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 17:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW07-190522 Lab ID:HS19051518-06
Collection Date: 22-May-2019 11:35 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 17:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 17:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 17:44
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 17:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 17:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 17:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 17:44
Surr: 1,2-Dichloroethane-d4	*87.7*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 17:44*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 17:44*
Surr: Dibromofluoromethane	*90.0*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 17:44*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 17:44*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW13-190522 Lab ID:HS19051518-07
Collection Date: 22-May-2019 12:25 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:08
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:08
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:08
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:08
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:08
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:08
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:08
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:08
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:08
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 18:08
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 18:08
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:08
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 18:08
Acetone	**7.4**		**0.40**	**1.0**	**2.0**	**UG/L**	1	28-May-2019 18:08
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:08
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:08
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:08
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 18:08
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:08
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW13-190522 Lab ID:HS19051518-07
Collection Date: 22-May-2019 12:25 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 18:08
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 18:08
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 18:08
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 18:08
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:08
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:08
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:08
Surr: 1,2-Dichloroethane-d4	*87.9*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 18:08*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 18:08*
Surr: Dibromofluoromethane	*91.4*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 18:08*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 18:08*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW15-190522 Lab ID:HS19051518-08
Collection Date: 22-May-2019 13:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:32
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.6**		**0.50**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 18:32
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:32
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:32
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:32
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:32
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:32
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:32
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:32
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 18:32
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 18:32
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:32
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 18:32
Acetone	**4.4**		**0.40**	**1.0**	**2.0**	**UG/L**	1	28-May-2019 18:32
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:32
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:32
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:32
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 18:32
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:32
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW15-190522 Lab ID:HS19051518-08
Collection Date: 22-May-2019 13:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 18:32
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 18:32
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 18:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 18:32
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:32
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
Tetrachloroethene	**7.8**		**0.30**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 18:32
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
Trichloroethene	**7.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 18:32
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:32
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:32
Surr: 1,2-Dichloroethane-d4	*86.8*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 18:32*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 18:32*
Surr: Dibromofluoromethane	*89.1*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 18:32*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 18:32*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW17-190523 Lab ID:HS19051518-09
Collection Date: 22-May-2019 08:05 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:56
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:56
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:56
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:56
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:56
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:56
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:56
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:56
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:56
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 18:56
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 18:56
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:56
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 18:56
Acetone	**2.8**		**0.40**	**1.0**	**2.0**	**UG/L**	1	28-May-2019 18:56
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:56
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:56
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 18:56
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 18:56
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW17-190523 Lab ID:HS19051518-09
Collection Date: 22-May-2019 08:05 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 18:56
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 18:56
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 18:56
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 18:56
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 18:56
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 18:56
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 18:56
Surr: 1,2-Dichloroethane-d4	*85.1*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 18:56*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 18:56*
Surr: Dibromofluoromethane	*89.2*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 18:56*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 18:56*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW16-190523 Lab ID:HS19051518-10
Collection Date: 23-May-2019 09:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 19:20
1,1,2-Trichlor-1,2,2-trifluoroethane	**10**		**0.50**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 19:20
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 19:20
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 19:20
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 19:20
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 19:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 19:20
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 19:20
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 19:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 19:20
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 19:20
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 19:20
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 19:20
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 19:20
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 19:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 19:20
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 19:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 19:20
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 19:20
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: 35BWW16-190523 Lab ID:HS19051518-10
Collection Date: 23-May-2019 09:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 19:20
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 19:20
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 19:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 19:20
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 19:20
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
Tetrachloroethene	**9.5**		**0.30**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 19:20
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
Trichloroethene	**3.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	28-May-2019 19:20
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 19:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 19:20
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 19:20*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 19:20*
Surr: Dibromofluoromethane	*90.8*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 19:20*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 19:20*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS19051518
Sample ID: Trip Blank-C&G-040119-154 Lab ID:HS19051518-11
Collection Date: 24-May-2019 08:15 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 14:32
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 14:32
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 14:32
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 14:32
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 14:32
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 14:32
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 14:32
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 14:32
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 14:32
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 14:32
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	28-May-2019 14:32
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 14:32
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	28-May-2019 14:32
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 14:32
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 14:32
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 14:32
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 14:32
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	28-May-2019 14:32
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	28-May-2019 14:32
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Sample ID: Trip Blank-C&G-040119-154
Collection Date: 24-May-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19051518
Lab ID:HS19051518-11
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	28-May-2019 14:32
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	28-May-2019 14:32
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	28-May-2019 14:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	28-May-2019 14:32
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	28-May-2019 14:32
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	28-May-2019 14:32
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	28-May-2019 14:32
Surr: 1,2-Dichloroethane-d4	*85.0*			**0**	*81-118*	*%REC*	*1*	*28-May-2019 14:32*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*28-May-2019 14:32*
Surr: Dibromofluoromethane	*90.9*			**0**	*80-119*	*%REC*	*1*	*28-May-2019 14:32*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*28-May-2019 14:32*

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

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 **DATES REPORT**
WorkOrder: HS19051518

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R339360	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS19051518-01	35BWW20-190522	22 May 2019 08:10			28 May 2019 15:44	1
HS19051518-02	35BWW20-190522-FD	22 May 2019 08:10			28 May 2019 16:08	1
HS19051518-03	LHSMW58-190522	22 May 2019 09:00			28 May 2019 16:32	1
HS19051518-04	35BWW24-190522	22 May 2019 09:55			28 May 2019 16:56	1
HS19051518-05	35BWW25-190522	22 May 2019 10:45			28 May 2019 17:20	1
HS19051518-06	35BWW07-190522	22 May 2019 11:35			28 May 2019 17:44	1
HS19051518-07	35BWW13-190522	22 May 2019 12:25			28 May 2019 18:08	1
HS19051518-08	35BWW15-190522	22 May 2019 13:10			28 May 2019 18:32	1
HS19051518-09	35BWW17-190523	22 May 2019 08:05			28 May 2019 18:56	1
HS19051518-10	35BWW16-190523	23 May 2019 09:00			28 May 2019 19:20	1
HS19051518-11	Trip Blank-C&G-040119-154	24 May 2019 08:15			28 May 2019 14:32	1

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190528** Units: **UG/L** Analysis Date: **28-May-2019 13:44**
Client ID: Run ID: **VOA6_339360** SeqNo: **5096401** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190528** Units: **UG/L** Analysis Date: **28-May-2019 13:44**
Client ID: Run ID: **VOA6_339360** SeqNo: **5096401** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.15*	*1.0*	*50*	*0*	*86.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.64*	*1.0*	*50*	*0*	*103*	*85 - 114*				
Surr: Dibromofluoromethane	*45.48*	*1.0*	*50*	*0*	*91.0*	*80 - 119*				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190528** Units: **UG/L** Analysis Date: **28-May-2019 13:44**
Client ID: Run ID: **VOA6_339360** SeqNo: **5096401** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.21*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190528** Units: **UG/L** Analysis Date: **28-May-2019 12:56**
Client ID: Run ID: **VOA6_339360** SeqNo: **5096400** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	20.47	1.0	20	0	102	78 - 124				
1,1,1-Trichloroethane	21.21	1.0	20	0	106	74 - 131				
1,1,2,2-Tetrachloroethane	21.54	1.0	20	0	108	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	21.45	1.0	20	0	107	70 - 136				
1,1,2-Trichloroethane	22.34	1.0	20	0	112	80 - 119				
1,1-Dichloroethane	22.66	1.0	20	0	113	77 - 125				
1,1-Dichloroethene	20.2	1.0	20	0	101	71 - 131				
1,1-Dichloropropene	21.41	1.0	20	0	107	78 - 125				
1,2,3-Trichlorobenzene	23.4	1.0	20	0	117	69 - 129				
1,2,3-Trichloropropane	21.01	1.0	20	0	105	73 - 122				
1,2,4-Trichlorobenzene	21.17	1.0	20	0	106	69 - 130				
1,2,4-Trimethylbenzene	20.88	1.0	20	0	104	76 - 124				
1,2-Dibromo-3-chloropropane	21.18	1.0	20	0	106	62 - 128				
1,2-Dibromoethane	21.51	1.0	20	0	108	77 - 121				
1,2-Dichlorobenzene	20.42	1.0	20	0	102	80 - 119				
1,2-Dichloroethane	20.71	1.0	20	0	104	73 - 128				
1,2-Dichloropropane	24.1	1.0	20	0	120	78 - 122				
1,3,5-Trimethylbenzene	20.65	1.0	20	0	103	75 - 124				
1,3-Dichlorobenzene	20.16	1.0	20	0	101	80 - 119				
1,3-Dichloropropane	22.14	1.0	20	0	111	80 - 119				
1,4-Dichlorobenzene	20.29	1.0	20	0	101	79 - 118				
2,2-Dichloropropane	21.64	1.0	20	0	108	60 - 139				
2-Butanone	50.84	2.0	40	0	127	56 - 143				
2-Chlorotoluene	20.38	1.0	20	0	102	79 - 122				
2-Hexanone	47.09	2.0	40	0	118	57 - 139				
4-Chlorotoluene	20.55	1.0	20	0	103	78 - 122				
4-Isopropyltoluene	20.22	1.0	20	0	101	77 - 127				
4-Methyl-2-pentanone	47.58	2.0	40	0	119	67 - 130				
Acetone	48.28	2.0	40	0	121	39 - 160				
Benzene	23	1.0	20	0	115	79 - 120				
Bromobenzene	19.7	1.0	20	0	98.5	80 - 120				
Bromochloromethane	21.86	1.0	20	0	109	78 - 123				
Bromodichloromethane	22	1.0	20	0	110	79 - 125				
Bromoform	21.08	1.0	20	0	105	66 - 130				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190528** Units: **UG/L** Analysis Date: **28-May-2019 12:56**
Client ID: Run ID: **VOA6_339360** SeqNo: **5096400** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	20.18	1.0	20	0	101	53 - 141				
Carbon disulfide	51.71	2.0	40	0	129	64 - 133				
Carbon tetrachloride	19.13	1.0	20	0	95.6	72 - 136				
Chlorobenzene	21.65	1.0	20	0	108	82 - 118				
Chloroethane	21.89	1.0	20	0	109	60 - 138				
Chloroform	22.12	1.0	20	0	111	79 - 124				
Chloromethane	21.47	1.0	20	0	107	50 - 139				
cis-1,2-Dichloroethene	22.2	1.0	20	0	111	78 - 123				
cis-1,3-Dichloropropene	23.48	1.0	20	0	117	75 - 124				
Dibromochloromethane	20.43	1.0	20	0	102	74 - 126				
Dibromomethane	22.08	1.0	20	0	110	79 - 123				
Dichlorodifluoromethane	19.97	1.0	20	0	99.8	32 - 152				
Ethylbenzene	21.82	1.0	20	0	109	79 - 121				
Hexachlorobutadiene	21.39	1.0	20	0	107	66 - 134				
Isopropylbenzene	21.09	1.0	20	0	105	72 - 131				
m,p-Xylene	43.73	2.0	40	0	109	80 - 121				
Methylene chloride	24.73	2.0	20	0	124	74 - 124				
Naphthalene	22.02	1.0	20	0	110	61 - 128				
n-Butylbenzene	21.23	1.0	20	0	106	75 - 128				
n-Propylbenzene	20.32	1.0	20	0	102	76 - 126				
o-Xylene	21.97	1.0	20	0	110	78 - 122				
sec-Butylbenzene	19.94	1.0	20	0	99.7	77 - 126				
Styrene	22.37	1.0	20	0	112	78 - 123				
tert-Butylbenzene	19.97	1.0	20	0	99.9	78 - 124				
Tetrachloroethene	20.39	1.0	20	0	102	74 - 129				
Toluene	21.89	1.0	20	0	109	80 - 121				
trans-1,2-Dichloroethene	22.61	1.0	20	0	113	75 - 124				
trans-1,3-Dichloropropene	22.91	1.0	20	0	115	73 - 127				
Trichloroethene	21.46	1.0	20	0	107	79 - 123				
Trichlorofluoromethane	18.36	1.0	20	0	91.8	65 - 141				
Vinyl chloride	19.64	1.0	20	0	98.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.51*	*1.0*	*50*	*0*	*91.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.04*	*1.0*	*50*	*0*	*112*	*85 - 114*				
Surr: Dibromofluoromethane	*50.96*	*1.0*	*50*	*0*	*102*	*80 - 119*				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190528** Units: **UG/L** Analysis Date: **28-May-2019 12:56**
Client ID: Run ID: **VOA6_339360** SeqNo: **5096400** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*44.61*	*1.0*	*50*	*0*	*89.2*	*89 - 112*				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051518-09MS** Units: **UG/L** Analysis Date: **28-May-2019 20:32**
Client ID: **35BWW17-190523** Run ID: **VOA6_339360** SeqNo: **5096418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	17.06	1.0	20	0	85.3	78 - 124				
1,1,1-Trichloroethane	16.31	1.0	20	0	81.5	74 - 131				
1,1,2,2-Tetrachloroethane	20.11	1.0	20	0	101	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	16.82	1.0	20	0	84.1	70 - 136				
1,1,2-Trichloroethane	18.58	1.0	20	0	92.9	80 - 119				
1,1-Dichloroethane	16.69	1.0	20	0	83.5	77 - 125				
1,1-Dichloroethene	15.74	1.0	20	0	78.7	71 - 131				
1,1-Dichloropropene	17.36	1.0	20	0	86.8	78 - 125				
1,2,3-Trichlorobenzene	20.64	1.0	20	0	103	69 - 129				
1,2,3-Trichloropropane	18.72	1.0	20	0	93.6	73 - 122				
1,2,4-Trichlorobenzene	18.58	1.0	20	0	92.9	69 - 130				
1,2,4-Trimethylbenzene	18.65	1.0	20	0	93.3	76 - 124				
1,2-Dibromo-3-chloropropane	19.25	1.0	20	0	96.3	62 - 128				
1,2-Dibromoethane	17.08	1.0	20	0	85.4	77 - 121				
1,2-Dichlorobenzene	18.49	1.0	20	0	92.4	80 - 119				
1,2-Dichloroethane	15.42	1.0	20	0	77.1	73 - 128				
1,2-Dichloropropane	18.41	1.0	20	0	92.1	78 - 122				
1,3,5-Trimethylbenzene	19.37	1.0	20	0	96.8	75 - 124				
1,3-Dichlorobenzene	18.76	1.0	20	0	93.8	80 - 119				
1,3-Dichloropropane	18.15	1.0	20	0	90.8	80 - 119				
1,4-Dichlorobenzene	18.47	1.0	20	0	92.4	79 - 118				
2,2-Dichloropropane	14.81	1.0	20	0	74.0	60 - 139				
2-Butanone	36.83	2.0	40	0	92.1	56 - 143				
2-Chlorotoluene	19.43	1.0	20	0	97.1	79 - 122				
2-Hexanone	35.89	2.0	40	0	89.7	57 - 139				
4-Chlorotoluene	19.31	1.0	20	0	96.5	78 - 122				
4-Isopropyltoluene	19.62	1.0	20	0	98.1	77 - 127				
4-Methyl-2-pentanone	37.34	2.0	40	0	93.3	67 - 130				
Acetone	35.75	2.0	40	2.755	82.5	39 - 160				
Benzene	17.38	1.0	20	0	86.9	79 - 120				
Bromobenzene	17.29	1.0	20	0	86.5	80 - 120				
Bromochloromethane	16.09	1.0	20	0	80.5	78 - 123				
Bromodichloromethane	16.19	1.0	20	0	80.9	79 - 125				
Bromoform	16.93	1.0	20	0	84.6	66 - 130				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051518-09MS** Units: **UG/L** Analysis Date: **28-May-2019 20:32**
Client ID: **35BWW17-190523** Run ID: **VOA6_339360** SeqNo: **5096418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	12.68	1.0	20	0	63.4	53 - 141				
Carbon disulfide	35.29	2.0	40	0	88.2	64 - 133				
Carbon tetrachloride	15.49	1.0	20	0	77.5	72 - 136				
Chlorobenzene	17.96	1.0	20	0	89.8	82 - 118				
Chloroethane	10.8	1.0	20	0	54.0	60 - 138				S
Chloroform	16.02	1.0	20	0	80.1	79 - 124				
Chloromethane	14.1	1.0	20	0	70.5	50 - 139				
cis-1,2-Dichloroethene	16.47	1.0	20	0	82.4	78 - 123				
cis-1,3-Dichloropropene	17.79	1.0	20	0	88.9	75 - 124				
Dibromochloromethane	16.76	1.0	20	0	83.8	74 - 126				
Dibromomethane	16.48	1.0	20	0	82.4	79 - 123				
Dichlorodifluoromethane	12.19	1.0	20	0	61.0	32 - 152				
Ethylbenzene	17.99	1.0	20	0	89.9	79 - 121				
Hexachlorobutadiene	16.41	1.0	20	0	82.1	66 - 134				
Isopropylbenzene	18.62	1.0	20	0	93.1	72 - 131				
m,p-Xylene	37.64	2.0	40	0	94.1	80 - 121				
Methylene chloride	17.06	2.0	20	0	85.3	74 - 124				
Naphthalene	19.15	1.0	20	0	95.8	61 - 128				
n-Butylbenzene	19.75	1.0	20	0	98.8	75 - 128				
n-Propylbenzene	19.91	1.0	20	0	99.6	76 - 126				
o-Xylene	19.17	1.0	20	0	95.8	78 - 122				
sec-Butylbenzene	20.05	1.0	20	0	100	77 - 126				
Styrene	18.04	1.0	20	0	90.2	78 - 123				
tert-Butylbenzene	19.89	1.0	20	0	99.4	78 - 124				
Tetrachloroethene	18.11	1.0	20	0	90.6	74 - 129				
Toluene	17.63	1.0	20	0	88.1	80 - 121				
trans-1,2-Dichloroethene	17.11	1.0	20	0	85.5	75 - 124				
trans-1,3-Dichloropropene	16.94	1.0	20	0	84.7	73 - 127				
Trichloroethene	16.78	1.0	20	0	83.9	79 - 123				
Trichlorofluoromethane	14.27	1.0	20	0	71.4	65 - 141				
Vinyl chloride	15.77	1.0	20	0	78.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.63*	*1.0*	*50*	*0*	*89.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.05*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*46.04*	*1.0*	*50*	*0*	*92.1*	*80 - 119*				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051518-09MS** Units: **UG/L** Analysis Date: **28-May-2019 20:32**
Client ID: **35BWW17-190523** Run ID: **VOA6_339360** SeqNo: **5096418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.18*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051518-03MS** Units: **UG/L** Analysis Date: **28-May-2019 19:44**
Client ID: **LHSMW58-190522** Run ID: **VOA6_339360** SeqNo: **5096416** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	16.94	1.0	20	0	84.7	78 - 124				
1,1,1-Trichloroethane	16.21	1.0	20	0	81.1	74 - 131				
1,1,2,2-Tetrachloroethane	19.84	1.0	20	0	99.2	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	17.43	1.0	20	0	87.2	70 - 136				
1,1,2-Trichloroethane	17.67	1.0	20	0	88.3	80 - 119				
1,1-Dichloroethane	16.65	1.0	20	0	83.2	77 - 125				
1,1-Dichloroethene	15.81	1.0	20	0	79.1	71 - 131				
1,1-Dichloropropene	17.55	1.0	20	0	87.8	78 - 125				
1,2,3-Trichlorobenzene	19.58	1.0	20	0	97.9	69 - 129				
1,2,3-Trichloropropane	18.66	1.0	20	0	93.3	73 - 122				
1,2,4-Trichlorobenzene	18.28	1.0	20	0	91.4	69 - 130				
1,2,4-Trimethylbenzene	18.93	1.0	20	0	94.7	76 - 124				
1,2-Dibromo-3-chloropropane	19.02	1.0	20	0	95.1	62 - 128				
1,2-Dibromoethane	17.11	1.0	20	0	85.5	77 - 121				
1,2-Dichlorobenzene	18.72	1.0	20	0	93.6	80 - 119				
1,2-Dichloroethane	15.46	1.0	20	0	77.3	73 - 128				
1,2-Dichloropropane	18.06	1.0	20	0	90.3	78 - 122				
1,3,5-Trimethylbenzene	19.61	1.0	20	0	98.1	75 - 124				
1,3-Dichlorobenzene	18.68	1.0	20	0	93.4	80 - 119				
1,3-Dichloropropane	17.63	1.0	20	0	88.1	80 - 119				
1,4-Dichlorobenzene	18.75	1.0	20	0	93.8	79 - 118				
2,2-Dichloropropane	14.78	1.0	20	0	73.9	60 - 139				
2-Butanone	37.71	2.0	40	0	94.3	56 - 143				
2-Chlorotoluene	19.45	1.0	20	0	97.3	79 - 122				
2-Hexanone	34.73	2.0	40	0	86.8	57 - 139				
4-Chlorotoluene	19.4	1.0	20	0	97.0	78 - 122				
4-Isopropyltoluene	20.08	1.0	20	0	100	77 - 127				
4-Methyl-2-pentanone	34.58	2.0	40	0	86.4	67 - 130				
Acetone	34.33	2.0	40	9.727	61.5	39 - 160				
Benzene	17.32	1.0	20	0	86.6	79 - 120				
Bromobenzene	18.11	1.0	20	0	90.6	80 - 120				
Bromochloromethane	15.66	1.0	20	0	78.3	78 - 123				
Bromodichloromethane	15.97	1.0	20	0	79.8	79 - 125				
Bromoform	16.37	1.0	20	0	81.9	66 - 130				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051518-03MS** Units: **UG/L** Analysis Date: **28-May-2019 19:44**
Client ID: **LHSMW58-190522** Run ID: **VOA6_339360** SeqNo: **5096416** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	13.66	1.0	20	0	68.3	53 - 141				
Carbon disulfide	34.53	2.0	40	0	86.3	64 - 133				
Carbon tetrachloride	15.71	1.0	20	0	78.5	72 - 136				
Chlorobenzene	17.85	1.0	20	0	89.3	82 - 118				
Chloroethane	10.9	1.0	20	0	54.5	60 - 138				S
Chloroform	15.91	1.0	20	0	79.6	79 - 124				
Chloromethane	13.85	1.0	20	0	69.2	50 - 139				
cis-1,2-Dichloroethene	16.2	1.0	20	0	81.0	78 - 123				
cis-1,3-Dichloropropene	17.56	1.0	20	0	87.8	75 - 124				
Dibromochloromethane	16.26	1.0	20	0	81.3	74 - 126				
Dibromomethane	16.34	1.0	20	0	81.7	79 - 123				
Dichlorodifluoromethane	13.44	1.0	20	0	67.2	32 - 152				
Ethylbenzene	18.08	1.0	20	0	90.4	79 - 121				
Hexachlorobutadiene	18.71	1.0	20	0	93.5	66 - 134				
Isopropylbenzene	18.21	1.0	20	0	91.0	72 - 131				
m,p-Xylene	36.3	2.0	40	0	90.8	80 - 121				
Methylene chloride	16.8	2.0	20	0	84.0	74 - 124				
Naphthalene	18.18	1.0	20	0	90.9	61 - 128				
n-Butylbenzene	20.28	1.0	20	0	101	75 - 128				
n-Propylbenzene	20.53	1.0	20	0	103	76 - 126				
o-Xylene	18.41	1.0	20	0	92.0	78 - 122				
sec-Butylbenzene	20.83	1.0	20	0	104	77 - 126				
Styrene	17.56	1.0	20	0	87.8	78 - 123				
tert-Butylbenzene	20.36	1.0	20	0	102	78 - 124				
Tetrachloroethene	21.28	1.0	20	3.611	88.3	74 - 129				
Toluene	17.17	1.0	20	0	85.9	80 - 121				
trans-1,2-Dichloroethene	16.95	1.0	20	0	84.8	75 - 124				
trans-1,3-Dichloropropene	16.6	1.0	20	0	83.0	73 - 127				
Trichloroethene	17.26	1.0	20	0	86.3	79 - 123				
Trichlorofluoromethane	14.95	1.0	20	0	74.7	65 - 141				
Vinyl chloride	16.35	1.0	20	0	81.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*43.66*	*1.0*	*50*	*0*	*87.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.15*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*44.72*	*1.0*	*50*	*0*	*89.4*	*80 - 119*				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19051518-03MS** Units: **UG/L** Analysis Date: **28-May-2019 19:44**
Client ID: **LHSMW58-190522** Run ID: **VOA6_339360** SeqNo: **5096416** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.06*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051518-09MSD** Units: **UG/L** Analysis Date: **28-May-2019 20:57**
Client ID: **35BWW17-190523** Run ID: **VOA6_339360** SeqNo: **5096419** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	16.33	1.0	20	0	81.6	78 - 124	17.06	4.39	20	
1,1,1-Trichloroethane	16.14	1.0	20	0	80.7	74 - 131	16.31	1.05	20	
1,1,2,2-Tetrachloroethane	19.51	1.0	20	0	97.5	71 - 121	20.11	3.04	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	16.65	1.0	20	0	83.3	70 - 136	16.82	0.987	20	
1,1,2-Trichloroethane	17.87	1.0	20	0	89.3	80 - 119	18.58	3.9	20	
1,1-Dichloroethane	16.69	1.0	20	0	83.5	77 - 125	16.69	0.028	20	
1,1-Dichloroethene	15.23	1.0	20	0	76.1	71 - 131	15.74	3.31	20	
1,1-Dichloropropene	17.2	1.0	20	0	86.0	78 - 125	17.36	0.969	20	
1,2,3-Trichlorobenzene	20.1	1.0	20	0	100	69 - 129	20.64	2.69	20	
1,2,3-Trichloropropane	18.29	1.0	20	0	91.4	73 - 122	18.72	2.35	20	
1,2,4-Trichlorobenzene	17.84	1.0	20	0	89.2	69 - 130	18.58	4.06	20	
1,2,4-Trimethylbenzene	18.06	1.0	20	0	90.3	76 - 124	18.65	3.24	20	
1,2-Dibromo-3-chloropropane	18.26	1.0	20	0	91.3	62 - 128	19.25	5.27	20	
1,2-Dibromoethane	17.01	1.0	20	0	85.1	77 - 121	17.08	0.404	20	
1,2-Dichlorobenzene	18.21	1.0	20	0	91.0	80 - 119	18.49	1.51	20	
1,2-Dichloroethane	15.31	1.0	20	0	76.6	73 - 128	15.42	0.719	20	
1,2-Dichloropropane	18.15	1.0	20	0	90.8	78 - 122	18.41	1.42	20	
1,3,5-Trimethylbenzene	18.61	1.0	20	0	93.1	75 - 124	19.37	4	20	
1,3-Dichlorobenzene	18.12	1.0	20	0	90.6	80 - 119	18.76	3.5	20	
1,3-Dichloropropane	17.92	1.0	20	0	89.6	80 - 119	18.15	1.27	20	
1,4-Dichlorobenzene	17.98	1.0	20	0	89.9	79 - 118	18.47	2.71	20	
2,2-Dichloropropane	14.43	1.0	20	0	72.1	60 - 139	14.81	2.6	20	
2-Butanone	37.14	2.0	40	0	92.9	56 - 143	36.83	0.85	20	
2-Chlorotoluene	18.73	1.0	20	0	93.6	79 - 122	19.43	3.66	20	
2-Hexanone	35.4	2.0	40	0	88.5	57 - 139	35.89	1.38	20	
4-Chlorotoluene	18.64	1.0	20	0	93.2	78 - 122	19.31	3.5	20	
4-Isopropyltoluene	18.96	1.0	20	0	94.8	77 - 127	19.62	3.42	20	
4-Methyl-2-pentanone	37.28	2.0	40	0	93.2	67 - 130	37.34	0.167	20	
Acetone	35.71	2.0	40	2.755	82.4	39 - 160	35.75	0.129	20	
Benzene	17.18	1.0	20	0	85.9	79 - 120	17.38	1.18	20	
Bromobenzene	17.21	1.0	20	0	86.1	80 - 120	17.29	0.443	20	
Bromochloromethane	16.05	1.0	20	0	80.2	78 - 123	16.09	0.298	20	
Bromodichloromethane	16.16	1.0	20	0	80.8	79 - 125	16.19	0.167	20	
Bromoform	16.6	1.0	20	0	83.0	66 - 130	16.93	1.97	20	

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051518-09MSD** Units: **UG/L** Analysis Date: **28-May-2019 20:57**
Client ID: **35BWW17-190523** Run ID: **VOA6_339360** SeqNo: **5096419** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	12.08	1.0	20	0	60.4	53 - 141	12.68	4.83	20	
Carbon disulfide	34.18	2.0	40	0	85.5	64 - 133	35.29	3.19	20	
Carbon tetrachloride	15.1	1.0	20	0	75.5	72 - 136	15.49	2.56	20	
Chlorobenzene	17.59	1.0	20	0	88.0	82 - 118	17.96	2.07	20	
Chloroethane	10.28	1.0	20	0	51.4	60 - 138	10.8	4.96	20	S
Chloroform	15.84	1.0	20	0	79.2	79 - 124	16.02	1.11	20	
Chloromethane	13.82	1.0	20	0	69.1	50 - 139	14.1	2.05	20	
cis-1,2-Dichloroethene	16.34	1.0	20	0	81.7	78 - 123	16.47	0.785	20	
cis-1,3-Dichloropropene	17.56	1.0	20	0	87.8	75 - 124	17.79	1.29	20	
Dibromochloromethane	16.34	1.0	20	0	81.7	74 - 126	16.76	2.53	20	
Dibromomethane	16.63	1.0	20	0	83.2	79 - 123	16.48	0.9	20	
Dichlorodifluoromethane	12.25	1.0	20	0	61.2	32 - 152	12.19	0.441	20	
Ethylbenzene	17.54	1.0	20	0	87.7	79 - 121	17.99	2.53	20	
Hexachlorobutadiene	16.21	1.0	20	0	81.0	66 - 134	16.41	1.23	20	
Isopropylbenzene	17.94	1.0	20	0	89.7	72 - 131	18.62	3.71	20	
m,p-Xylene	35.67	2.0	40	0	89.2	80 - 121	37.64	5.38	20	
Methylene chloride	16.7	2.0	20	0	83.5	74 - 124	17.06	2.17	20	
Naphthalene	18.75	1.0	20	0	93.7	61 - 128	19.15	2.14	20	
n-Butylbenzene	19.26	1.0	20	0	96.3	75 - 128	19.75	2.49	20	
n-Propylbenzene	19.41	1.0	20	0	97.0	76 - 126	19.91	2.59	20	
o-Xylene	18.25	1.0	20	0	91.2	78 - 122	19.17	4.91	20	
sec-Butylbenzene	19.53	1.0	20	0	97.6	77 - 126	20.05	2.64	20	
Styrene	17.35	1.0	20	0	86.8	78 - 123	18.04	3.85	20	
tert-Butylbenzene	19.28	1.0	20	0	96.4	78 - 124	19.89	3.09	20	
Tetrachloroethene	17.49	1.0	20	0	87.5	74 - 129	18.11	3.47	20	
Toluene	17.29	1.0	20	0	86.5	80 - 121	17.63	1.93	20	
trans-1,2-Dichloroethene	16.9	1.0	20	0	84.5	75 - 124	17.11	1.21	20	
trans-1,3-Dichloropropene	16.75	1.0	20	0	83.8	73 - 127	16.94	1.07	20	
Trichloroethene	16.68	1.0	20	0	83.4	79 - 123	16.78	0.599	20	
Trichlorofluoromethane	14.04	1.0	20	0	70.2	65 - 141	14.27	1.65	20	
Vinyl chloride	15.33	1.0	20	0	76.6	58 - 137	15.77	2.83	20	
Surr: 1,2-Dichloroethane-d4	*43.14*	*1.0*	*50*	*0*	*86.3*	*81 - 118*	*44.63*	*3.39*	*20*	
Surr: 4-Bromofluorobenzene	*52.51*	*1.0*	*50*	*0*	*105*	*85 - 114*	*53.05*	*1.03*	*20*	
Surr: Dibromofluoromethane	*45.73*	*1.0*	*50*	*0*	*91.5*	*80 - 119*	*46.04*	*0.662*	*20*	

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051518-09MSD** Units: **UG/L** Analysis Date: **28-May-2019 20:57**
Client ID: **35BWW17-190523** Run ID: **VOA6_339360** SeqNo: **5096419** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.45*	*1.0*	*50*	*0*	*103*	*89 - 112*	*52.18*	*1.41*	*20*	

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051518-03MSD** Units: **UG/L** Analysis Date: **28-May-2019 20:08**
Client ID: **LHSMW58-190522** Run ID: **VOA6_339360** SeqNo: **5096417** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	16	1.0	20	0	80.0	78 - 124	16.94	5.75	20	
1,1,1-Trichloroethane	15.77	1.0	20	0	78.9	74 - 131	16.21	2.75	20	
1,1,2,2-Tetrachloroethane	18.64	1.0	20	0	93.2	71 - 121	19.84	6.25	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	16.98	1.0	20	0	84.9	70 - 136	17.43	2.61	20	
1,1,2-Trichloroethane	17.14	1.0	20	0	85.7	80 - 119	17.67	3.05	20	
1,1-Dichloroethane	16.4	1.0	20	0	82.0	77 - 125	16.65	1.5	20	
1,1-Dichloroethene	15.22	1.0	20	0	76.1	71 - 131	15.81	3.81	20	
1,1-Dichloropropene	16.76	1.0	20	0	83.8	78 - 125	17.55	4.58	20	
1,2,3-Trichlorobenzene	19.56	1.0	20	0	97.8	69 - 129	19.58	0.132	20	
1,2,3-Trichloropropane	17.76	1.0	20	0	88.8	73 - 122	18.66	4.96	20	
1,2,4-Trichlorobenzene	17.76	1.0	20	0	88.8	69 - 130	18.28	2.88	20	
1,2,4-Trimethylbenzene	17.6	1.0	20	0	88.0	76 - 124	18.93	7.28	20	
1,2-Dibromo-3-chloropropane	17.77	1.0	20	0	88.8	62 - 128	19.02	6.8	20	
1,2-Dibromoethane	16.72	1.0	20	0	83.6	77 - 121	17.11	2.3	20	
1,2-Dichlorobenzene	17.52	1.0	20	0	87.6	80 - 119	18.72	6.62	20	
1,2-Dichloroethane	14.96	1.0	20	0	74.8	73 - 128	15.46	3.3	20	
1,2-Dichloropropane	17.36	1.0	20	0	86.8	78 - 122	18.06	3.96	20	
1,3,5-Trimethylbenzene	18.21	1.0	20	0	91.1	75 - 124	19.61	7.4	20	
1,3-Dichlorobenzene	17.5	1.0	20	0	87.5	80 - 119	18.68	6.53	20	
1,3-Dichloropropane	17.21	1.0	20	0	86.0	80 - 119	17.63	2.4	20	
1,4-Dichlorobenzene	17.31	1.0	20	0	86.5	79 - 118	18.75	8.03	20	
2,2-Dichloropropane	14.19	1.0	20	0	71.0	60 - 139	14.78	4.05	20	
2-Butanone	38.16	2.0	40	0	95.4	56 - 143	37.71	1.19	20	
2-Chlorotoluene	18.25	1.0	20	0	91.3	79 - 122	19.45	6.38	20	
2-Hexanone	34.49	2.0	40	0	86.2	57 - 139	34.73	0.689	20	
4-Chlorotoluene	17.96	1.0	20	0	89.8	78 - 122	19.4	7.68	20	
4-Isopropyltoluene	18.49	1.0	20	0	92.5	77 - 127	20.08	8.22	20	
4-Methyl-2-pentanone	34.87	2.0	40	0	87.2	67 - 130	34.58	0.835	20	
Acetone	34.32	2.0	40	9.727	61.5	39 - 160	34.33	0.0434	20	
Benzene	16.64	1.0	20	0	83.2	79 - 120	17.32	4.02	20	
Bromobenzene	16.49	1.0	20	0	82.5	80 - 120	18.11	9.37	20	
Bromochloromethane	15.54	1.0	20	0	77.7	78 - 123	15.66	0.776	20	S
Bromodichloromethane	15.66	1.0	20	0	78.3	79 - 125	15.97	1.97	20	S
Bromoform	15.86	1.0	20	0	79.3	66 - 130	16.37	3.2	20	

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051518-03MSD** Units: **UG/L** Analysis Date: **28-May-2019 20:08**
Client ID: **LHSMW58-190522** Run ID: **VOA6_339360** SeqNo: **5096417** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	13.12	1.0	20	0	65.6	53 - 141	13.66	4.03	20	
Carbon disulfide	33.34	2.0	40	0	83.3	64 - 133	34.53	3.51	20	
Carbon tetrachloride	14.98	1.0	20	0	74.9	72 - 136	15.71	4.74	20	
Chlorobenzene	16.88	1.0	20	0	84.4	82 - 118	17.85	5.63	20	
Chloroethane	8.901	1.0	20	0	44.5	60 - 138	10.9	20.2	20	SR
Chloroform	15.49	1.0	20	0	77.4	79 - 124	15.91	2.7	20	S
Chloromethane	13.38	1.0	20	0	66.9	50 - 139	13.85	3.4	20	
cis-1,2-Dichloroethene	15.64	1.0	20	0	78.2	78 - 123	16.2	3.51	20	
cis-1,3-Dichloropropene	17.05	1.0	20	0	85.2	75 - 124	17.56	2.94	20	
Dibromochloromethane	15.98	1.0	20	0	79.9	74 - 126	16.26	1.74	20	
Dibromomethane	15.85	1.0	20	0	79.3	79 - 123	16.34	3.07	20	
Dichlorodifluoromethane	12.72	1.0	20	0	63.6	32 - 152	13.44	5.44	20	
Ethylbenzene	17.06	1.0	20	0	85.3	79 - 121	18.08	5.82	20	
Hexachlorobutadiene	18.32	1.0	20	0	91.6	66 - 134	18.71	2.1	20	
Isopropylbenzene	17.44	1.0	20	0	87.2	72 - 131	18.21	4.32	20	
m,p-Xylene	34.79	2.0	40	0	87.0	80 - 121	36.3	4.25	20	
Methylene chloride	16.51	2.0	20	0	82.5	74 - 124	16.8	1.75	20	
Naphthalene	17.68	1.0	20	0	88.4	61 - 128	18.18	2.76	20	
n-Butylbenzene	18.98	1.0	20	0	94.9	75 - 128	20.28	6.65	20	
n-Propylbenzene	18.84	1.0	20	0	94.2	76 - 126	20.53	8.56	20	
o-Xylene	17.63	1.0	20	0	88.2	78 - 122	18.41	4.32	20	
sec-Butylbenzene	19.2	1.0	20	0	96.0	77 - 126	20.83	8.11	20	
Styrene	16.76	1.0	20	0	83.8	78 - 123	17.56	4.66	20	
tert-Butylbenzene	18.7	1.0	20	0	93.5	78 - 124	20.36	8.52	20	
Tetrachloroethene	19.95	1.0	20	3.611	81.7	74 - 129	21.28	6.46	20	
Toluene	16.52	1.0	20	0	82.6	80 - 121	17.17	3.91	20	
trans-1,2-Dichloroethene	16.3	1.0	20	0	81.5	75 - 124	16.95	3.95	20	
trans-1,3-Dichloropropene	16.21	1.0	20	0	81.0	73 - 127	16.6	2.36	20	
Trichloroethene	16.47	1.0	20	0	82.4	79 - 123	17.26	4.65	20	
Trichlorofluoromethane	14.34	1.0	20	0	71.7	65 - 141	14.95	4.15	20	
Vinyl chloride	15.29	1.0	20	0	76.5	58 - 137	16.35	6.72	20	
Surr: 1,2-Dichloroethane-d4	*44.45*	*1.0*	*50*	*0*	*88.9*	*81 - 118*	*43.66*	*1.8*	*20*	
Surr: 4-Bromofluorobenzene	*52.12*	*1.0*	*50*	*0*	*104*	*85 - 114*	*51.15*	*1.86*	*20*	
Surr: Dibromofluoromethane	*45.42*	*1.0*	*50*	*0*	*90.8*	*80 - 119*	*44.72*	*1.54*	*20*	

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS19051518

QC BATCH REPORT

Batch ID: R339360 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19051518-03MSD** Units: **UG/L** Analysis Date: **28-May-2019 20:08**
Client ID: **LHSMW58-190522** Run ID: **VOA6_339360** SeqNo: **5096417** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.98*	*1.0*	*50*	*0*	*102*	*89 - 112*	*51.06*	*0.152*	*20*	

The following samples were analyzed in this batch:

HS19051518-01	HS19051518-02	HS19051518-03	HS19051518-04
HS19051518-05	HS19051518-06	HS19051518-07	HS19051518-08
HS19051518-09	HS19051518-10	HS19051518-11	

ALS Houston, US Date: 29-May-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: **HS19051518**

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
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	ANAB L2231	20-Dec-2021
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019
North Carolina	624-2019	31-Dec-2019
Maryland	343, 2018-2019	30-Jun-2019
Arkansas	19-028-0	27-Mar-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 29-May-19

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19051518
Date/Time Received: **24-May-2019 09:00**
Received by: **NDR**

Checklist completed by: *Nilesh D. Ranchod* eSignature 25-May-2019 Date
Reviewed by: *RJ Modashia* eSignature 27-May-2019 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):	4.3C UC/C	IR # 11
Cooler(s)/Kit(s):	44856	
Date/Time sample(s) sent to storage:	05/24/2019 18:00	

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: LHAAP37-MAY2019-ALS

TURNAROUND TIME:

RUSH:

Page 1 of

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-37			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

ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	Sample Container and Preservative	3-40 ml VOA/HCL	3-40 ml VOA/HCL	3-40 ml VOA/Cool to 6 deg C	2-40ml Amber/H2SO4	1-250ml/Cool to 6 deg C								
									ANALYSIS	Vocs by 8260B	MEE by RSK175	CO2 by RSK175	TOC by Sm5310C	Anions (chloride/sulfate/nitrate) by 9056								
35BwW20-190522	LHAAP37	21.95	22.21		WG	5/22/19	0810	3		X												
35BwW20-190522-FD	LHAAP37	21.95	22.21		WG	5/22/19	0810	3		X												
LHSmW58-190522	LHAAP 37	20.22	20.45		WG	5/22/19	0900	3		X												
LHSmW58-190522-MS	LHAAP 37	20.22	20.45		WG	5/22/19	0900	3		X												
LHSmW58-190522-MSD	LHAAP 37	20.22	20.45		WG	5/22/19	0900	3		X												
35BwW24-190522	LHAAP37	20.53	27.77		WG	5/22/19	0955	3		X												
35BwW25-190522	LHAAP37	25.23	25.46		WG	5/22/19	0945	3		X												
35BwW07-190522	LHAAP37	25.11	25.38		WG	5/22/19	1135	3		X												
35BwW13-190522	LHAAP37	20.17	20.40		WG	5/22/19	1225	3		X												
35BwW15-190522	LHAAP37	20.35	20.56		WG	5/22/19	1310	3		X												
35BwW17-190523	LHAAP37	17.95	18.20		WG	5/23/19	0805	3		X												
35BwW17-190523-MS	LHAAP37	17.95	18.20		WG	5/23/19	0805	3		X												
35BwW17-190523-MSD	LHAAP37	17.95	18.20		WG	5/23/19	0805	3		X												
35BwW16-190523	LHAAP37	20.15	20.40		WG	5/23/19	0900	3		X												
TRIP BLANK	LHAAP37				W	5/23/19		2		X												

HS19051518

Aptim Environmental & Infrastucture, Inc.

LHAAP-37

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
			NA AW	05/24/19 09.00

44856

TCP UC 4.3

UC # 11

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

44856

CUSTODY SEAL

Date: 5/23/19 Time: 1430
Name: Scott Beesinger
Company: BHFTT

Seal Broken By:
Date: 05/24/19

44856 MAY 24 2019

Must Deliver Next Business Day
Time and Tempature Sensitive!

44856

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINGER
APTIM ENVIROMENTAL & INFRASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 24APR19
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-37-BO 65124-RJ
RMA:

FedEx Express

FedEx
TRK# 4809 7833 1361

FRI - 24 MAY 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

[illegible] 102795 23MAY19 SGGA 553C1/D66C/8CBA

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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August 21, 2019

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

Work Order: **HS19080238**

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

Dear Susan,

ALS Environmental received 11 sample(s) on Aug 06, 2019 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: 21-ago-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Work Order: HS19080238

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19080238-01	35BWW19.190805	Groundwater		05-Aug-2019 07:25	06-Aug-2019 09:53	☐
HS19080238-02	35BWW18.190805	Groundwater		05-Aug-2019 08:35	06-Aug-2019 09:53	☐
HS19080238-03	35BWW09.190805	Groundwater		05-Aug-2019 09:20	06-Aug-2019 09:53	☐
HS19080238-04	35BWW01.190805	Groundwater		05-Aug-2019 10:05	06-Aug-2019 09:53	☐
HS19080238-05	35BWW01.190805-FD	Groundwater		05-Aug-2019 10:05	06-Aug-2019 09:53	☐
HS19080238-06	35BWW08.190805	Groundwater		05-Aug-2019 11:00	06-Aug-2019 09:53	☐
HS19080238-07	35BWW04.190805	Groundwater		05-Aug-2019 12:00	06-Aug-2019 09:53	☐
HS19080238-08	35BWW12.190805	Groundwater		05-Aug-2019 12:55	06-Aug-2019 09:53	☐
HS19080238-09	35BWW12.190805-FD	Groundwater		05-Aug-2019 12:55	06-Aug-2019 09:53	☐
HS19080238-10	35BWW07.190805	Groundwater		05-Aug-2019 13:55	06-Aug-2019 09:53	☐
HS19080238-11	Trip Blank	Groundwater	C&G-062119-170	05-Aug-2019 00:00	06-Aug-2019 09:53	☐

ALS Houston, US Date: 21-Aug-19

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

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 TOC was subcontracted to ALS Kelso , WA. Final report attached..

GCMS Volatiles by Method SW8260

Batch ID: R343919

Sample ID: 35BWW09.190805 (HS19080238-03MS)

- 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.

Sample ID: 35BWW09.190805 (HS19080238-03MSD)

- 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.

Batch ID: R343872

Sample ID: HS19080180-02MS

- MS and MSD are for an unrelated sample

WetChemistry by Method SW9056

Batch ID: R344224

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW19.190805
Collection Date: 05-Aug-2019 07:25

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 21:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	07-Aug-2019 21:55
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	07-Aug-2019 21:55
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 21:55
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	07-Aug-2019 21:55
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	07-Aug-2019 21:55
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	07-Aug-2019 21:55
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW19.190805
Collection Date: 05-Aug-2019 07:25

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	07-Aug-2019 21:55
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	07-Aug-2019 21:55
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	07-Aug-2019 21:55
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 21:55
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 21:55
Surr: 1,2-Dichloroethane-d4	*91.4*			**0**	*81-118*	*%REC*	*1*	*07-Aug-2019 21:55*
Surr: 4-Bromofluorobenzene	*99.7*			**0**	*85-114*	*%REC*	*1*	*07-Aug-2019 21:55*
Surr: Dibromofluoromethane	*93.1*			**0**	*80-119*	*%REC*	*1*	*07-Aug-2019 21:55*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*07-Aug-2019 21:55*

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW18.190805
Collection Date: 05-Aug-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 22:19
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	07-Aug-2019 22:19
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	07-Aug-2019 22:19
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 22:19
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	07-Aug-2019 22:19
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	07-Aug-2019 22:19
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	07-Aug-2019 22:19
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW18.190805
Collection Date: 05-Aug-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	07-Aug-2019 22:19
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	07-Aug-2019 22:19
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	07-Aug-2019 22:19
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	07-Aug-2019 22:19
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	07-Aug-2019 22:19
Surr: 1,2-Dichloroethane-d4	*90.4*			**0**	*81-118*	*%REC*	*1*	*07-Aug-2019 22:19*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*07-Aug-2019 22:19*
Surr: Dibromofluoromethane	*92.7*			**0**	*80-119*	*%REC*	*1*	*07-Aug-2019 22:19*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*07-Aug-2019 22:19*

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW09.190805
Collection Date: 05-Aug-2019 09:20

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 12:57
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 12:57
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	08-Aug-2019 12:57
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 12:57
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Aug-2019 12:57
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 12:57
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Aug-2019 12:57
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW09.190805
Collection Date: 05-Aug-2019 09:20

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Aug-2019 12:57
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 12:57
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 12:57
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 12:57
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Trichloroethene	**70**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Aug-2019 12:57
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 12:57
Surr: 1,2-Dichloroethane-d4	*89.4*			**0**	*81-118*	*%REC*	*1*	*08-Aug-2019 12:57*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*08-Aug-2019 12:57*
Surr: Dibromofluoromethane	*92.0*			**0**	*80-119*	*%REC*	*1*	*08-Aug-2019 12:57*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*08-Aug-2019 12:57*

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW01.190805
Collection Date: 05-Aug-2019 10:05

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 13:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	08-Aug-2019 13:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Aug-2019 13:45
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 13:45
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Aug-2019 13:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW01.190805
Collection Date: 05-Aug-2019 10:05

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Aug-2019 13:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 13:45
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 13:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:45
Surr: 1,2-Dichloroethane-d4	*90.0*			**0**	*81-118*	*%REC*	*1*	*08-Aug-2019 13:45*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*08-Aug-2019 13:45*
Surr: Dibromofluoromethane	*92.0*			**0**	*80-119*	*%REC*	*1*	*08-Aug-2019 13:45*
Surr: Toluene-d8	*99.9*			**0**	*89-112*	*%REC*	*1*	*08-Aug-2019 13:45*

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW01.190805-FD
Collection Date: 05-Aug-2019 10:05

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 14:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	08-Aug-2019 14:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Aug-2019 14:09
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 14:09
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Aug-2019 14:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW01.190805-FD
Collection Date: 05-Aug-2019 10:05

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Aug-2019 14:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 14:09
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 14:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:09
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*81-118*	*%REC*	*1*	*08-Aug-2019 14:09*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*08-Aug-2019 14:09*
Surr: Dibromofluoromethane	*92.6*			**0**	*80-119*	*%REC*	*1*	*08-Aug-2019 14:09*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*08-Aug-2019 14:09*

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW08.190805
Collection Date: 05-Aug-2019 11:00

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:33
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 14:33
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	08-Aug-2019 14:33
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:33
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Aug-2019 14:33
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 14:33
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Aug-2019 14:33
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW08.190805
Collection Date: 05-Aug-2019 11:00

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Aug-2019 14:33
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 14:33
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 14:33
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:33
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:33
Surr: 1,2-Dichloroethane-d4	*90.7*			**0**	*81-118*	*%REC*	*1*	*08-Aug-2019 14:33*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*85-114*	*%REC*	*1*	*08-Aug-2019 14:33*
Surr: Dibromofluoromethane	*92.7*			**0**	*80-119*	*%REC*	*1*	*08-Aug-2019 14:33*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*08-Aug-2019 14:33*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**2.43**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Aug-2019 21:12
Nitrogen, Nitrate (As N)	**0.180**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	06-Aug-2019 21:12
Sulfate	**17.0**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Aug-2019 21:12
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	19-Aug-2019 16:55
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	21-Aug-2019 09:17

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW04.190805
Collection Date: 05-Aug-2019 12:00

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:57
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 14:57
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	08-Aug-2019 14:57
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:57
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Aug-2019 14:57
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 14:57
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Aug-2019 14:57
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW04.190805
Collection Date: 05-Aug-2019 12:00

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Aug-2019 14:57
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 14:57
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 14:57
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 14:57
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Tetrachloroethene	**7.9**		**0.30**	**0.50**	**1.0**	**UG/L**	1	08-Aug-2019 14:57
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Trichloroethene	**0.93**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Aug-2019 14:57
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 14:57
Surr: 1,2-Dichloroethane-d4	*89.3*			**0**	*81-118*	*%REC*	*1*	*08-Aug-2019 14:57*
Surr: 4-Bromofluorobenzene	*99.2*			**0**	*85-114*	*%REC*	*1*	*08-Aug-2019 14:57*
Surr: Dibromofluoromethane	*92.5*			**0**	*80-119*	*%REC*	*1*	*08-Aug-2019 14:57*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*08-Aug-2019 14:57*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**3.17**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Aug-2019 21:56
Nitrogen, Nitrate (As N)	**0.187**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	06-Aug-2019 21:56
Sulfate	**24.0**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Aug-2019 21:56
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	19-Aug-2019 16:55
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	21-Aug-2019 09:17

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW12.190805
Collection Date: 05-Aug-2019 12:55

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:21
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 15:21
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	08-Aug-2019 15:21
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:21
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Aug-2019 15:21
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 15:21
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Aug-2019 15:21
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW12.190805
Collection Date: 05-Aug-2019 12:55

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Aug-2019 15:21
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 15:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 15:21
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:21
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Tetrachloroethene	**5.8**		**0.30**	**0.50**	**1.0**	**UG/L**	1	08-Aug-2019 15:21
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:21
Surr: 1,2-Dichloroethane-d4	*89.4*			**0**	*81-118*	*%REC*	*1*	*08-Aug-2019 15:21*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*08-Aug-2019 15:21*
Surr: Dibromofluoromethane	*91.9*			**0**	*80-119*	*%REC*	*1*	*08-Aug-2019 15:21*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*08-Aug-2019 15:21*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**5.65**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Aug-2019 22:11
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	06-Aug-2019 22:11
Sulfate	**33.8**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Aug-2019 22:11
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	19-Aug-2019 16:55
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	21-Aug-2019 09:17

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW12.190805-FD
Collection Date: 05-Aug-2019 12:55

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 15:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	08-Aug-2019 15:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Aug-2019 15:45
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 15:45
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Aug-2019 15:45
Carbon tetrachloride	**6.5**		**0.50**	**0.50**	**1.0**	**UG/L**	1	08-Aug-2019 15:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW12.190805-FD
Collection Date: 05-Aug-2019 12:55

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Aug-2019 15:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 15:45
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 15:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 15:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Tetrachloroethene	**6.3**		**0.30**	**0.50**	**1.0**	**UG/L**	1	08-Aug-2019 15:45
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Trichloroethene	**0.53**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Aug-2019 15:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 15:45
Surr: 1,2-Dichloroethane-d4	*89.2*			**0**	*81-118*	*%REC*	*1*	*08-Aug-2019 15:45*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*08-Aug-2019 15:45*
Surr: Dibromofluoromethane	*91.7*			**0**	*80-119*	*%REC*	*1*	*08-Aug-2019 15:45*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*08-Aug-2019 15:45*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**6.10**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Aug-2019 22:25
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	06-Aug-2019 22:25
Sulfate	**37.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	06-Aug-2019 22:25
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	19-Aug-2019 16:55
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	21-Aug-2019 09:17

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW07.190805
Collection Date: 05-Aug-2019 13:55

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 16:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 16:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	08-Aug-2019 16:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 16:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Aug-2019 16:09
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 16:09
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Aug-2019 16:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW07.190805
Collection Date: 05-Aug-2019 13:55

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Aug-2019 16:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 16:09
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 16:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 16:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 16:09
Surr: 1,2-Dichloroethane-d4	*90.1*			**0**	*81-118*	*%REC*	*1*	*08-Aug-2019 16:09*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*08-Aug-2019 16:09*
Surr: Dibromofluoromethane	*91.7*			**0**	*80-119*	*%REC*	*1*	*08-Aug-2019 16:09*
Surr: Toluene-d8	*99.3*			**0**	*89-112*	*%REC*	*1*	*08-Aug-2019 16:09*

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: Trip Blank
Collection Date: 05-Aug-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:21
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 13:21
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	08-Aug-2019 13:21
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:21
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Aug-2019 13:21
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 13:21
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Aug-2019 13:21
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21

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

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: Trip Blank
Collection Date: 05-Aug-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19080238
Lab ID:HS19080238-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Aug-2019 13:21
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Aug-2019 13:21
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Aug-2019 13:21
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	08-Aug-2019 13:21
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Aug-2019 13:21
Surr: 1,2-Dichloroethane-d4	*89.1*			**0**	*81-118*	*%REC*	*1*	*08-Aug-2019 13:21*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*85-114*	*%REC*	*1*	*08-Aug-2019 13:21*
Surr: Dibromofluoromethane	*92.2*			**0**	*80-119*	*%REC*	*1*	*08-Aug-2019 13:21*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*08-Aug-2019 13:21*

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

ALS Houston, US Date: 21-ago-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R343872 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS19080238-01	35BWW19.190805	05 Aug 2019 07:25			07 Aug 2019 21:55	1
HS19080238-02	35BWW18.190805	05 Aug 2019 08:35			07 Aug 2019 22:19	1
Batch ID: R343919 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS19080238-03	35BWW09.190805	05 Aug 2019 09:20			08 Aug 2019 12:57	1
HS19080238-04	35BWW01.190805	05 Aug 2019 10:05			08 Aug 2019 13:45	1
HS19080238-05	35BWW01.190805-FD	05 Aug 2019 10:05			08 Aug 2019 14:09	1
HS19080238-06	35BWW08.190805	05 Aug 2019 11:00			08 Aug 2019 14:33	1
HS19080238-07	35BWW04.190805	05 Aug 2019 12:00			08 Aug 2019 14:57	1
HS19080238-08	35BWW12.190805	05 Aug 2019 12:55			08 Aug 2019 15:21	1
HS19080238-09	35BWW12.190805-FD	05 Aug 2019 12:55			08 Aug 2019 15:45	1
HS19080238-10	35BWW07.190805	05 Aug 2019 13:55			08 Aug 2019 16:09	1
HS19080238-11	Trip Blank	05 Aug 2019 00:00			08 Aug 2019 13:21	1
Batch ID: R344224 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS19080238-06	35BWW08.190805	05 Aug 2019 11:00			06 Aug 2019 21:12	1
HS19080238-07	35BWW04.190805	05 Aug 2019 12:00			06 Aug 2019 21:56	1
HS19080238-08	35BWW12.190805	05 Aug 2019 12:55			06 Aug 2019 22:11	1
HS19080238-09	35BWW12.190805-FD	05 Aug 2019 12:55			06 Aug 2019 22:25	1
Batch ID: R344526 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS19080238-06	35BWW08.190805	05 Aug 2019 11:00			19 Aug 2019 16:55	1
HS19080238-07	35BWW04.190805	05 Aug 2019 12:00			19 Aug 2019 16:55	1
HS19080238-08	35BWW12.190805	05 Aug 2019 12:55			19 Aug 2019 16:55	1
HS19080238-09	35BWW12.190805-FD	05 Aug 2019 12:55			19 Aug 2019 16:55	1
Batch ID: R344639 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS19080238-06	35BWW08.190805	05 Aug 2019 11:00			21 Aug 2019 09:17	1
HS19080238-07	35BWW04.190805	05 Aug 2019 12:00			21 Aug 2019 09:17	1
HS19080238-08	35BWW12.190805	05 Aug 2019 12:55			21 Aug 2019 09:17	1
HS19080238-09	35BWW12.190805-FD	05 Aug 2019 12:55			21 Aug 2019 09:17	1

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190807** Units: **UG/L** Analysis Date: **07-Aug-2019 13:30**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190807** Units: **UG/L** Analysis Date: **07-Aug-2019 13:30**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.28*	*1.0*	*50*	*0*	*88.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.98*	*1.0*	*50*	*0*	*100.0*	*85 - 114*				
Surr: Dibromofluoromethane	*45.6*	*1.0*	*50*	*0*	*91.2*	*80 - 119*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190807** Units: **UG/L** Analysis Date: **07-Aug-2019 13:30**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201296** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.25*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190807** Units: **UG/L** Analysis Date: **07-Aug-2019 12:42**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.88	1.0	20	0	94.4	78 - 124				
1,1,1-Trichloroethane	17.91	1.0	20	0	89.6	74 - 131				
1,1,2,2-Tetrachloroethane	19.57	1.0	20	0	97.8	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	17.32	1.0	20	0	86.6	70 - 136				
1,1,2-Trichloroethane	19.03	1.0	20	0	95.1	80 - 119				
1,1-Dichloroethane	18.63	1.0	20	0	93.1	77 - 125				
1,1-Dichloroethene	17.73	1.0	20	0	88.7	71 - 131				
1,1-Dichloropropene	16.87	1.0	20	0	84.3	78 - 125				
1,2,3-Trichlorobenzene	17.6	1.0	20	0	88.0	69 - 129				
1,2,3-Trichloropropane	19.23	1.0	20	0	96.2	73 - 122				
1,2,4-Trichlorobenzene	17.89	1.0	20	0	89.4	69 - 130				
1,2,4-Trimethylbenzene	16.82	1.0	20	0	84.1	76 - 124				
1,2-Dibromo-3-chloropropane	18.89	1.0	20	0	94.4	62 - 128				
1,2-Dibromoethane	19.46	1.0	20	0	97.3	77 - 121				
1,2-Dichlorobenzene	18.81	1.0	20	0	94.0	80 - 119				
1,2-Dichloroethane	18.59	1.0	20	0	93.0	73 - 128				
1,2-Dichloropropane	19.17	1.0	20	0	95.9	78 - 122				
1,3,5-Trimethylbenzene	16.39	1.0	20	0	81.9	75 - 124				
1,3-Dichlorobenzene	17.31	1.0	20	0	86.5	80 - 119				
1,3-Dichloropropane	18.74	1.0	20	0	93.7	80 - 119				
1,4-Dichlorobenzene	18.67	1.0	20	0	93.4	79 - 118				
2,2-Dichloropropane	19.03	1.0	20	0	95.2	60 - 139				
2-Butanone	38.71	2.0	40	0	96.8	56 - 143				
2-Chlorotoluene	17.17	1.0	20	0	85.9	79 - 122				
2-Hexanone	39.63	2.0	40	0	99.1	57 - 139				
4-Chlorotoluene	17.31	1.0	20	0	86.6	78 - 122				
4-Isopropyltoluene	15.75	1.0	20	0	78.7	77 - 127				
4-Methyl-2-pentanone	36.66	2.0	40	0	91.7	67 - 130				
Acetone	42.92	2.0	40	0	107	39 - 160				
Benzene	18.67	1.0	20	0	93.3	79 - 120				
Bromobenzene	18.18	1.0	20	0	90.9	80 - 120				
Bromochloromethane	18.27	1.0	20	0	91.4	78 - 123				
Bromodichloromethane	18.9	1.0	20	0	94.5	79 - 125				
Bromoform	19.08	1.0	20	0	95.4	66 - 130				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190807** Units: **UG/L** Analysis Date: **07-Aug-2019 12:42**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	20.94	1.0	20	0	105	53 - 141				
Carbon disulfide	36.9	2.0	40	0	92.3	64 - 133				
Carbon tetrachloride	16.66	1.0	20	0	83.3	72 - 136				
Chlorobenzene	18.59	1.0	20	0	92.9	82 - 118				
Chloroethane	19.27	1.0	20	0	96.4	60 - 138				
Chloroform	18.84	1.0	20	0	94.2	79 - 124				
Chloromethane	18.3	1.0	20	0	91.5	50 - 139				
cis-1,2-Dichloroethene	19.01	1.0	20	0	95.0	78 - 123				
cis-1,3-Dichloropropene	19.28	1.0	20	0	96.4	75 - 124				
Dibromochloromethane	18.79	1.0	20	0	93.9	74 - 126				
Dibromomethane	18.98	1.0	20	0	94.9	79 - 123				
Dichlorodifluoromethane	18.22	1.0	20	0	91.1	32 - 152				
Ethylbenzene	17.66	1.0	20	0	88.3	79 - 121				
Hexachlorobutadiene	18.71	1.0	20	0	93.6	66 - 134				
Isopropylbenzene	16.67	1.0	20	0	83.4	72 - 131				
m,p-Xylene	35.46	2.0	40	0	88.6	80 - 121				
Methylene chloride	19.71	2.0	20	0	98.5	74 - 124				
Naphthalene	17.34	1.0	20	0	86.7	61 - 128				
n-Butylbenzene	16.15	1.0	20	0	80.7	75 - 128				
n-Propylbenzene	16.26	1.0	20	0	81.3	76 - 126				
o-Xylene	17.78	1.0	20	0	88.9	78 - 122				
sec-Butylbenzene	15.41	1.0	20	0	77.0	77 - 126				
Styrene	18.91	1.0	20	0	94.6	78 - 123				
tert-Butylbenzene	15.61	1.0	20	0	78.0	78 - 124				
Tetrachloroethene	16.59	1.0	20	0	83.0	74 - 129				
Toluene	18.55	1.0	20	0	92.8	80 - 121				
trans-1,2-Dichloroethene	18.72	1.0	20	0	93.6	75 - 124				
trans-1,3-Dichloropropene	19.15	1.0	20	0	95.7	73 - 127				
Trichloroethene	18.25	1.0	20	0	91.2	79 - 123				
Trichlorofluoromethane	17.22	1.0	20	0	86.1	65 - 141				
Vinyl chloride	17.87	1.0	20	0	89.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*50.42*	*1.0*	*50*	*0*	*101*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.35*	*1.0*	*50*	*0*	*103*	*85 - 114*				
Surr: Dibromofluoromethane	*51.09*	*1.0*	*50*	*0*	*102*	*80 - 119*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190807** Units: **UG/L** Analysis Date: **07-Aug-2019 12:42**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*47.31*	*1.0*	*50*	*0*	*94.6*	*89 - 112*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19080180-02MS** Units: **UG/L** Analysis Date: **07-Aug-2019 16:42**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201304** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.15	1.0	20	0	95.7	78 - 124				
1,1,1-Trichloroethane	17.93	1.0	20	0	89.6	74 - 131				
1,1,2,2-Tetrachloroethane	20.41	1.0	20	0	102	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	19.86	1.0	20	0	99.3	70 - 136				
1,1,2-Trichloroethane	18.65	1.0	20	0	93.3	80 - 119				
1,1-Dichloroethane	16.87	1.0	20	0	84.4	77 - 125				
1,1-Dichloroethene	17.28	1.0	20	0	86.4	71 - 131				
1,1-Dichloropropene	18.36	1.0	20	0	91.8	78 - 125				
1,2,3-Trichlorobenzene	20.43	1.0	20	0	102	69 - 129				
1,2,3-Trichloropropane	19.96	1.0	20	0	99.8	73 - 122				
1,2,4-Trichlorobenzene	20.3	1.0	20	0	101	69 - 130				
1,2,4-Trimethylbenzene	20.3	1.0	20	0	101	76 - 124				
1,2-Dibromo-3-chloropropane	19.64	1.0	20	0	98.2	62 - 128				
1,2-Dibromoethane	18.9	1.0	20	0	94.5	77 - 121				
1,2-Dichlorobenzene	20.59	1.0	20	0	103	80 - 119				
1,2-Dichloroethane	17.44	1.0	20	0	87.2	73 - 128				
1,2-Dichloropropane	18.28	1.0	20	0	91.4	78 - 122				
1,3,5-Trimethylbenzene	20.53	1.0	20	0	103	75 - 124				
1,3-Dichlorobenzene	19.68	1.0	20	0	98.4	80 - 119				
1,3-Dichloropropane	18.74	1.0	20	0	93.7	80 - 119				
1,4-Dichlorobenzene	20.71	1.0	20	0	104	79 - 118				
2,2-Dichloropropane	18.32	1.0	20	0	91.6	60 - 139				
2-Butanone	44.5	2.0	40	0	111	56 - 143				
2-Chlorotoluene	19.86	1.0	20	0	99.3	79 - 122				
2-Hexanone	59.65	2.0	40	0	149	57 - 139				S
4-Chlorotoluene	19.88	1.0	20	0	99.4	78 - 122				
4-Isopropyltoluene	21.06	1.0	20	0	105	77 - 127				
4-Methyl-2-pentanone	59.01	2.0	40	0	148	67 - 130				S
Acetone	34.64	2.0	40	0	86.6	39 - 160				
Benzene	18.4	1.0	20	0	92.0	79 - 120				
Bromobenzene	19.39	1.0	20	0	97.0	80 - 120				
Bromochloromethane	16.08	1.0	20	0	80.4	78 - 123				
Bromodichloromethane	17.79	1.0	20	0	89.0	79 - 125				
Bromoform	18.8	1.0	20	0	94.0	66 - 130				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19080180-02MS** Units: **UG/L** Analysis Date: **07-Aug-2019 16:42**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201304** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	19.44	1.0	20	0	97.2	53 - 141				
Carbon disulfide	51.43	2.0	40	0	129	64 - 133				
Carbon tetrachloride	18.8	1.0	20	0	94.0	72 - 136				
Chlorobenzene	19.16	1.0	20	0	95.8	82 - 118				
Chloroethane	16.89	1.0	20	0	84.4	60 - 138				
Chloroform	17.94	1.0	20	1.023	84.6	79 - 124				
Chloromethane	13.12	1.0	20	0	65.6	50 - 139				
cis-1,2-Dichloroethene	17.11	1.0	20	0	85.6	78 - 123				
cis-1,3-Dichloropropene	17.98	1.0	20	0	89.9	75 - 124				
Dibromochloromethane	18.74	1.0	20	0	93.7	74 - 126				
Dibromomethane	17.71	1.0	20	0	88.5	79 - 123				
Dichlorodifluoromethane	10.48	1.0	20	0	52.4	32 - 152				
Ethylbenzene	20.1	1.0	20	0	100	79 - 121				
Hexachlorobutadiene	22.35	1.0	20	0	112	66 - 134				
Isopropylbenzene	20.55	1.0	20	0	103	72 - 131				
m,p-Xylene	39.89	2.0	40	0	99.7	80 - 121				
Methylene chloride	17.35	2.0	20	0	86.7	74 - 124				
Naphthalene	19.51	1.0	20	0	97.6	61 - 128				
n-Butylbenzene	21.55	1.0	20	0	108	75 - 128				
n-Propylbenzene	21.02	1.0	20	0	105	76 - 126				
o-Xylene	19.66	1.0	20	0	98.3	78 - 122				
sec-Butylbenzene	21.11	1.0	20	0	106	77 - 126				
Styrene	19.72	1.0	20	0	98.6	78 - 123				
tert-Butylbenzene	20.93	1.0	20	0	105	78 - 124				
Tetrachloroethene	20.3	1.0	20	0	101	74 - 129				
Toluene	19.63	1.0	20	0	98.1	80 - 121				
trans-1,2-Dichloroethene	17.28	1.0	20	0	86.4	75 - 124				
trans-1,3-Dichloropropene	17.66	1.0	20	0	88.3	73 - 127				
Trichloroethene	24.06	1.0	20	5.316	93.7	79 - 123				
Trichlorofluoromethane	17.38	1.0	20	0	86.9	65 - 141				
Vinyl chloride	15.15	1.0	20	0	75.7	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.15*	*1.0*	*50*	*0*	*90.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.14*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*46.34*	*1.0*	*50*	*0*	*92.7*	*80 - 119*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19080180-02MS** Units: **UG/L** Analysis Date: **07-Aug-2019 16:42**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201304** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.31*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19080180-02MSD** Units: **UG/L** Analysis Date: **07-Aug-2019 17:06**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201305** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.98	1.0	20	0	94.9	78 - 124	19.15	0.87	20	
1,1,1-Trichloroethane	17.64	1.0	20	0	88.2	74 - 131	17.93	1.64	20	
1,1,2,2-Tetrachloroethane	20	1.0	20	0	100	71 - 121	20.41	2.01	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	19.07	1.0	20	0	95.3	70 - 136	19.86	4.06	20	
1,1,2-Trichloroethane	18.42	1.0	20	0	92.1	80 - 119	18.65	1.23	20	
1,1-Dichloroethane	16.78	1.0	20	0	83.9	77 - 125	16.87	0.525	20	
1,1-Dichloroethene	16.77	1.0	20	0	83.8	71 - 131	17.28	3.03	20	
1,1-Dichloropropene	18.12	1.0	20	0	90.6	78 - 125	18.36	1.35	20	
1,2,3-Trichlorobenzene	20.61	1.0	20	0	103	69 - 129	20.43	0.882	20	
1,2,3-Trichloropropane	19.53	1.0	20	0	97.6	73 - 122	19.96	2.21	20	
1,2,4-Trichlorobenzene	19.81	1.0	20	0	99.0	69 - 130	20.3	2.44	20	
1,2,4-Trimethylbenzene	19.7	1.0	20	0	98.5	76 - 124	20.3	3.01	20	
1,2-Dibromo-3-chloropropane	19.77	1.0	20	0	98.8	62 - 128	19.64	0.679	20	
1,2-Dibromoethane	18.61	1.0	20	0	93.0	77 - 121	18.9	1.54	20	
1,2-Dichlorobenzene	20.15	1.0	20	0	101	80 - 119	20.59	2.13	20	
1,2-Dichloroethane	17.38	1.0	20	0	86.9	73 - 128	17.44	0.326	20	
1,2-Dichloropropane	18.06	1.0	20	0	90.3	78 - 122	18.28	1.25	20	
1,3,5-Trimethylbenzene	19.69	1.0	20	0	98.5	75 - 124	20.53	4.14	20	
1,3-Dichlorobenzene	18.89	1.0	20	0	94.5	80 - 119	19.68	4.08	20	
1,3-Dichloropropane	18.34	1.0	20	0	91.7	80 - 119	18.74	2.15	20	
1,4-Dichlorobenzene	20.11	1.0	20	0	101	79 - 118	20.71	2.93	20	
2,2-Dichloropropane	17.62	1.0	20	0	88.1	60 - 139	18.32	3.87	20	
2-Butanone	45.57	2.0	40	0	114	56 - 143	44.5	2.37	20	
2-Chlorotoluene	19.34	1.0	20	0	96.7	79 - 122	19.86	2.68	20	
2-Hexanone	59.65	2.0	40	0	149	57 - 139	59.65	0.00283	20	S
4-Chlorotoluene	19.16	1.0	20	0	95.8	78 - 122	19.88	3.7	20	
4-Isopropyltoluene	20.12	1.0	20	0	101	77 - 127	21.06	4.54	20	
4-Methyl-2-pentanone	58.88	2.0	40	0	147	67 - 130	59.01	0.221	20	S
Acetone	33.74	2.0	40	0	84.4	39 - 160	34.64	2.63	20	
Benzene	17.9	1.0	20	0	89.5	79 - 120	18.4	2.75	20	
Bromobenzene	18.81	1.0	20	0	94.0	80 - 120	19.39	3.04	20	
Bromochloromethane	16.29	1.0	20	0	81.4	78 - 123	16.08	1.27	20	
Bromodichloromethane	17.73	1.0	20	0	88.7	79 - 125	17.79	0.339	20	
Bromoform	18.43	1.0	20	0	92.1	66 - 130	18.8	2.01	20	

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19080180-02MSD** Units: **UG/L** Analysis Date: **07-Aug-2019 17:06**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201305** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	17.16	1.0	20	0	85.8	53 - 141	19.44	12.5	20	
Carbon disulfide	49.99	2.0	40	0	125	64 - 133	51.43	2.85	20	
Carbon tetrachloride	18.21	1.0	20	0	91.0	72 - 136	18.8	3.18	20	
Chlorobenzene	18.85	1.0	20	0	94.2	82 - 118	19.16	1.62	20	
Chloroethane	16.36	1.0	20	0	81.8	60 - 138	16.89	3.16	20	
Chloroform	17.8	1.0	20	1.023	83.9	79 - 124	17.94	0.769	20	
Chloromethane	13.29	1.0	20	0	66.5	50 - 139	13.12	1.32	20	
cis-1,2-Dichloroethene	16.91	1.0	20	0	84.5	78 - 123	17.11	1.19	20	
cis-1,3-Dichloropropene	18.06	1.0	20	0	90.3	75 - 124	17.98	0.469	20	
Dibromochloromethane	18.42	1.0	20	0	92.1	74 - 126	18.74	1.76	20	
Dibromomethane	17.83	1.0	20	0	89.1	79 - 123	17.71	0.686	20	
Dichlorodifluoromethane	10.12	1.0	20	0	50.6	32 - 152	10.48	3.48	20	
Ethylbenzene	19.33	1.0	20	0	96.6	79 - 121	20.1	3.9	20	
Hexachlorobutadiene	20.8	1.0	20	0	104	66 - 134	22.35	7.18	20	
Isopropylbenzene	19.72	1.0	20	0	98.6	72 - 131	20.55	4.13	20	
m,p-Xylene	38.69	2.0	40	0	96.7	80 - 121	39.89	3.08	20	
Methylene chloride	17.22	2.0	20	0	86.1	74 - 124	17.35	0.761	20	
Naphthalene	19.85	1.0	20	0	99.3	61 - 128	19.51	1.74	20	
n-Butylbenzene	20.43	1.0	20	0	102	75 - 128	21.55	5.36	20	
n-Propylbenzene	20.23	1.0	20	0	101	76 - 126	21.02	3.82	20	
o-Xylene	19.24	1.0	20	0	96.2	78 - 122	19.66	2.18	20	
sec-Butylbenzene	20.22	1.0	20	0	101	77 - 126	21.11	4.35	20	
Styrene	19.08	1.0	20	0	95.4	78 - 123	19.72	3.3	20	
tert-Butylbenzene	19.85	1.0	20	0	99.3	78 - 124	20.93	5.28	20	
Tetrachloroethene	19.68	1.0	20	0	98.4	74 - 129	20.3	3.07	20	
Toluene	19.25	1.0	20	0	96.3	80 - 121	19.63	1.94	20	
trans-1,2-Dichloroethene	16.89	1.0	20	0	84.5	75 - 124	17.28	2.25	20	
trans-1,3-Dichloropropene	17.7	1.0	20	0	88.5	73 - 127	17.66	0.269	20	
Trichloroethene	23.94	1.0	20	5.316	93.1	79 - 123	24.06	0.506	20	
Trichlorofluoromethane	16.51	1.0	20	0	82.5	65 - 141	17.38	5.13	20	
Vinyl chloride	14.75	1.0	20	0	73.7	58 - 137	15.15	2.66	20	
Surr: 1,2-Dichloroethane-d4	*45.32*	*1.0*	*50*	*0*	*90.6*	*81 - 118*	*45.15*	*0.379*	*20*	
Surr: 4-Bromofluorobenzene	*50.43*	*1.0*	*50*	*0*	*101*	*85 - 114*	*50.14*	*0.578*	*20*	
Surr: Dibromofluoromethane	*46.81*	*1.0*	*50*	*0*	*93.6*	*80 - 119*	*46.34*	*1.01*	*20*	

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343872 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19080180-02MSD** Units: **UG/L** Analysis Date: **07-Aug-2019 17:06**
Client ID: Run ID: **VOA6_343872** SeqNo: **5201305** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.3*	*1.0*	*50*	*0*	*101*	*89 - 112*	*50.31*	*0.0248*	*20*	

The following samples were analyzed in this batch: HS19080238-01 HS19080238-02

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190808** Units: **UG/L** Analysis Date: **08-Aug-2019 12:33**
Client ID: Run ID: **VOA6_343919** SeqNo: **5202079** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190808** Units: **UG/L** Analysis Date: **08-Aug-2019 12:33**
Client ID: Run ID: **VOA6_343919** SeqNo: **5202079** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.02*	*1.0*	*50*	*0*	*88.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.67*	*1.0*	*50*	*0*	*97.3*	*85 - 114*				
Surr: Dibromofluoromethane	*45.44*	*1.0*	*50*	*0*	*90.9*	*80 - 119*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-190808** Units: **UG/L** Analysis Date: **08-Aug-2019 12:33**
Client ID: Run ID: **VOA6_343919** SeqNo: **5202079** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.14*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-190808** Units: **UG/L** Analysis Date: **08-Aug-2019 11:45**
Client ID: Run ID: **VOA6_343919** SeqNo: **5202078** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.46	1.0	20	0	97.3	78 - 124				
1,1,1-Trichloroethane	19	1.0	20	0	95.0	74 - 131				
1,1,2,2-Tetrachloroethane	19.97	1.0	20	0	99.9	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	19.04	1.0	20	0	95.2	70 - 136				
1,1,2-Trichloroethane	19.49	1.0	20	0	97.4	80 - 119				
1,1-Dichloroethane	19.31	1.0	20	0	96.5	77 - 125				
1,1-Dichloroethene	19.08	1.0	20	0	95.4	71 - 131				
1,1-Dichloropropene	18.39	1.0	20	0	91.9	78 - 125				
1,2,3-Trichlorobenzene	22.55	1.0	20	0	113	69 - 129				
1,2,3-Trichloropropane	19.42	1.0	20	0	97.1	73 - 122				
1,2,4-Trichlorobenzene	20.73	1.0	20	0	104	69 - 130				
1,2,4-Trimethylbenzene	18.32	1.0	20	0	91.6	76 - 124				
1,2-Dibromo-3-chloropropane	19.4	1.0	20	0	97.0	62 - 128				
1,2-Dibromoethane	19.5	1.0	20	0	97.5	77 - 121				
1,2-Dichlorobenzene	19.85	1.0	20	0	99.3	80 - 119				
1,2-Dichloroethane	19.01	1.0	20	0	95.1	73 - 128				
1,2-Dichloropropane	20.24	1.0	20	0	101	78 - 122				
1,3,5-Trimethylbenzene	18.06	1.0	20	0	90.3	75 - 124				
1,3-Dichlorobenzene	18.34	1.0	20	0	91.7	80 - 119				
1,3-Dichloropropane	19.17	1.0	20	0	95.9	80 - 119				
1,4-Dichlorobenzene	19.64	1.0	20	0	98.2	79 - 118				
2,2-Dichloropropane	19.78	1.0	20	0	98.9	60 - 139				
2-Butanone	36.3	2.0	40	0	90.8	56 - 143				
2-Chlorotoluene	18.19	1.0	20	0	90.9	79 - 122				
2-Hexanone	38.67	2.0	40	0	96.7	57 - 139				
4-Chlorotoluene	18.25	1.0	20	0	91.3	78 - 122				
4-Isopropyltoluene	17.67	1.0	20	0	88.4	77 - 127				
4-Methyl-2-pentanone	37.92	2.0	40	0	94.8	67 - 130				
Acetone	35.01	2.0	40	0	87.5	39 - 160				
Benzene	19.48	1.0	20	0	97.4	79 - 120				
Bromobenzene	18.64	1.0	20	0	93.2	80 - 120				
Bromochloromethane	18.75	1.0	20	0	93.7	78 - 123				
Bromodichloromethane	19.53	1.0	20	0	97.6	79 - 125				
Bromoform	18.98	1.0	20	0	94.9	66 - 130				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190808** Units: **UG/L** Analysis Date: **08-Aug-2019 11:45**
Client ID: Run ID: **VOA6_343919** SeqNo: **5202078** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	23.64	1.0	20	0	118	53 - 141				
Carbon disulfide	39.13	2.0	40	0	97.8	64 - 133				
Carbon tetrachloride	17.67	1.0	20	0	88.3	72 - 136				
Chlorobenzene	19.12	1.0	20	0	95.6	82 - 118				
Chloroethane	21.88	1.0	20	0	109	60 - 138				
Chloroform	19.29	1.0	20	0	96.4	79 - 124				
Chloromethane	20.58	1.0	20	0	103	50 - 139				
cis-1,2-Dichloroethene	19.38	1.0	20	0	96.9	78 - 123				
cis-1,3-Dichloropropene	19.82	1.0	20	0	99.1	75 - 124				
Dibromochloromethane	19.31	1.0	20	0	96.6	74 - 126				
Dibromomethane	19.52	1.0	20	0	97.6	79 - 123				
Dichlorodifluoromethane	19.1	1.0	20	0	95.5	32 - 152				
Ethylbenzene	18.78	1.0	20	0	93.9	79 - 121				
Hexachlorobutadiene	23.01	1.0	20	0	115	66 - 134				
Isopropylbenzene	18.11	1.0	20	0	90.5	72 - 131				
m,p-Xylene	37.4	2.0	40	0	93.5	80 - 121				
Methylene chloride	20.05	2.0	20	0	100	74 - 124				
Naphthalene	20.16	1.0	20	0	101	61 - 128				
n-Butylbenzene	18.38	1.0	20	0	91.9	75 - 128				
n-Propylbenzene	17.96	1.0	20	0	89.8	76 - 126				
o-Xylene	19.05	1.0	20	0	95.2	78 - 122				
sec-Butylbenzene	17.44	1.0	20	0	87.2	77 - 126				
Styrene	19.41	1.0	20	0	97.0	78 - 123				
tert-Butylbenzene	17.36	1.0	20	0	86.8	78 - 124				
Tetrachloroethene	18.12	1.0	20	0	90.6	74 - 129				
Toluene	19.34	1.0	20	0	96.7	80 - 121				
trans-1,2-Dichloroethene	19.28	1.0	20	0	96.4	75 - 124				
trans-1,3-Dichloropropene	20.09	1.0	20	0	100	73 - 127				
Trichloroethene	19.17	1.0	20	0	95.9	79 - 123				
Trichlorofluoromethane	18.76	1.0	20	0	93.8	65 - 141				
Vinyl chloride	19.75	1.0	20	0	98.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*50.1*	*1.0*	*50*	*0*	*100*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.81*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*50.54*	*1.0*	*50*	*0*	*101*	*80 - 119*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-190808** Units: **UG/L** Analysis Date: **08-Aug-2019 11:45**
Client ID: Run ID: **VOA6_343919** SeqNo: **5202078** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*47.57*	*1.0*	*50*	*0*	*95.1*	*89 - 112*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19080238-03MS** Units: **UG/L** Analysis Date: **08-Aug-2019 16:34**
Client ID: **35BWW09.190805** Run ID: **VOA6_343919** SeqNo: **5202814** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.12	1.0	20	0	95.6	78 - 124				
1,1,1-Trichloroethane	18.07	1.0	20	0	90.4	74 - 131				
1,1,2,2-Tetrachloroethane	20.2	1.0	20	0	101	71 - 121				
1,1,2-Trichlor-1,2,2-trifluoroethane	20.28	1.0	20	0	101	70 - 136				
1,1,2-Trichloroethane	19.05	1.0	20	0	95.3	80 - 119				
1,1-Dichloroethane	17.16	1.0	20	0	85.8	77 - 125				
1,1-Dichloroethene	17.72	1.0	20	0	88.6	71 - 131				
1,1-Dichloropropene	18.71	1.0	20	0	93.5	78 - 125				
1,2,3-Trichlorobenzene	20.73	1.0	20	0	104	69 - 129				
1,2,3-Trichloropropane	19.62	1.0	20	0	98.1	73 - 122				
1,2,4-Trichlorobenzene	20.78	1.0	20	0	104	69 - 130				
1,2,4-Trimethylbenzene	20.17	1.0	20	0	101	76 - 124				
1,2-Dibromo-3-chloropropane	20.28	1.0	20	0	101	62 - 128				
1,2-Dibromoethane	18.99	1.0	20	0	95.0	77 - 121				
1,2-Dichlorobenzene	20.54	1.0	20	0	103	80 - 119				
1,2-Dichloroethane	17.64	1.0	20	0	88.2	73 - 128				
1,2-Dichloropropane	18.49	1.0	20	0	92.5	78 - 122				
1,3,5-Trimethylbenzene	20.35	1.0	20	0	102	75 - 124				
1,3-Dichlorobenzene	19.51	1.0	20	0	97.6	80 - 119				
1,3-Dichloropropane	18.76	1.0	20	0	93.8	80 - 119				
1,4-Dichlorobenzene	20.51	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	17.67	1.0	20	0	88.3	60 - 139				
2-Butanone	44.73	2.0	40	0	112	56 - 143				
2-Chlorotoluene	19.71	1.0	20	0	98.6	79 - 122				
2-Hexanone	55.67	2.0	40	0	139	57 - 139				S
4-Chlorotoluene	19.6	1.0	20	0	98.0	78 - 122				
4-Isopropyltoluene	21.03	1.0	20	0	105	77 - 127				
4-Methyl-2-pentanone	54.84	2.0	40	0	137	67 - 130				S
Acetone	35.38	2.0	40	0	88.5	39 - 160				
Benzene	18.45	1.0	20	0	92.3	79 - 120				
Bromobenzene	19.27	1.0	20	0	96.3	80 - 120				
Bromochloromethane	16.53	1.0	20	0	82.7	78 - 123				
Bromodichloromethane	18.03	1.0	20	0	90.2	79 - 125				
Bromoform	18.73	1.0	20	0	93.6	66 - 130				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19080238-03MS** Units: **UG/L** Analysis Date: **08-Aug-2019 16:34**
Client ID: **35BWW09.190805** Run ID: **VOA6_343919** SeqNo: **5202814** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	18.54	1.0	20	0	92.7	53 - 141				
Carbon disulfide	50.78	2.0	40	0	127	64 - 133				
Carbon tetrachloride	18.73	1.0	20	0	93.7	72 - 136				
Chlorobenzene	19.26	1.0	20	0	96.3	82 - 118				
Chloroethane	17.3	1.0	20	0	86.5	60 - 138				
Chloroform	17.31	1.0	20	0	86.6	79 - 124				
Chloromethane	13.09	1.0	20	0	65.4	50 - 139				
cis-1,2-Dichloroethene	17.72	1.0	20	0	88.6	78 - 123				
cis-1,3-Dichloropropene	17.91	1.0	20	0	89.5	75 - 124				
Dibromochloromethane	18.83	1.0	20	0	94.2	74 - 126				
Dibromomethane	17.96	1.0	20	0	89.8	79 - 123				
Dichlorodifluoromethane	10.02	1.0	20	0	50.1	32 - 152				
Ethylbenzene	19.96	1.0	20	0	99.8	79 - 121				
Hexachlorobutadiene	22.87	1.0	20	0	114	66 - 134				
Isopropylbenzene	20.23	1.0	20	0	101	72 - 131				
m,p-Xylene	39.76	2.0	40	0	99.4	80 - 121				
Methylene chloride	17.76	2.0	20	0	88.8	74 - 124				
Naphthalene	19.45	1.0	20	0	97.2	61 - 128				
n-Butylbenzene	21.83	1.0	20	0	109	75 - 128				
n-Propylbenzene	20.86	1.0	20	0	104	76 - 126				
o-Xylene	19.64	1.0	20	0	98.2	78 - 122				
sec-Butylbenzene	21.12	1.0	20	0	106	77 - 126				
Styrene	19.53	1.0	20	0	97.6	78 - 123				
tert-Butylbenzene	20.9	1.0	20	0	105	78 - 124				
Tetrachloroethene	20.31	1.0	20	0	102	74 - 129				
Toluene	19.74	1.0	20	0	98.7	80 - 121				
trans-1,2-Dichloroethene	17.75	1.0	20	0	88.8	75 - 124				
trans-1,3-Dichloropropene	17.6	1.0	20	0	88.0	73 - 127				
Trichloroethene	89.13	1.0	20	70.49	93.2	79 - 123				
Trichlorofluoromethane	17.61	1.0	20	0	88.1	65 - 141				
Vinyl chloride	15.6	1.0	20	0	78.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*45.27*	*1.0*	*50*	*0*	*90.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.34*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*46.62*	*1.0*	*50*	*0*	*93.2*	*80 - 119*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19080238-03MS** Units: **UG/L** Analysis Date: **08-Aug-2019 16:34**
Client ID: **35BWW09.190805** Run ID: **VOA6_343919** SeqNo: **5202814** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.87*	*1.0*	*50*	*0*	*99.7*	*89 - 112*				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19080238-03MSD** Units: **UG/L** Analysis Date: **08-Aug-2019 16:58**
Client ID: **35BWW09.190805** Run ID: **VOA6_343919** SeqNo: **5202816** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	18.61	1.0	20	0	93.0	78 - 124	19.12	2.73	20	
1,1,1-Trichloroethane	17.55	1.0	20	0	87.8	74 - 131	18.07	2.95	20	
1,1,2,2-Tetrachloroethane	19.54	1.0	20	0	97.7	71 - 121	20.2	3.28	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	19.17	1.0	20	0	95.9	70 - 136	20.28	5.61	20	
1,1,2-Trichloroethane	18.54	1.0	20	0	92.7	80 - 119	19.05	2.69	20	
1,1-Dichloroethane	16.57	1.0	20	0	82.8	77 - 125	17.16	3.52	20	
1,1-Dichloroethene	16.94	1.0	20	0	84.7	71 - 131	17.72	4.51	20	
1,1-Dichloropropene	17.66	1.0	20	0	88.3	78 - 125	18.71	5.78	20	
1,2,3-Trichlorobenzene	20.69	1.0	20	0	103	69 - 129	20.73	0.198	20	
1,2,3-Trichloropropane	19.36	1.0	20	0	96.8	73 - 122	19.62	1.33	20	
1,2,4-Trichlorobenzene	20.25	1.0	20	0	101	69 - 130	20.78	2.59	20	
1,2,4-Trimethylbenzene	18.79	1.0	20	0	93.9	76 - 124	20.17	7.08	20	
1,2-Dibromo-3-chloropropane	19.23	1.0	20	0	96.1	62 - 128	20.28	5.33	20	
1,2-Dibromoethane	18.76	1.0	20	0	93.8	77 - 121	18.99	1.26	20	
1,2-Dichlorobenzene	19.39	1.0	20	0	96.9	80 - 119	20.54	5.75	20	
1,2-Dichloroethane	17.4	1.0	20	0	87.0	73 - 128	17.64	1.37	20	
1,2-Dichloropropane	18.09	1.0	20	0	90.4	78 - 122	18.49	2.22	20	
1,3,5-Trimethylbenzene	18.91	1.0	20	0	94.6	75 - 124	20.35	7.31	20	
1,3-Dichlorobenzene	18.3	1.0	20	0	91.5	80 - 119	19.51	6.43	20	
1,3-Dichloropropane	18.31	1.0	20	0	91.6	80 - 119	18.76	2.41	20	
1,4-Dichlorobenzene	19.38	1.0	20	0	96.9	79 - 118	20.51	5.64	20	
2,2-Dichloropropane	16.68	1.0	20	0	83.4	60 - 139	17.67	5.76	20	
2-Butanone	46.67	2.0	40	0	117	56 - 143	44.73	4.25	20	
2-Chlorotoluene	18.5	1.0	20	0	92.5	79 - 122	19.71	6.33	20	
2-Hexanone	55.97	2.0	40	0	140	57 - 139	55.67	0.539	20	S
4-Chlorotoluene	18.37	1.0	20	0	91.8	78 - 122	19.6	6.5	20	
4-Isopropyltoluene	19.63	1.0	20	0	98.1	77 - 127	21.03	6.88	20	
4-Methyl-2-pentanone	54.84	2.0	40	0	137	67 - 130	54.84	0	20	S
Acetone	36.24	2.0	40	0	90.6	39 - 160	35.38	2.38	20	
Benzene	17.83	1.0	20	0	89.2	79 - 120	18.45	3.42	20	
Bromobenzene	17.8	1.0	20	0	89.0	80 - 120	19.27	7.93	20	
Bromochloromethane	16.23	1.0	20	0	81.1	78 - 123	16.53	1.86	20	
Bromodichloromethane	17.52	1.0	20	0	87.6	79 - 125	18.03	2.89	20	
Bromoform	18.11	1.0	20	0	90.6	66 - 130	18.73	3.35	20	

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19080238-03MSD** Units: **UG/L** Analysis Date: **08-Aug-2019 16:58**
Client ID: **35BWW09.190805** Run ID: **VOA6_343919** SeqNo: **5202816** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	16.98	1.0	20	0	84.9	53 - 141	18.54	8.78	20	
Carbon disulfide	48.14	2.0	40	0	120	64 - 133	50.78	5.35	20	
Carbon tetrachloride	17.91	1.0	20	0	89.5	72 - 136	18.73	4.52	20	
Chlorobenzene	18.44	1.0	20	0	92.2	82 - 118	19.26	4.33	20	
Chloroethane	16.02	1.0	20	0	80.1	60 - 138	17.3	7.65	20	
Chloroform	16.81	1.0	20	0	84.0	79 - 124	17.31	2.95	20	
Chloromethane	12.44	1.0	20	0	62.2	50 - 139	13.09	5.1	20	
cis-1,2-Dichloroethene	17.22	1.0	20	0	86.1	78 - 123	17.72	2.88	20	
cis-1,3-Dichloropropene	17.82	1.0	20	0	89.1	75 - 124	17.91	0.483	20	
Dibromochloromethane	18.19	1.0	20	0	91.0	74 - 126	18.83	3.45	20	
Dibromomethane	17.72	1.0	20	0	88.6	79 - 123	17.96	1.35	20	
Dichlorodifluoromethane	9.356	1.0	20	0	46.8	32 - 152	10.02	6.82	20	
Ethylbenzene	18.89	1.0	20	0	94.5	79 - 121	19.96	5.52	20	
Hexachlorobutadiene	22.07	1.0	20	0	110	66 - 134	22.87	3.56	20	
Isopropylbenzene	19.27	1.0	20	0	96.4	72 - 131	20.23	4.84	20	
m,p-Xylene	37.68	2.0	40	0	94.2	80 - 121	39.76	5.38	20	
Methylene chloride	17.27	2.0	20	0	86.3	74 - 124	17.76	2.79	20	
Naphthalene	19.44	1.0	20	0	97.2	61 - 128	19.45	0.0134	20	
n-Butylbenzene	20.28	1.0	20	0	101	75 - 128	21.83	7.33	20	
n-Propylbenzene	19.28	1.0	20	0	96.4	76 - 126	20.86	7.9	20	
o-Xylene	18.76	1.0	20	0	93.8	78 - 122	19.64	4.59	20	
sec-Butylbenzene	19.88	1.0	20	0	99.4	77 - 126	21.12	6.07	20	
Styrene	18.9	1.0	20	0	94.5	78 - 123	19.53	3.25	20	
tert-Butylbenzene	19.4	1.0	20	0	97.0	78 - 124	20.9	7.43	20	
Tetrachloroethene	18.93	1.0	20	0	94.6	74 - 129	20.31	7.02	20	
Toluene	18.71	1.0	20	0	93.5	80 - 121	19.74	5.38	20	
trans-1,2-Dichloroethene	16.96	1.0	20	0	84.8	75 - 124	17.75	4.55	20	
trans-1,3-Dichloropropene	17.52	1.0	20	0	87.6	73 - 127	17.6	0.401	20	
Trichloroethene	85.3	1.0	20	70.49	74.0	79 - 123	89.13	4.4	20	S
Trichlorofluoromethane	16.5	1.0	20	0	82.5	65 - 141	17.61	6.51	20	
Vinyl chloride	14.25	1.0	20	0	71.2	58 - 137	15.6	9.08	20	
Surr: 1,2-Dichloroethane-d4	*45.05*	*1.0*	*50*	*0*	*90.1*	*81 - 118*	*45.27*	*0.482*	*20*	
Surr: 4-Bromofluorobenzene	*51.13*	*1.0*	*50*	*0*	*102*	*85 - 114*	*50.34*	*1.55*	*20*	
Surr: Dibromofluoromethane	*46.54*	*1.0*	*50*	*0*	*93.1*	*80 - 119*	*46.62*	*0.158*	*20*	

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R343919 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19080238-03MSD** Units: **UG/L** Analysis Date: **08-Aug-2019 16:58**
Client ID: **35BWW09.190805** Run ID: **VOA6_343919** SeqNo: **5202816** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.04*	*1.0*	*50*	*0*	*98.1*	*89 - 112*	*49.87*	*1.67*	*20*	

The following samples were analyzed in this batch:

HS19080238-03	HS19080238-04	HS19080238-05	HS19080238-06
HS19080238-07	HS19080238-08	HS19080238-09	HS19080238-10
HS19080238-11			

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R344224 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-080619** Units: **mg/L** Analysis Date: **06-Aug-2019 14:10**
Client ID: Run ID: **ICS2100_344224** SeqNo: **5209196** PrepDate: DF: **1**

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

LCS Sample ID: **WLCSW1-080619** Units: **mg/L** Analysis Date: **06-Aug-2019 14:24**
Client ID: Run ID: **ICS2100_344224** SeqNo: **5209197** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.49	0.500	20	0	97.5	80 - 120				
Nitrogen, Nitrate (As N)	3.721	0.100	4	0	93.0	80 - 120				
Sulfate	19.15	0.500	20	0	95.8	80 - 120				

LCSD Sample ID: **WLCSDW1-080619** Units: **mg/L** Analysis Date: **06-Aug-2019 14:39**
Client ID: Run ID: **ICS2100_344224** SeqNo: **5209198** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.09	0.500	20	0	95.5	80 - 120	19.49	2.06	20	
Nitrogen, Nitrate (As N)	3.641	0.100	4	0	91.0	80 - 120	3.721	2.17	20	
Sulfate	18.8	0.500	20	0	94.0	80 - 120	19.15	1.83	20	

MS Sample ID: **HS19080238-06MS** Units: **mg/L** Analysis Date: **06-Aug-2019 21:27**
Client ID: **35BWW08.190805** Run ID: **ICS2100_344224** SeqNo: **5209204** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	12.15	0.500	10	2.427	97.3	80 - 120				
Nitrogen, Nitrate (As N)	2.021	0.100	2	0.18	92.0	80 - 120				
Sulfate	27.21	0.500	10	17.03	102	80 - 120				

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS19080238

QC BATCH REPORT

Batch ID: R344224 (0) **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS19080238-06MSD** Units: **mg/L** Analysis Date: **06-Aug-2019 21:41**
Client ID: **35BWW08.190805** Run ID: **ICS2100_344224** SeqNo: **5209205** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	11.51	0.500	10	2.427	90.8	80 - 120	12.15	5.43	20	
Nitrogen, Nitrate (As N)	1.893	0.100	2	0.18	85.6	80 - 120	2.021	6.54	20	
Sulfate	25.92	0.500	10	17.03	88.8	80 - 120	27.21	4.87	20	

The following samples were analyzed in this batch: HS19080238-06 HS19080238-07 HS19080238-08 HS19080238-09

ALS Houston, US Date: 21-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: **HS19080238**

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

ALS Houston, US Date: 21-Aug-19

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
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	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

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ALS Houston, US Date: 21-Aug-19

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19080238

Date/Time Received: **06-Aug-2019 09:53**
Received by: **SBM**

Checklist completed by: *Paresh M. Giga* eSignature — 6-Aug-2019 Date

Reviewed by: *RJ Modashia* eSignature — 6-Aug-2019 Date

Matrices: **Groundwater/Water**

Carrier name: **UPS**

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):	1.3c U/C	IR11
Cooler(s)/Kit(s):	24602	
Date/Time sample(s) sent to storage:	8/6/19 12:20	

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:

00956783

APTIM

Page 1 of

COC ID: LHAAP37-AUG2019-ALS | TURNAROUND TIME: | 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-37	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 / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	Sample Container and Preservatives	ANALYSIS	3-40 ml VOA/HCL — Voas by 8260B	3-40 ml VOA/HCL — MEE by RSK175	3-40 ml VOA/Cool to 6 deg C — CO2 by RSK175	2-40ml Amber/H2SO4 — TOC by Sm5310C	1-250ml/Cool to 6 deg C — Anions (Chloride/sulfate/nitrate) by 9056
35BwW4-190805	LHAAP 37	25.72	25.63		WG	8/5/19	0725	3			X				
35BwW8-190805	LHAAP 37	25.61	25.84		WG	8/5/19	0835	3			X				
35BwW09-190805	LHAAP37	23.95	24.14		WG	8/5/19	0920	3			X				
35BwW01-190805	LHAAP 37	11.93	12.12		WG	8/5/19	1005	3			X				
35BwW01-190805-FD	LHAAP37	11.93	12.12		WG	8/5/19	1005	3			X				
35BwW08-190805	LHAAP 37	20.58	20.72		WG	8/5/19	1100	12			X	X	X	X	X
35BwW04-190805	LHAAP 37	20.78	20.98		WG	8/5/19	1200	12			X	X	X	X	X
35BwW12-190805	LHAAP37	19.54	19.74		WG	8/5/19	1255	12			X	X	X	X	X
35BwW12-190805-FD	LHAAP37	19.54	19.74		WG	8/5/19	1255	12			X	X	X	X	X
35BwW07-190805	LHAAP37	23.90	24.12		WG	8/5/19	1355	3			X				
TRIP BLANK	LHAAP37				W	8/5/19		2			X				

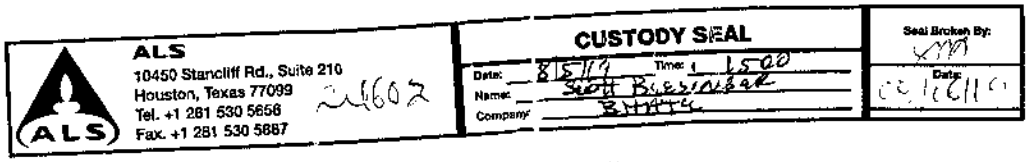
Aptim Environmental & Infrastructure, Inc.
Longhorn Army Ammunition Plant

HS1908023B

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	Sam Beeson/BHATE	8/5/19 1500	[illegible] Sims	8/6/19 09:53

24602 W.C. 1.3°
11
CF 0.0°

00956784



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
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24602

CUSTODY SEAL
Date: 8/5/14 Time: 1500
Name: Scott Biesinger
Company: ALS

Seal Broken By:
Date: 08/06/14

24602 AUG 06 2014

DWS – ID

J4627919660

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ALS Environmental
ALS Group USA, Corp
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August 20, 2019

Analytical Report for Service Request No: K1907235

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

RE: HS19080238

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory August 07, 2019
For your reference, these analyses have been assigned our service request number **K1907235.**

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

ALS Environmental
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Table of Contents

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: HS19080238
Sample Matrix: Ground Water

Service Request: K1907235
Date Received: 08/07/2019

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:

Four ground water samples were received for analysis at ALS Environmental on 08/07/2019. 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, 08/14/2019: The Relative Percent Difference (RPD) criterion for the replicate analysis of Total Organic Carbon in sample 35BWW08.190805 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Approved by Noe D. Davis Date 08/20/2019

Chain of Custody

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KL907235

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **11919**

SUBCONTRACT TO:

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

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
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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:	HS19080238
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19080238-06**	**35BWW08.190805**	**Groundwater**	**05 Aug 2019 11:00**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			20 Aug 2019
2.	**HS19080238-07**	**35BWW04.190805**	**Groundwater**	**05 Aug 2019 12:00**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			20 Aug 2019
3.	**HS19080238-08**	**35BWW12.190805**	**Groundwater**	**05 Aug 2019 12:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			20 Aug 2019
4.	**HS19080238-09**	**35BWW12.190805-FD**	**Groundwater**	**05 Aug 2019 12:55**
	TOC Analysis with DOD Level IV/EQuIS APTIM EDD			20 Aug 2019

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: 8/6/19 1800

Received By: _____ Date/Time: 8/7/19 1010

Cooler ID(s): _____ Temperature(s): _____