



04-Oct-2019

Natalie Steiner  
XTO Energy  
21459 CR5  
Rifle, CO 81650

Re: **YCF 3-45-1**

Work Order: **19092031**

Dear Natalie,

ALS Environmental received 6 samples on 28-Sep-2019 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 36.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA  
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager

### Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

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RIGHT SOLUTIONS RIGHT PARTNER

**Client:** XTO Energy  
**Project:** YCF 3-45-1  
**Work Order:** 19092031

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
19092031-01	PW Spill N. Sidewall	Soil		9/27/2019 11:45	9/28/2019 10:00	<input type="checkbox"/>
19092031-02	PW Spill S. Sidewall	Soil		9/27/2019 11:51	9/28/2019 10:00	<input type="checkbox"/>
19092031-03	PW Spill E. Sidewall	Soil		9/27/2019 11:53	9/28/2019 10:00	<input type="checkbox"/>
19092031-04	PW Spill W. Sidewall	Soil		9/27/2019 11:47	9/28/2019 10:00	<input type="checkbox"/>
19092031-05	PW Spill Bottom #1 (10')	Soil		9/27/2019 11:55	9/28/2019 10:00	<input type="checkbox"/>
19092031-06	PW Spill Bottom #2 (10')	Soil		9/27/2019 11:49	9/28/2019 10:00	<input type="checkbox"/>

**Client:** XTO Energy**Project:** YCF 3-45-1**Work Order:** 19092031**Case Narrative**

Batch 143204, Method GRO\_8015\_S, Samples 19092031-03A, -04A, -05A, and -06A: GRO surrogate recoveries high due to matrix interference.

Batch 143288, Method DRO\_8015\_S, Samples 19092031-01A, -04A, and -05A: DRO surrogate recoveries high due to matrix interference.

Batch 143319, Method PNLVI\_8270\_S, Sample 19092031-04A: One or more base/neutral surrogate recoveries were above the upper control limits. The base/neutral sample results may be biased high.

Batch 143249, Method VOC\_8260\_S, Samples 19092031-05A and -06A: GRO surrogate recoveries high due to matrix interference.

Batch 143249, Method VOC\_8260\_S, Sample 19092031-06A MS/MSD: The MS/MSD recovery was below the lower control limit for m,p-Xylene. The corresponding result in the parent sample may be biased low for this analyte.

Batch 143249, Method VOC\_8260\_S, Sample 19092031-06A MS: The MS recovery was below the lower control limit for Total Xylenes. However, the MSD recovery and the RPD between the MS and MSD were within control limits. No qualification is required.

Batch 143293, Method ICP\_6020\_S, Sample 19092031-06A MS/MSD: The MS/MSD recoveries were outside of the control limits for Barium, Chromium, Nickel, and Zinc; however, the results in the parent sample are greater than 4x the spike amount. No qualification is required.

Batch 143293, Method ICP\_6020\_S, Sample 19092031-06A MSD: The RPD between the MS and MSD was outside the control limit for Arsenic. The corresponding result in the parent sample should be considered estimated for this analyte.

<b><u>Qualifier</u></b>	<b><u>Description</u></b>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
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
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<b><u>Acronym</u></b>	<b><u>Description</u></b>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<b><u>Units Reported</u></b>	<b><u>Description</u></b>
% of sample	Percent of Sample
°C	Degrees Celcius
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg	Milligrams per Kilogram
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius

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none	
s.u.	Standard Units

# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill N. Sidewall  
Collection Date: 9/27/2019 11:45 AM

Work Order: 19092031  
Lab ID: 19092031-01  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015M		Prep: SW3550 / 10/2/19		Analyst: KB
DRO (C10-C28)	4.6	J	3.3	5.8	mg/Kg-dry	1	10/3/2019 09:12
Surr: 4-Terphenyl-d14	113	S		33-111	%REC	1	10/3/2019 09:12
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015D		Prep: SW5035 / 9/30/19		Analyst: KB
GRO (C6-C10)	U		3.0	7.3	mg/Kg	1	10/2/2019 08:27
Surr: Toluene-d8	80.1			71-123	%REC	1	10/2/2019 08:27
<b>MERCURY BY CVAA</b>							
			Method: SW7471B		Prep: SW7471 / 10/1/19		Analyst: RSH
Mercury	0.030		0.0020	0.020	mg/Kg-dry	1	10/2/2019 09:40
<b>METALS BY ICP-MS</b>							
			Method: SW6020A		Prep: SW3050B / 10/1/19		Analyst: STP
Arsenic	2.1		0.056	0.47	mg/Kg-dry	1	10/1/2019 22:07
Barium	140		0.43	0.47	mg/Kg-dry	1	10/1/2019 22:07
Boron	5.7		1.8	1.9	mg/Kg-dry	1	10/1/2019 22:07
Cadmium	U		0.028	0.19	mg/Kg-dry	1	10/1/2019 22:07
Chromium	25		0.21	0.47	mg/Kg-dry	1	10/1/2019 22:07
Copper	15		0.47	0.47	mg/Kg-dry	1	10/1/2019 22:07
Lead	11		0.23	0.47	mg/Kg-dry	1	10/1/2019 22:07
Nickel	22		2.4	4.7	mg/Kg-dry	10	10/2/2019 14:36
Selenium	U		0.43	0.47	mg/Kg-dry	1	10/1/2019 22:07
Silver	U		0.062	0.47	mg/Kg-dry	1	10/1/2019 22:07
Zinc	58		9.2	9.4	mg/Kg-dry	10	10/2/2019 14:36
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: SW6020A		Prep: USDA Method 20B / 10/3/19		Analyst: STP
Calcium	38		2.5	5.0	mg/L	10	10/3/2019 15:33
Magnesium	13		0.50	2.0	mg/L	10	10/3/2019 15:33
Sodium	310		0.45	2.0	mg/L	10	10/3/2019 15:33
<b>SODIUM ADSORPTION RATIO</b>							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: ABL
Sodium Adsorption Ratio	11		0.010	0.010	none	1	10/3/2019
<b>POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)</b>							
			Method: SW846 8270D		Prep: SW3546 / 10/1/19		Analyst: EEW
Acenaphthene	U		0.95	4.9	µg/Kg-dry	1	10/2/2019 19:50
Anthracene	U		1.7	4.9	µg/Kg-dry	1	10/2/2019 19:50
Benzo(a)anthracene	U		2.0	4.9	µg/Kg-dry	1	10/2/2019 19:50
Benzo(a)pyrene	U		1.3	4.9	µg/Kg-dry	1	10/2/2019 19:50
Benzo(b)fluoranthene	U		1.2	4.9	µg/Kg-dry	1	10/2/2019 19:50
Benzo(k)fluoranthene	U		1.4	4.9	µg/Kg-dry	1	10/2/2019 19:50
Chrysene	U		1.0	4.9	µg/Kg-dry	1	10/2/2019 19:50
Dibenzo(a,h)anthracene	U		1.1	4.9	µg/Kg-dry	1	10/2/2019 19:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 04-Oct-19

**Client:** XTO Energy  
**Project:** YCF 3-45-1  
**Sample ID:** PW Spill N. Sidewall  
**Collection Date:** 9/27/2019 11:45 AM

**Work Order:** 19092031  
**Lab ID:** 19092031-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.90	4.9	µg/Kg-dry	1	10/2/2019 19:50
Fluorene	U		1.6	4.9	µg/Kg-dry	1	10/2/2019 19:50
Indeno(1,2,3-cd)pyrene	U		1.8	4.9	µg/Kg-dry	1	10/2/2019 19:50
Naphthalene	U		2.1	4.9	µg/Kg-dry	1	10/2/2019 19:50
Pyrene	U		0.81	4.9	µg/Kg-dry	1	10/2/2019 19:50
Surr: 2-Fluorobiphenyl	92.5			20-140	%REC	1	10/2/2019 19:50
Surr: 4-Terphenyl-d14	88.3			22-172	%REC	1	10/2/2019 19:50
Surr: Nitrobenzene-d5	87.3			28-140	%REC	1	10/2/2019 19:50
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 9/30/19		Analyst: <b>MF</b>
Benzene	U		0.0075	0.044	mg/Kg	1	10/1/2019 02:18
<b>Ethylbenzene</b>	<b>0.016</b>	J	<b>0.0092</b>	<b>0.044</b>	<b>mg/Kg</b>	1	10/1/2019 02:18
m,p-Xylene	U		0.058	0.087	mg/Kg	1	10/1/2019 02:18
o-Xylene	U		0.017	0.044	mg/Kg	1	10/1/2019 02:18
Toluene	U		0.012	0.044	mg/Kg	1	10/1/2019 02:18
Xylenes, Total	U		0.058	0.13	mg/Kg	1	10/1/2019 02:18
Surr: 1,2-Dichloroethane-d4	108			70-130	%REC	1	10/1/2019 02:18
Surr: 4-Bromofluorobenzene	98.0			70-130	%REC	1	10/1/2019 02:18
Surr: Dibromofluoromethane	98.9			70-130	%REC	1	10/1/2019 02:18
Surr: Toluene-d8	101			70-130	%REC	1	10/1/2019 02:18
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 10/3/19		Analyst: <b>DVD</b>
<b>Electrical Conductivity @ Saturation</b>	<b>1.9</b>		<b>0.011</b>	<b>0.10</b>	<b>mmhos/cm @25°</b>	20	10/3/2019 16:30
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>MB</b>
<b>Chromium, Trivalent</b>	<b>25</b>		<b>0.37</b>	<b>1.2</b>	<b>mg/Kg-dry</b>	1	10/2/2019 16:15
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 10/2/19		Analyst: <b>RZM</b>
<b>Chromium, Hexavalent</b>	U		1.0	1.2	mg/Kg-dry	1	10/2/2019 15:00
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>KTP</b>
<b>Moisture</b>	<b>17</b>		<b>0.10</b>	<b>0.10</b>	<b>% of sample</b>	1	10/1/2019 12:26
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 10/1/19		Analyst: <b>DNW</b>
<b>pH</b>	<b>8.78</b>		<b>0.10</b>	<b>0.100</b>	<b>s.u.</b>	1	10/1/2019 11:11
<b>Temperature</b>	<b>22.5</b>		<b>0.10</b>	<b>0.100</b>	<b>°C</b>	1	10/1/2019 11:11

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill S. Sidewall  
Collection Date: 9/27/2019 11:51 AM

Work Order: 19092031  
Lab ID: 19092031-02  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015M		Prep: SW3550 / 10/2/19		Analyst: KB
DRO (C10-C28)	87		3.5	6.1	mg/Kg-dry	1	10/3/2019 10:10
Surr: 4-Terphenyl-d14	102			33-111	%REC	1	10/3/2019 10:10
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015D		Prep: SW5035 / 9/30/19		Analyst: KB
GRO (C6-C10)	430		3.1	7.4	mg/Kg	1	10/2/2019 08:57
Surr: Toluene-d8	123			71-123	%REC	1	10/2/2019 08:57
<b>MERCURY BY CVAA</b>							
			Method: SW7471B		Prep: SW7471 / 10/1/19		Analyst: RSH
Mercury	0.015	J	0.0022	0.022	mg/Kg-dry	1	10/2/2019 09:42
<b>METALS BY ICP-MS</b>							
			Method: SW6020A		Prep: SW3050B / 10/1/19		Analyst: STP
Arsenic	11		0.055	0.46	mg/Kg-dry	1	10/1/2019 22:09
Barium	320		4.2	4.6	mg/Kg-dry	10	10/2/2019 14:37
Boron	11		1.7	1.8	mg/Kg-dry	1	10/1/2019 22:09
Cadmium	0.057	J	0.028	0.18	mg/Kg-dry	1	10/1/2019 22:09
Chromium	39		0.20	0.46	mg/Kg-dry	1	10/1/2019 22:09
Copper	12		0.46	0.46	mg/Kg-dry	1	10/1/2019 22:09
Lead	15		0.22	0.46	mg/Kg-dry	1	10/1/2019 22:09
Nickel	28		2.4	4.6	mg/Kg-dry	10	10/2/2019 14:37
Selenium	U		0.42	0.46	mg/Kg-dry	1	10/1/2019 22:09
Silver	U		0.061	0.46	mg/Kg-dry	1	10/1/2019 22:09
Zinc	55		9.0	9.2	mg/Kg-dry	10	10/2/2019 14:37
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: SW6020A		Prep: USDA Method 20B / 10/3/19		Analyst: STP
Calcium	820		2.5	5.0	mg/L	10	10/3/2019 15:34
Magnesium	110		0.50	2.0	mg/L	10	10/3/2019 15:34
Sodium	1,100		0.45	2.0	mg/L	10	10/3/2019 15:34
<b>SODIUM ADSORPTION RATIO</b>							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: ABL
Sodium Adsorption Ratio	9.8		0.010	0.010	none	1	10/3/2019
<b>POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)</b>							
			Method: SW846 8270D		Prep: SW3546 / 10/1/19		Analyst: EEW
Acenaphthene	8.1		1.0	5.2	µg/Kg-dry	1	10/2/2019 20:06
Anthracene	U		1.8	5.2	µg/Kg-dry	1	10/2/2019 20:06
Benzo(a)anthracene	U		2.1	5.2	µg/Kg-dry	1	10/2/2019 20:06
Benzo(a)pyrene	U		1.4	5.2	µg/Kg-dry	1	10/2/2019 20:06
Benzo(b)fluoranthene	U		1.2	5.2	µg/Kg-dry	1	10/2/2019 20:06
Benzo(k)fluoranthene	U		1.5	5.2	µg/Kg-dry	1	10/2/2019 20:06
Chrysene	U		1.1	5.2	µg/Kg-dry	1	10/2/2019 20:06
Dibenzo(a,h)anthracene	U		1.2	5.2	µg/Kg-dry	1	10/2/2019 20:06

Note: See Qualifiers page for a list of qualifiers and their definitions.



# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill S. Sidewall  
Collection Date: 9/27/2019 11:51 AM

Work Order: 19092031  
Lab ID: 19092031-02  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.96	5.2	µg/Kg-dry	1	10/2/2019 20:06
<b>Fluorene</b>	<b>130</b>		<b>1.7</b>	<b>5.2</b>	<b>µg/Kg-dry</b>	1	10/2/2019 20:06
Indeno(1,2,3-cd)pyrene	U		1.9	5.2	µg/Kg-dry	1	10/2/2019 20:06
<b>Naphthalene</b>	<b>510</b>		<b>2.3</b>	<b>5.2</b>	<b>µg/Kg-dry</b>	1	10/2/2019 20:06
Pyrene	U		0.86	5.2	µg/Kg-dry	1	10/2/2019 20:06
Surr: 2-Fluorobiphenyl	72.1			20-140	%REC	1	10/2/2019 20:06
Surr: 4-Terphenyl-d14	69.4			22-172	%REC	1	10/2/2019 20:06
Surr: Nitrobenzene-d5	75.1			28-140	%REC	1	10/2/2019 20:06
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 9/30/19		Analyst: <b>MF</b>
<b>Benzene</b>	<b>0.0082</b>	J	<b>0.0076</b>	<b>0.045</b>	<b>mg/Kg</b>	1	10/1/2019 02:35
<b>Ethylbenzene</b>	<b>0.71</b>		<b>0.0094</b>	<b>0.045</b>	<b>mg/Kg</b>	1	10/1/2019 02:35
<b>m,p-Xylene</b>	<b>32</b>		<b>0.30</b>	<b>0.45</b>	<b>mg/Kg</b>	5	10/1/2019 20:35
<b>o-Xylene</b>	<b>4.0</b>		<b>0.017</b>	<b>0.045</b>	<b>mg/Kg</b>	1	10/1/2019 02:35
<b>Toluene</b>	<b>0.91</b>		<b>0.012</b>	<b>0.045</b>	<b>mg/Kg</b>	1	10/1/2019 02:35
<b>Xylenes, Total</b>	<b>39</b>		<b>0.30</b>	<b>0.67</b>	<b>mg/Kg</b>	5	10/1/2019 20:35
Surr: 1,2-Dichloroethane-d4	104			70-130	%REC	1	10/1/2019 02:35
Surr: 1,2-Dichloroethane-d4	103			70-130	%REC	5	10/1/2019 20:35
Surr: 4-Bromofluorobenzene	126			70-130	%REC	1	10/1/2019 02:35
Surr: 4-Bromofluorobenzene	97.6			70-130	%REC	5	10/1/2019 20:35
Surr: Dibromofluoromethane	97.1			70-130	%REC	1	10/1/2019 02:35
Surr: Dibromofluoromethane	99.2			70-130	%REC	5	10/1/2019 20:35
Surr: Toluene-d8	123			70-130	%REC	1	10/1/2019 02:35
Surr: Toluene-d8	100			70-130	%REC	5	10/1/2019 20:35
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 10/3/19		Analyst: <b>DVD</b>
<b>Electrical Conductivity @ Saturation</b>	<b>11</b>		<b>0.011</b>	<b>0.10</b>	<b>mmhos/cm @25°</b>	20	10/3/2019 16:30
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>MB</b>
<b>Chromium, Trivalent</b>	<b>39</b>		<b>0.40</b>	<b>1.3</b>	<b>mg/Kg-dry</b>	1	10/2/2019 16:15
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 10/2/19		Analyst: <b>RZM</b>
<b>Chromium, Hexavalent</b>	U		1.1	1.3	mg/Kg-dry	1	10/2/2019 15:00
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>KTP</b>
<b>Moisture</b>	<b>22</b>		<b>0.10</b>	<b>0.10</b>	<b>% of sample</b>	1	10/1/2019 12:26
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 10/1/19		Analyst: <b>DNW</b>
<b>pH</b>	<b>8.32</b>		<b>0.10</b>	<b>0.100</b>	<b>s.u.</b>	1	10/1/2019 11:11
<b>Temperature</b>	<b>22.6</b>		<b>0.10</b>	<b>0.100</b>	<b>°C</b>	1	10/1/2019 11:11

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill E. Sidewall  
Collection Date: 9/27/2019 11:53 AM

Work Order: 19092031  
Lab ID: 19092031-03  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015M		Prep: SW3550 / 10/2/19		Analyst: KB
DRO (C10-C28)	630		3.7	6.5	mg/Kg-dry	1	10/3/2019 10:40
Surr: 4-Terphenyl-d14	101			33-111	%REC	1	10/3/2019 10:40
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015D		Prep: SW5035 / 9/30/19		Analyst: KB
GRO (C6-C10)	2,600		3.6	8.5	mg/Kg	1	10/2/2019 09:26
Surr: Toluene-d8	496	S		71-123	%REC	1	10/2/2019 09:26
<b>MERCURY BY CVAA</b>							
			Method: SW7471B		Prep: SW7471 / 10/1/19		Analyst: RSH
Mercury	0.039		0.0024	0.024	mg/Kg-dry	1	10/2/2019 09:45
<b>METALS BY ICP-MS</b>							
			Method: SW6020A		Prep: SW3050B / 10/1/19		Analyst: STP
Arsenic	12		0.058	0.48	mg/Kg-dry	1	10/1/2019 22:11
Barium	320		4.4	4.8	mg/Kg-dry	10	10/2/2019 14:39
Boron	10		1.8	1.9	mg/Kg-dry	1	10/1/2019 22:11
Cadmium	0.078	J	0.029	0.19	mg/Kg-dry	1	10/1/2019 22:11
Chromium	40		0.21	0.48	mg/Kg-dry	1	10/1/2019 22:11
Copper	15		0.48	0.48	mg/Kg-dry	1	10/1/2019 22:11
Lead	15		0.23	0.48	mg/Kg-dry	1	10/1/2019 22:11
Nickel	25		2.5	4.8	mg/Kg-dry	10	10/2/2019 14:39
Selenium	U		0.44	0.48	mg/Kg-dry	1	10/1/2019 22:11
Silver	U		0.064	0.48	mg/Kg-dry	1	10/1/2019 22:11
Zinc	57		9.5	9.6	mg/Kg-dry	10	10/2/2019 14:39
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: SW6020A		Prep: USDA Method 20B / 10/3/19		Analyst: STP
Calcium	320		2.5	5.0	mg/L	10	10/3/2019 15:36
Magnesium	40		0.50	2.0	mg/L	10	10/3/2019 15:36
Sodium	620		0.45	2.0	mg/L	10	10/3/2019 15:36
<b>SODIUM ADSORPTION RATIO</b>							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: ABL
Sodium Adsorption Ratio	8.7		0.010	0.010	none	1	10/3/2019
<b>POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)</b>							
			Method: SW846 8270D		Prep: SW3546 / 10/1/19		Analyst: EEW
Acenaphthene	U		1.1	5.5	µg/Kg-dry	1	10/2/2019 20:21
Anthracene	30		1.8	5.5	µg/Kg-dry	1	10/2/2019 20:21
Benzo(a)anthracene	U		2.3	5.5	µg/Kg-dry	1	10/2/2019 20:21
Benzo(a)pyrene	U		1.5	5.5	µg/Kg-dry	1	10/2/2019 20:21
Benzo(b)fluoranthene	U		1.3	5.5	µg/Kg-dry	1	10/2/2019 20:21
Benzo(k)fluoranthene	U		1.6	5.5	µg/Kg-dry	1	10/2/2019 20:21
Chrysene	14		1.1	5.5	µg/Kg-dry	1	10/2/2019 20:21
Dibenzo(a,h)anthracene	U		1.3	5.5	µg/Kg-dry	1	10/2/2019 20:21

Note: See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill E. Sidewall  
Collection Date: 9/27/2019 11:53 AM

Work Order: 19092031  
Lab ID: 19092031-03  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	8.7		1.0	5.5	µg/Kg-dry	1	10/2/2019 20:21
Fluorene	840		1.8	5.5	µg/Kg-dry	1	10/2/2019 20:21
Indeno(1,2,3-cd)pyrene	U		2.0	5.5	µg/Kg-dry	1	10/2/2019 20:21
Naphthalene	7,300		48	110	µg/Kg-dry	20	10/3/2019 14:28
Pyrene	14		0.90	5.5	µg/Kg-dry	1	10/2/2019 20:21
Surr: 2-Fluorobiphenyl	51.6			20-140	%REC	1	10/2/2019 20:21
Surr: 4-Terphenyl-d14	48.0			22-172	%REC	1	10/2/2019 20:21
Surr: Nitrobenzene-d5	95.9			28-140	%REC	20	10/3/2019 14:28
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C		Prep: SW5035 / 9/30/19		Analyst: MF
Benzene	1.3		0.0088	0.051	mg/Kg	1	10/1/2019 02:51
Ethylbenzene	8.3		0.011	0.051	mg/Kg	1	10/1/2019 02:51
m,p-Xylene	500		3.4	5.1	mg/Kg	50	10/3/2019 01:24
o-Xylene	58		0.40	1.0	mg/Kg	20	10/1/2019 20:50
Toluene	80		0.28	1.0	mg/Kg	20	10/1/2019 20:50
Xylenes, Total	580		3.4	7.7	mg/Kg	50	10/3/2019 01:24
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	1	10/1/2019 02:51
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	20	10/1/2019 20:50
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	50	10/3/2019 01:24
Surr: 4-Bromofluorobenzene	235	S		70-130	%REC	1	10/1/2019 02:51
Surr: 4-Bromofluorobenzene	101			70-130	%REC	20	10/1/2019 20:50
Surr: 4-Bromofluorobenzene	102			70-130	%REC	50	10/3/2019 01:24
Surr: Dibromofluoromethane	99.1			70-130	%REC	1	10/1/2019 02:51
Surr: Dibromofluoromethane	98.2			70-130	%REC	20	10/1/2019 20:50
Surr: Dibromofluoromethane	102			70-130	%REC	50	10/3/2019 01:24
Surr: Toluene-d8	402	S		70-130	%REC	1	10/1/2019 02:51
Surr: Toluene-d8	106			70-130	%REC	20	10/1/2019 20:50
Surr: Toluene-d8	104			70-130	%REC	50	10/3/2019 01:24
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: DVD
Electrical Conductivity @ Saturation	5.3		0.011	0.10	mmhos/cm @25°	20	10/3/2019 16:30
<b>CHROMIUM, TRIVALENT</b>			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	40		0.41	1.3	mg/Kg-dry	1	10/2/2019 16:15
<b>CHROMIUM, HEXAVALENT</b>			Method: SW7196A		Prep: SW3060A / 10/2/19		Analyst: RZM
Chromium, Hexavalent	U		1.1	1.3	mg/Kg-dry	1	10/2/2019 15:00
<b>MOISTURE</b>			Method: SW3550C				Analyst: KTP
Moisture	24		0.10	0.10	% of sample	1	10/1/2019 12:26
<b>PH</b>			Method: SW9045D		Prep: EXTRACT / 10/1/19		Analyst: DNW

Note: See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy

Project: YCF 3-45-1

Sample ID: PW Spill E. Sidewall

Collection Date: 9/27/2019 11:53 AM

Work Order: 19092031

Lab ID: 19092031-03

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
pH	8.61		0.10	0.100	s.u.	1	10/1/2019 11:11
Temperature	22.5		0.10	0.100	°C	1	10/1/2019 11:11

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill W. Sidewall  
Collection Date: 9/27/2019 11:47 AM

Work Order: 19092031  
Lab ID: 19092031-04  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015M		Prep: SW3550 / 10/2/19		Analyst: KB
DRO (C10-C28)	3,300		3.4	6.0	mg/Kg-dry	1	10/3/2019 11:09
Surr: 4-Terphenyl-d14	1,420	S		33-111	%REC	1	10/3/2019 11:09
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015D		Prep: SW5035 / 9/30/19		Analyst: KB
GRO (C6-C10)	560		2.9	7.0	mg/Kg	1	10/2/2019 09:56
Surr: Toluene-d8	152	S		71-123	%REC	1	10/2/2019 09:56
<b>MERCURY BY CVAA</b>							
			Method: SW7471B		Prep: SW7471 / 10/1/19		Analyst: RSH
Mercury	0.062		0.0020	0.020	mg/Kg-dry	1	10/2/2019 09:47
<b>METALS BY ICP-MS</b>							
			Method: SW6020A		Prep: SW3050B / 10/1/19		Analyst: STP
Arsenic	2.1		0.047	0.39	mg/Kg-dry	1	10/1/2019 22:13
Barium	520		3.6	3.9	mg/Kg-dry	10	10/2/2019 14:41
Boron	11		1.5	1.6	mg/Kg-dry	1	10/1/2019 22:13
Cadmium	0.17		0.023	0.16	mg/Kg-dry	1	10/1/2019 22:13
Chromium	29		0.17	0.39	mg/Kg-dry	1	10/1/2019 22:13
Copper	21		3.9	3.9	mg/Kg-dry	10	10/2/2019 17:29
Lead	15		0.19	0.39	mg/Kg-dry	1	10/1/2019 22:13
Nickel	29		2.0	3.9	mg/Kg-dry	10	10/2/2019 14:41
Selenium	U		0.36	0.39	mg/Kg-dry	1	10/1/2019 22:13
Silver	U		0.051	0.39	mg/Kg-dry	1	10/1/2019 22:13
Zinc	60		7.6	7.8	mg/Kg-dry	10	10/2/2019 14:41
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: SW6020A		Prep: USDA Method 20B / 10/3/19		Analyst: STP
Calcium	620		2.5	5.0	mg/L	10	10/3/2019 15:43
Magnesium	57		0.50	2.0	mg/L	10	10/3/2019 15:43
Sodium	730		0.45	2.0	mg/L	10	10/3/2019 15:43
<b>SODIUM ADSORPTION RATIO</b>							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: ABL
Sodium Adsorption Ratio	7.6		0.010	0.010	none	1	10/3/2019
<b>POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)</b>							
			Method: SW846 8270D		Prep: SW3546 / 10/1/19		Analyst: EEW
Acenaphthene	150		0.97	5.0	µg/Kg-dry	1	10/2/2019 20:37
Anthracene	U		1.7	5.0	µg/Kg-dry	1	10/2/2019 20:37
Benzo(a)anthracene	U		2.1	5.0	µg/Kg-dry	1	10/2/2019 20:37
Benzo(a)pyrene	3.5	J	1.4	5.0	µg/Kg-dry	1	10/2/2019 20:37
Benzo(b)fluoranthene	4.7	J	1.2	5.0	µg/Kg-dry	1	10/2/2019 20:37
Benzo(k)fluoranthene	U		1.5	5.0	µg/Kg-dry	1	10/2/2019 20:37
Chrysene	31		1.0	5.0	µg/Kg-dry	1	10/2/2019 20:37
Dibenzo(a,h)anthracene	U		1.2	5.0	µg/Kg-dry	1	10/2/2019 20:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill W. Sidewall  
Collection Date: 9/27/2019 11:47 AM

Work Order: 19092031  
Lab ID: 19092031-04  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	22		0.92	5.0	µg/Kg-dry	1	10/2/2019 20:37
Fluorene	1,700		1.6	5.0	µg/Kg-dry	1	10/2/2019 20:37
Indeno(1,2,3-cd)pyrene	U		1.8	5.0	µg/Kg-dry	1	10/2/2019 20:37
Naphthalene	4,500		43	99	µg/Kg-dry	20	10/3/2019 14:43
Pyrene	26		0.82	5.0	µg/Kg-dry	1	10/2/2019 20:37
Surr: 2-Fluorobiphenyl	102			20-140	%REC	1	10/2/2019 20:37
Surr: 4-Terphenyl-d14	82.2			22-172	%REC	1	10/2/2019 20:37
Surr: Nitrobenzene-d5	148	S		28-140	%REC	20	10/3/2019 14:43
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 9/30/19		Analyst: <b>BCM</b>
Benzene	U		0.0072	0.042	mg/Kg	1	10/1/2019 03:14
Ethylbenzene	0.021	J	0.0089	0.042	mg/Kg	1	10/1/2019 03:14
m,p-Xylene	40		0.28	0.42	mg/Kg	5	10/1/2019 21:06
o-Xylene	3.8		0.016	0.042	mg/Kg	1	10/1/2019 03:14
Toluene	0.13		0.012	0.042	mg/Kg	1	10/1/2019 03:14
Xylenes, Total	47		0.28	0.63	mg/Kg	5	10/1/2019 21:06
Surr: 1,2-Dichloroethane-d4	103			70-130	%REC	1	10/1/2019 03:14
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	5	10/1/2019 21:06
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	10/1/2019 03:14
Surr: 4-Bromofluorobenzene	101			70-130	%REC	5	10/1/2019 21:06
Surr: Dibromofluoromethane	78.0			70-130	%REC	1	10/1/2019 03:14
Surr: Dibromofluoromethane	93.5			70-130	%REC	5	10/1/2019 21:06
Surr: Toluene-d8	127			70-130	%REC	1	10/1/2019 03:14
Surr: Toluene-d8	106			70-130	%REC	5	10/1/2019 21:06
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 10/3/19		Analyst: <b>DVD</b>
Electrical Conductivity @ Saturation	7.4		0.011	0.10	mmhos/cm @25°	20	10/3/2019 16:30
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>MB</b>
Chromium, Trivalent	29		0.38	1.2	mg/Kg-dry	1	10/2/2019 16:15
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 10/2/19		Analyst: <b>RZM</b>
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	10/2/2019 15:00
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>KTP</b>
Moisture	18		0.10	0.10	% of sample	1	10/1/2019 12:26
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 10/1/19		Analyst: <b>DNW</b>
pH	8.78		0.10	0.100	s.u.	1	10/1/2019 11:11
Temperature	22.5		0.10	0.100	°C	1	10/1/2019 11:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill Bottom #1 (10')  
Collection Date: 9/27/2019 11:55 AM

Work Order: 19092031  
Lab ID: 19092031-05  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015M		Prep: SW3550 / 10/2/19		Analyst: KB
DRO (C10-C28)	3,200		3.1	5.4	mg/Kg-dry	1	10/3/2019 11:38
Surr: 4-Terphenyl-d14	1,690	S		33-111	%REC	1	10/3/2019 11:38
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: SW8015D		Prep: SW5035 / 9/30/19		Analyst: KB
GRO (C6-C10)	650		2.8	6.7	mg/Kg	1	10/2/2019 10:25
Surr: Toluene-d8	187	S		71-123	%REC	1	10/2/2019 10:25
<b>MERCURY BY CVAA</b>							
			Method: SW7471B		Prep: SW7471 / 10/1/19		Analyst: RSH
Mercury	0.040		0.0018	0.018	mg/Kg-dry	1	10/2/2019 09:49
<b>METALS BY ICP-MS</b>							
			Method: SW6020A		Prep: SW3050B / 10/1/19		Analyst: STP
Arsenic	6.2		0.051	0.42	mg/Kg-dry	1	10/1/2019 22:15
Barium	520		3.9	4.2	mg/Kg-dry	10	10/2/2019 14:42
Boron	13		1.6	1.7	mg/Kg-dry	1	10/1/2019 22:15
Cadmium	0.062	J	0.025	0.17	mg/Kg-dry	1	10/1/2019 22:15
Chromium	55		0.19	0.42	mg/Kg-dry	1	10/1/2019 22:15
Copper	13		0.42	0.42	mg/Kg-dry	1	10/1/2019 22:15
Lead	14		0.20	0.42	mg/Kg-dry	1	10/1/2019 22:15
Nickel	36		2.2	4.2	mg/Kg-dry	10	10/2/2019 14:42
Selenium	U		0.39	0.42	mg/Kg-dry	1	10/1/2019 22:15
Silver	U		0.056	0.42	mg/Kg-dry	1	10/1/2019 22:15
Zinc	62		8.3	8.5	mg/Kg-dry	10	10/2/2019 14:42
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: SW6020A		Prep: USDA Method 20B / 10/3/19		Analyst: STP
Calcium	390		2.5	5.0	mg/L	10	10/3/2019 15:44
Magnesium	29		0.50	2.0	mg/L	10	10/3/2019 15:44
Sodium	1,400		0.45	2.0	mg/L	10	10/3/2019 15:44
<b>SODIUM ADSORPTION RATIO</b>							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: ABL
Sodium Adsorption Ratio	19		0.010	0.010	none	1	10/3/2019
<b>POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)</b>							
			Method: SW846 8270D		Prep: SW3546 / 10/1/19		Analyst: EEW
Acenaphthene	U		0.89	4.6	µg/Kg-dry	1	10/2/2019 20:52
Anthracene	U		1.6	4.6	µg/Kg-dry	1	10/2/2019 20:52
Benzo(a)anthracene	U		1.9	4.6	µg/Kg-dry	1	10/2/2019 20:52
Benzo(a)pyrene	U		1.3	4.6	µg/Kg-dry	1	10/2/2019 20:52
Benzo(b)fluoranthene	U		1.1	4.6	µg/Kg-dry	1	10/2/2019 20:52
Benzo(k)fluoranthene	U		1.4	4.6	µg/Kg-dry	1	10/2/2019 20:52
Chrysene	9.1		0.95	4.6	µg/Kg-dry	1	10/2/2019 20:52
Dibenzo(a,h)anthracene	U		1.1	4.6	µg/Kg-dry	1	10/2/2019 20:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill Bottom #1 (10')  
Collection Date: 9/27/2019 11:55 AM

Work Order: 19092031  
Lab ID: 19092031-05  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	6.6		0.85	4.6	µg/Kg-dry	1	10/2/2019 20:52
Fluorene	480		1.5	4.6	µg/Kg-dry	1	10/2/2019 20:52
Indeno(1,2,3-cd)pyrene	U		1.7	4.6	µg/Kg-dry	1	10/2/2019 20:52
Naphthalene	2,500		2.0	4.6	µg/Kg-dry	1	10/2/2019 20:52
Pyrene	9.9		0.76	4.6	µg/Kg-dry	1	10/2/2019 20:52
Surr: 2-Fluorobiphenyl	29.7			20-140	%REC	1	10/2/2019 20:52
Surr: 4-Terphenyl-d14	24.4			22-172	%REC	1	10/2/2019 20:52
Surr: Nitrobenzene-d5	39.2			28-140	%REC	1	10/2/2019 20:52
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C		Prep: SW5035 / 9/30/19		Analyst: BCM
Benzene	0.13		0.0068	0.040	mg/Kg	1	10/1/2019 03:36
Ethylbenzene	1.9		0.0084	0.040	mg/Kg	1	10/1/2019 03:36
m,p-Xylene	64		0.53	0.80	mg/Kg	10	10/1/2019 21:22
o-Xylene	6.2		0.015	0.040	mg/Kg	1	10/1/2019 03:36
Toluene	3.7		0.011	0.040	mg/Kg	1	10/1/2019 03:36
Xylenes, Total	74		0.53	1.2	mg/Kg	10	10/1/2019 21:22
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	1	10/1/2019 03:36
Surr: 1,2-Dichloroethane-d4	103			70-130	%REC	10	10/1/2019 21:22
Surr: 4-Bromofluorobenzene	102			70-130	%REC	1	10/1/2019 03:36
Surr: 4-Bromofluorobenzene	99.0			70-130	%REC	10	10/1/2019 21:22
Surr: Dibromofluoromethane	77.2			70-130	%REC	1	10/1/2019 03:36
Surr: Dibromofluoromethane	97.2			70-130	%REC	10	10/1/2019 21:22
Surr: Toluene-d8	133	S		70-130	%REC	1	10/1/2019 03:36
Surr: Toluene-d8	102			70-130	%REC	10	10/1/2019 21:22
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: DVD
Electrical Conductivity @ Saturation	9.6		0.011	0.10	mmhos/cm @25°	20	10/3/2019 16:30
<b>CHROMIUM, TRIVALENT</b>			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	55		0.35	1.1	mg/Kg-dry	1	10/2/2019 16:15
<b>CHROMIUM, HEXAVALENT</b>			Method: SW7196A		Prep: SW3060A / 10/2/19		Analyst: RZM
Chromium, Hexavalent	U		0.97	1.1	mg/Kg-dry	1	10/2/2019 15:00
<b>MOISTURE</b>			Method: SW3550C				Analyst: KTP
Moisture	13		0.10	0.10	% of sample	1	10/1/2019 14:55
<b>PH</b>			Method: SW9045D		Prep: EXTRACT / 10/1/19		Analyst: DNW
pH	9.43		0.10	0.100	s.u.	1	10/1/2019 11:11
Temperature	22.5		0.10	0.100	°C	1	10/1/2019 11:11

Note: See Qualifiers page for a list of qualifiers and their definitions.



# ALS Group, USA

Date: 04-Oct-19

**Client:** XTO Energy  
**Project:** YCF 3-45-1  
**Sample ID:** PW Spill Bottom #2 (10')  
**Collection Date:** 9/27/2019 11:49 AM

**Work Order:** 19092031  
**Lab ID:** 19092031-06  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015M</b>		Prep: SW3550 / 10/2/19		Analyst: <b>KB</b>
<b>DRO (C10-C28)</b>	<b>1,700</b>		<b>3.3</b>	<b>5.8</b>	<b>mg/Kg-dry</b>	1	10/3/2019 12:07
Surr: 4-Terphenyl-d14	105			33-111	%REC	1	10/3/2019 12:07
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 9/30/19		Analyst: <b>KB</b>
<b>GRO (C6-C10)</b>	<b>1,100</b>		<b>2.9</b>	<b>6.8</b>	<b>mg/Kg</b>	1	10/2/2019 10:54
Surr: Toluene-d8	265	S		71-123	%REC	1	10/2/2019 10:54
<b>MERCURY BY CVAA</b>							
			Method: <b>SW7471B</b>		Prep: SW7471 / 10/1/19		Analyst: <b>RSB</b>
<b>Mercury</b>	<b>0.043</b>		<b>0.0022</b>	<b>0.022</b>	<b>mg/Kg-dry</b>	1	10/2/2019 09:51
<b>METALS BY ICP-MS</b>							
			Method: <b>SW6020A</b>		Prep: SW3050B / 10/1/19		Analyst: <b>STP</b>
<b>Arsenic</b>	<b>10</b>		<b>0.047</b>	<b>0.40</b>	<b>mg/Kg-dry</b>	1	10/1/2019 22:17
<b>Barium</b>	<b>220</b>		<b>3.6</b>	<b>4.0</b>	<b>mg/Kg-dry</b>	10	10/2/2019 14:44
<b>Boron</b>	<b>6.4</b>		<b>1.5</b>	<b>1.6</b>	<b>mg/Kg-dry</b>	1	10/1/2019 22:17
<b>Cadmium</b>	<b>0.16</b>		<b>0.024</b>	<b>0.16</b>	<b>mg/Kg-dry</b>	1	10/1/2019 22:17
<b>Chromium</b>	<b>73</b>		<b>0.17</b>	<b>0.40</b>	<b>mg/Kg-dry</b>	1	10/1/2019 22:17
<b>Copper</b>	<b>25</b>		<b>4.0</b>	<b>4.0</b>	<b>mg/Kg-dry</b>	10	10/2/2019 17:31
<b>Lead</b>	<b>13</b>		<b>0.19</b>	<b>0.40</b>	<b>mg/Kg-dry</b>	1	10/1/2019 22:17
<b>Nickel</b>	<b>70</b>		<b>2.1</b>	<b>4.0</b>	<b>mg/Kg-dry</b>	10	10/2/2019 14:44
Selenium	U		0.36	0.40	mg/Kg-dry	1	10/1/2019 22:17
Silver	U		0.052	0.40	mg/Kg-dry	1	10/1/2019 22:17
<b>Zinc</b>	<b>67</b>		<b>7.7</b>	<b>7.9</b>	<b>mg/Kg-dry</b>	10	10/2/2019 14:44
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: <b>SW6020A</b>		Prep: USDA Method 20B / 10/3/19		Analyst: <b>STP</b>
<b>Calcium</b>	<b>590</b>		<b>2.5</b>	<b>5.0</b>	<b>mg/L</b>	10	10/3/2019 15:46
<b>Magnesium</b>	<b>75</b>		<b>0.50</b>	<b>2.0</b>	<b>mg/L</b>	10	10/3/2019 15:46
<b>Sodium</b>	<b>770</b>		<b>0.45</b>	<b>2.0</b>	<b>mg/L</b>	10	10/3/2019 15:46
<b>SODIUM ADSORPTION RATIO</b>							
			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 10/3/19		Analyst: <b>ABL</b>
<b>Sodium Adsorption Ratio</b>	<b>8.0</b>		<b>0.010</b>	<b>0.010</b>	<b>none</b>	1	10/3/2019
<b>POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3546 / 10/1/19		Analyst: <b>EEW</b>
Acenaphthene	U		0.93	4.8	µg/Kg-dry	1	10/2/2019 21:08
<b>Anthracene</b>	<b>27</b>		<b>1.6</b>	<b>4.8</b>	<b>µg/Kg-dry</b>	1	10/2/2019 21:08
Benzo(a)anthracene	U		2.0	4.8	µg/Kg-dry	1	10/2/2019 21:08
Benzo(a)pyrene	U		1.3	4.8	µg/Kg-dry	1	10/2/2019 21:08
Benzo(b)fluoranthene	U		1.1	4.8	µg/Kg-dry	1	10/2/2019 21:08
Benzo(k)fluoranthene	U		1.4	4.8	µg/Kg-dry	1	10/2/2019 21:08
<b>Chrysene</b>	<b>12</b>		<b>0.99</b>	<b>4.8</b>	<b>µg/Kg-dry</b>	1	10/2/2019 21:08
Dibenzo(a,h)anthracene	U		1.1	4.8	µg/Kg-dry	1	10/2/2019 21:08

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 04-Oct-19

Client: XTO Energy  
Project: YCF 3-45-1  
Sample ID: PW Spill Bottom #2 (10')  
Collection Date: 9/27/2019 11:49 AM

Work Order: 19092031  
Lab ID: 19092031-06  
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	5.4		0.88	4.8	µg/Kg-dry	1	10/2/2019 21:08
Fluorene	920		1.6	4.8	µg/Kg-dry	1	10/2/2019 21:08
Indeno(1,2,3-cd)pyrene	U		1.7	4.8	µg/Kg-dry	1	10/2/2019 21:08
Naphthalene	6,600		42	96	µg/Kg-dry	20	10/3/2019 14:59
Pyrene	13		0.79	4.8	µg/Kg-dry	1	10/2/2019 21:08
Surr: 2-Fluorobiphenyl	78.5			20-140	%REC	1	10/2/2019 21:08
Surr: 4-Terphenyl-d14	70.3			22-172	%REC	1	10/2/2019 21:08
Surr: Nitrobenzene-d5	115			28-140	%REC	20	10/3/2019 14:59
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: SW8260C		Prep: SW5035 / 9/30/19		Analyst: BCM
Benzene	0.14		0.0070	0.041	mg/Kg	1	10/1/2019 03:58
Ethylbenzene	2.4		0.0086	0.041	mg/Kg	1	10/1/2019 03:58
m,p-Xylene	140		1.1	1.6	mg/Kg	20	10/2/2019 20:24
o-Xylene	25		0.32	0.82	mg/Kg	20	10/2/2019 20:24
Toluene	15		0.22	0.82	mg/Kg	20	10/2/2019 20:24
Xylenes, Total	160		1.1	2.5	mg/Kg	20	10/2/2019 20:24
Surr: 1,2-Dichloroethane-d4	104			70-130	%REC	1	10/1/2019 03:58
Surr: 1,2-Dichloroethane-d4	96.4			70-130	%REC	20	10/2/2019 20:24
Surr: 4-Bromofluorobenzene	98.0			70-130	%REC	1	10/1/2019 03:58
Surr: 4-Bromofluorobenzene	102			70-130	%REC	20	10/2/2019 20:24
Surr: Dibromofluoromethane	77.8			70-130	%REC	1	10/1/2019 03:58
Surr: Dibromofluoromethane	93.0			70-130	%REC	20	10/2/2019 20:24
Surr: Toluene-d8	150	S		70-130	%REC	1	10/1/2019 03:58
Surr: Toluene-d8	101			70-130	%REC	20	10/2/2019 20:24
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: DVD
Electrical Conductivity @ Saturation	7.8		0.011	0.10	mmhos/cm @25°	20	10/3/2019 16:30
<b>CHROMIUM, TRIVALENT</b>			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	73		0.37	1.2	mg/Kg-dry	1	10/2/2019 16:15
<b>CHROMIUM, HEXAVALENT</b>			Method: SW7196A		Prep: SW3060A / 10/2/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	10/2/2019 15:00
<b>MOISTURE</b>			Method: SW3550C				Analyst: KTP
Moisture	16		0.10	0.10	% of sample	1	10/1/2019 14:55
<b>PH</b>			Method: SW9045D		Prep: EXTRACT / 10/1/19		Analyst: DNW
pH	7.65		0.10	0.100	s.u.	1	10/1/2019 11:11
Temperature	22.5		0.10	0.100	°C	1	10/1/2019 11:11

Note: See Qualifiers page for a list of qualifiers and their definitions.

**Client:** XTO Energy  
**Work Order:** 19092031  
**Project:** YCF 3-45-1

# QC BATCH REPORT

Batch ID: **143288** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: <b>DBLKS1-143288-143288</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/3/2019 06:47 AM</b>		
Client ID:		Run ID: <b>GC8_191002A</b>				SeqNo: <b>5964188</b>		Prep Date: <b>10/2/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	3.496	5.0								J
<i>Surr: 4-Terphenyl-d14</i>	3.569	0	3.33	0	107	33-111	0			

LCS		Sample ID: <b>DLCSS1-143288-143288</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/3/2019 07:16 AM</b>		
Client ID:		Run ID: <b>GC8_191002A</b>				SeqNo: <b>5964189</b>		Prep Date: <b>10/2/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	322.3	5.0	333	0	96.8	58-111	0			
<i>Surr: 4-Terphenyl-d14</i>	3.381	0	3.33	0	102	33-111	0			

MS		Sample ID: <b>19091742-01B MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/3/2019 08:14 AM</b>		
Client ID:		Run ID: <b>GC8_191002A</b>				SeqNo: <b>5964191</b>		Prep Date: <b>10/2/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	313.2	5.0	331.9	2.776	93.5	58-111	0			
<i>Surr: 4-Terphenyl-d14</i>	3.098	0	3.319	0	93.3	33-111	0			

MSD		Sample ID: <b>19091742-01B MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/3/2019 08:43 AM</b>		
Client ID:		Run ID: <b>GC8_191002A</b>				SeqNo: <b>5964192</b>		Prep Date: <b>10/2/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	317.2	4.9	329.6	2.776	95.4	58-111	313.2	1.26	30	
<i>Surr: 4-Terphenyl-d14</i>	3.233	0	3.296	0	98.1	33-111	3.098	4.27	30	

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

# QC BATCH REPORT

Batch ID: **143204** Instrument ID **GC9** Method: **SW8015D**

<b>MBLK</b>		Sample ID: <b>MBLK-143204-143204</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>9/30/2019 01:42 PM</b>		
Client ID:		Run ID: <b>GC9_190930A</b>				SeqNo: <b>5955427</b>		Prep Date: <b>9/30/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	U	5,000								
Surr: Toluene-d8	4408	0	5000	0	88.2	71-123	0			

<b>LCS</b>		Sample ID: <b>LCS-143204-143204</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>9/30/2019 01:12 PM</b>		
Client ID:		Run ID: <b>GC9_190930A</b>				SeqNo: <b>5955426</b>		Prep Date: <b>9/30/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	535900	5,000	500000	0	107	71-123	0			
Surr: Toluene-d8	5640	0	5000	0	113	71-123	0			

<b>MS</b>		Sample ID: <b>19091970-01A MS</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>10/1/2019 08:33 AM</b>		
Client ID:		Run ID: <b>GC9_190930A</b>				SeqNo: <b>5958291</b>		Prep Date: <b>9/30/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	5278000	7,800	784100	4801000	60.8	71-123	0			SEO
Surr: Toluene-d8	113800	0	7841	0	1450	71-123	0			S

<b>MSD</b>		Sample ID: <b>19091970-01A MSD</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>10/1/2019 09:03 AM</b>		
Client ID:		Run ID: <b>GC9_190930A</b>				SeqNo: <b>5958292</b>		Prep Date: <b>9/30/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	6827000	7,800	784100	4801000	258	71-123	5278000	25.6	30	SEO
Surr: Toluene-d8	171300	0	7841	0	2180	71-123	113800	40.3	30	SR

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

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

**Client:** XTO Energy  
**Work Order:** 19092031  
**Project:** YCF 3-45-1

## QC BATCH REPORT

Batch ID: **143300** Instrument ID **HG4** Method: **SW7471B**

MBLK		Sample ID: MBLK-143300-143300				Units: mg/Kg		Analysis Date: 10/2/2019 08:48 AM		
Client ID:		Run ID: HG4_191002A				SeqNo: 5960282		Prep Date: 10/1/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS		Sample ID: LCS-143300-143300				Units: mg/Kg		Analysis Date: 10/2/2019 08:50 AM		
Client ID:		Run ID: HG4_191002A				SeqNo: 5960284		Prep Date: 10/1/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.175 0.020 0.1665 0 105 80-120 0

MS		Sample ID: 19091723-02AMS					Units: mg/Kg		Analysis Date: 10/2/2019 09:06 AM		
Client ID:			Run ID: HG4_191002A			SeqNo: 5960293		Prep Date: 10/1/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1652 0.018 0.1482 0.02007 97.9 75-125 0

MSD		Sample ID: 19091723-02AMSD				Units: mg/Kg		Analysis Date: 10/2/2019 09:08 AM		
Client ID:		Run ID: HG4_191002A			SeqNo: 5960294		Prep Date: 10/1/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1683 0.018 0.1487 0.02007 99.7 75-125 0.1652 1.86 35

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

## QC BATCH REPORT

Batch ID: **143293** Instrument ID **ICPMS3** Method: **SW6020A**

<b>MBLK</b>		Sample ID: <b>MBLK-143293-143293</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/1/2019 09:33 PM</b>		
Client ID:		Run ID: <b>ICPMS3_191001B</b>				SeqNo: <b>5959681</b>		Prep Date: <b>10/1/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Boron	U	1.0								
Cadmium	U	0.10								
Chromium	U	0.25								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.25								
Silver	U	0.25								
Zinc	U	0.50								

<b>MBLK</b>		Sample ID: <b>MBLK-143293-143293</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/2/2019 05:18 PM</b>		
Client ID:		Run ID: <b>ICPMS4_191002B</b>				SeqNo: <b>5962503</b>		Prep Date: <b>10/1/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	U	0.25								

<b>LCS</b>		Sample ID: <b>LCS-143293-143293</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/1/2019 09:35 PM</b>		
Client ID:		Run ID: <b>ICPMS3_191001B</b>				SeqNo: <b>5959682</b>		Prep Date: <b>10/1/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	5.059	0.25	5	0	101	80-120	0			
Barium	5.007	0.25	5	0	100	80-120	0			
Boron	26.15	1.0	25	0	105	80-120	0			
Cadmium	4.886	0.10	5	0	97.7	80-120	0			
Chromium	5.324	0.25	5	0	106	80-120	0			
Copper	4.814	0.25	5	0	96.3	80-120	0			
Lead	5.169	0.25	5	0	103	80-120	0			
Nickel	5.208	0.25	5	0	104	80-120	0			
Selenium	4.847	0.25	5	0	96.9	80-120	0			
Silver	5.032	0.25	5	0	101	80-120	0			
Zinc	5.109	0.50	5	0	102	80-120	0			

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

# QC BATCH REPORT

Batch ID: 143293 Instrument ID ICPMS3 Method: SW6020A

MS Sample ID: 19092031-06AMS				Units: mg/Kg			Analysis Date: 10/1/2019 10:19 PM			
Client ID: PW Spill Bottom #2 (10')		Run ID: ICPMS3_191001B		SeqNo: 5959706		Prep Date: 10/1/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	19.65	0.36	7.174	8.787	151	75-125	0			S
Boron	43	1.4	35.87	5.383	105	75-125	0			
Cadmium	5.759	0.14	7.174	0.1385	78.3	75-125	0			
Chromium	64.69	0.36	7.174	61.31	47	75-125	0			SO
Lead	19.4	0.36	7.174	11.05	116	75-125	0			
Selenium	6.11	0.36	7.174	0.2183	82.1	75-125	0			
Silver	5.672	0.36	7.174	0.04333	78.5	75-125	0			

MS Sample ID: 19092031-06AMS				Units: mg/Kg			Analysis Date: 10/2/2019 02:46 PM			
Client ID: PW Spill Bottom #2 (10')		Run ID: ICPMS3_191002B		SeqNo: 5961933		Prep Date: 10/1/2019		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	175	3.6	7.174	182.5	-104	75-125	0			SO
Nickel	62.4	3.6	7.174	58.69	51.7	75-125	0			SO
Zinc	62.4	7.2	7.174	56.77	78.5	75-125	0			O

MS Sample ID: 19092031-06AMS				Units: mg/Kg			Analysis Date: 10/2/2019 05:32 PM			
Client ID: PW Spill Bottom #2 (10')		Run ID: ICPMS4_191002B		SeqNo: 5962512		Prep Date: 10/1/2019		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	27.82	3.6	7.174	20.9	96.5	75-125	0			

MSD Sample ID: 19092031-06AMSD				Units: mg/Kg			Analysis Date: 10/1/2019 10:21 PM			
Client ID: PW Spill Bottom #2 (10')		Run ID: ICPMS3_191001B		SeqNo: 5959707		Prep Date: 10/1/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	13.67	0.36	7.215	8.787	67.6	75-125	19.65	35.9	20	SR
Boron	42.54	1.4	36.08	5.383	103	75-125	43	1.09	20	
Cadmium	5.735	0.14	7.215	0.1385	77.6	75-125	5.759	0.42	20	
Chromium	60.97	0.36	7.215	61.31	-4.75	75-125	64.69	5.91	20	SO
Lead	18.37	0.36	7.215	11.05	101	75-125	19.4	5.46	20	
Selenium	6.009	0.36	7.215	0.2183	80.3	75-125	6.11	1.66	20	
Silver	5.647	0.36	7.215	0.04333	77.7	75-125	5.672	0.44	20	

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

## QC BATCH REPORT

Batch ID: 143293 Instrument ID ICPMS3 Method: SW6020A

MSD					Sample ID: 19092031-06AMSD		Units: mg/Kg		Analysis Date: 10/2/2019 02:51 PM		
Client ID: PW Spill Bottom #2 (10')			Run ID: ICPMS3_191002B			SeqNo: 5961936		Prep Date: 10/1/2019		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Barium	186.8	3.6	7.215	182.5	59.7	75-125	175	6.52	20	SO	
Nickel	60.35	3.6	7.215	58.69	23	75-125	62.4	3.34	20	SO	
Zinc	60.77	7.2	7.215	56.77	55.5	75-125	62.4	2.64	20	SO	

MSD				Sample ID: 19092031-06AMSD				Units: mg/Kg			Analysis Date: 10/2/2019 05:34 PM			
Client ID: PW Spill Bottom #2 (10')				Run ID: ICPMS4_191002B				SeqNo: 5962513			Prep Date: 10/1/2019		DF: 10	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Copper		28.16	3.6	7.215	20.9	101	75-125	27.82	1.23	20				

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

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



Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

## QC BATCH REPORT

Batch ID: 143453 Instrument ID ICPMS4 Method: SW6020A

DUP		Sample ID: 19092031-03ADUP				Units: mg/L		Analysis Date: 10/3/2019 03:41 PM		
Client ID: PW Spill E. Sidewall		Run ID: ICPMS4_191003A				SeqNo: 5964937		Prep Date: 10/3/2019		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	461.1	5.0	0	0	0	0-0	323.6	35.1		
Magnesium	54.58	2.0	0	0	0	0-0	39.97	30.9		
Sodium	815.7	2.0	0	0	0	0-0	623.5	26.7		

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

Batch ID: 143453 Instrument ID SAR Method: USDA H60 Metho

DUP		Sample ID: 19092031-03ADUP				Units: none		Analysis Date: 10/3/2019		
Client ID: PW Spill E. Sidewall		Run ID: SAR_191003A				SeqNo: 5965065		Prep Date: 10/3/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	9.568	0.010	0	0	0		8.7	9.51	50	

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

# QC BATCH REPORT

Batch ID: 143319 Instrument ID SVMS6 Method: SW846 8270D

MBLK				Sample ID: SBLKS1-143319-143319				Units: µg/Kg			Analysis Date: 10/2/2019 12:05 PM		
Client ID:			Run ID: SVMS6_191002A				SeqNo: 5963280		Prep Date: 10/1/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Acenaphthene	U	4.2											
Anthracene	U	4.2											
Benzo(a)anthracene	U	4.2											
Benzo(a)pyrene	U	4.2											
Benzo(b)fluoranthene	U	4.2											
Benzo(k)fluoranthene	U	4.2											
Chrysene	U	4.2											
Dibenzo(a,h)anthracene	U	4.2											
Fluoranthene	U	4.2											
Fluorene	U	4.2											
Indeno(1,2,3-cd)pyrene	U	4.2											
Naphthalene	U	4.2											
Pyrene	U	4.2											
Surr: 2-Fluorobiphenyl	3190	0	3333	0	95.7	20-140		0					
Surr: 4-Terphenyl-d14	3662	0	3333	0	110	22-172		0					
Surr: Nitrobenzene-d5	3124	0	3333	0	93.7	28-140		0					

LCS				Sample ID: SLCSS1-143319-143319				Units: µg/Kg		Analysis Date: 10/2/2019 12:21 PM	
Client ID:			Run ID: SVMS6_191002A			SeqNo: 5963281		Prep Date: 10/1/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1184	4.2	1333	0	88.8	40-140	0				
Anthracene	1262	4.2	1333	0	94.7	40-140	0				
Benzo(a)anthracene	1314	4.2	1333	0	98.5	40-140	0				
Benzo(a)pyrene	1404	4.2	1333	0	105	40-140	0				
Benzo(b)fluoranthene	1297	4.2	1333	0	97.3	40-140	0				
Benzo(k)fluoranthene	1354	4.2	1333	0	102	40-140	0				
Chrysene	1215	4.2	1333	0	91.1	40-140	0				
Dibenzo(a,h)anthracene	1340	4.2	1333	0	101	40-140	0				
Fluoranthene	1182	4.2	1333	0	88.7	40-140	0				
Fluorene	1258	4.2	1333	0	94.4	40-140	0				
Indeno(1,2,3-cd)pyrene	1422	4.2	1333	0	107	40-140	0				
Naphthalene	1233	4.2	1333	0	92.5	40-140	0				
Pyrene	1341	4.2	1333	0	101	40-140	0				
Surr: 2-Fluorobiphenyl	3211	0	3333	0	96.3	20-140	0				
Surr: 4-Terphenyl-d14	3309	0	3333	0	99.3	22-172	0				
Surr: Nitrobenzene-d5	2912	0	3333	0	87.4	28-140	0				

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

# QC BATCH REPORT

Batch ID: 143319 Instrument ID SVMS6 Method: SW846 8270D

MS				Sample ID: 19092044-01B MS			Units: µg/Kg		Analysis Date: 10/2/2019 06:17 PM		
Client ID:			Run ID: SVMS6_191002A			SeqNo: 5963304		Prep Date: 10/1/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1255	4.1	1311	110.1	87.4	40-140		0			
Anthracene	1303	4.1	1311	149.9	88	40-140		0			
Benzo(a)anthracene	1348	4.1	1311	35.62	100	40-140		0			
Benzo(a)pyrene	1350	4.1	1311	20.43	101	40-140		0			
Benzo(b)fluoranthene	1274	4.1	1311	61.5	92.5	40-140		0			
Benzo(k)fluoranthene	1198	4.1	1311	21.64	89.8	40-140		0			
Chrysene	1155	4.1	1311	44.01	84.8	40-140		0			
Dibenzo(a,h)anthracene	1424	4.1	1311	7.113	108	40-140		0			
Fluoranthene	1171	4.1	1311	105.3	81.3	40-140		0			
Fluorene	1460	4.1	1311	166.7	98.7	40-140		0			
Indeno(1,2,3-cd)pyrene	1564	4.1	1311	41.27	116	40-140		0			
Naphthalene	1424	4.1	1311	59.56	104	40-140		0			
Pyrene	1298	4.1	1311	278.8	77.8	40-140		0			
Surr: 2-Fluorobiphenyl	3069	0	3277	0	93.7	20-140		0			
Surr: 4-Terphenyl-d14	2773	0	3277	0	84.6	22-172		0			
Surr: Nitrobenzene-d5	2466	0	3277	0	75.2	28-140		0			

MSD				Sample ID: 19092044-01B MSD			Units: µg/Kg		Analysis Date: 10/2/2019 06:33 PM		
Client ID:		Run ID: SVMS6_191002A			SeqNo: 5963305		Prep Date: 10/1/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1461	4.1	1322	110.1	102	40-140	1255	15.2	30		
Anthracene	1511	4.1	1322	149.9	103	40-140	1303	14.8	30		
Benzo(a)anthracene	1534	4.1	1322	35.62	113	40-140	1348	12.9	30		
Benzo(a)pyrene	1521	4.1	1322	20.43	114	40-140	1350	12	30		
Benzo(b)fluoranthene	1513	4.1	1322	61.5	110	40-140	1274	17.2	30		
Benzo(k)fluoranthene	1353	4.1	1322	21.64	101	40-140	1198	12.2	30		
Chrysene	1319	4.1	1322	44.01	96.5	40-140	1155	13.2	30		
Dibenzo(a,h)anthracene	1568	4.1	1322	7.113	118	40-140	1424	9.68	30		
Fluoranthene	1451	4.1	1322	105.3	102	40-140	1171	21.4	30		
Fluorene	1555	4.1	1322	166.7	105	40-140	1460	6.29	30		
Indeno(1,2,3-cd)pyrene	1694	4.1	1322	41.27	125	40-140	1564	7.99	30		
Naphthalene	1616	4.1	1322	59.56	118	40-140	1424	12.6	30		
Pyrene	1561	4.1	1322	278.8	97	40-140	1298	18.3	30		
Surr: 2-Fluorobiphenyl	3399	0	3305	0	103	20-140	3069	10.2	0		
Surr: 4-Terphenyl-d14	3271	0	3305	0	99	22-172	2773	16.5	0		
Surr: Nitrobenzene-d5	2827	0	3305	0	85.6	28-140	2466	13.7	0		

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

# QC BATCH REPORT

Batch ID: 143249 Instrument ID VMS6 Method: SW8260C

MBLK				Sample ID: MBLK-143249-143249				Units: µg/Kg-dry			Analysis Date: 10/2/2019 01:36 PM			
Client ID:				Run ID: VMS6_191002A				SeqNo: 5963221			Prep Date: 9/30/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Benzene	U	30												
Ethylbenzene	13	30								J				
m,p-Xylene	U	60												
o-Xylene	15.5	30								J				
Toluene	U	30												
Xylenes, Total	U	90												
Surr: 1,2-Dichloroethane-d4	974.5	0	1000	0	97.4	70-130	0							
Surr: 4-Bromofluorobenzene	967.5	0	1000	0	96.8	70-130	0							
Surr: Dibromofluoromethane	868	0	1000	0	86.8	70-130	0							
Surr: Toluene-d8	957	0	1000	0	95.7	70-130	0							

LCS				Sample ID: LCS-143249-143249			Units: µg/Kg-dry		Analysis Date: 10/2/2019 11:36 AM		
Client ID:			Run ID: VMS6_191002A			SeqNo: 5963220		Prep Date: 9/30/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1020	30	1000	0	102	75-125	0				
Ethylbenzene	996	30	1000	0	99.6	75-125	0				
m,p-Xylene	1974	60	2000	0	98.7	80-125	0				
o-Xylene	1004	30	1000	0	100	75-125	0				
Toluene	1001	30	1000	0	100	70-125	0				
Xylenes, Total	2979	90	3000	0	99.3	75-125	0				
Surr: 1,2-Dichloroethane-d4	963	0	1000	0	96.3	70-130	0				
Surr: 4-Bromofluorobenzene	1011	0	1000	0	101	70-130	0				
Surr: Dibromofluoromethane	997	0	1000	0	99.7	70-130	0				
Surr: Toluene-d8	981.5	0	1000	0	98.2	70-130	0				

MS				Sample ID: 19092031-06A MS			Units: µg/Kg-dry		Analysis Date: 10/2/2019 08:48 PM		
Client ID: PW Spill Bottom #2 (10')			Run ID: VMS6_191002A		SeqNo: 5963152		Prep Date: 9/30/2019		DF: 20		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	30340	840	27840	327.5	108	75-125		0			
Ethylbenzene	32500	840	27840	4489	101	75-125		0			
m,p-Xylene	170200	1,700	55670	135900	61.6	80-125		0		S	
o-Xylene	49420	840	27840	25150	87.2	75-125		0			
Toluene	41220	840	27840	14680	95.4	70-125		0			
Xylenes, Total	219600	2,500	83510	161000	70.1	75-125		0		S	
Surr: 1,2-Dichloroethane-d4	26120	0	27840	0	93.8	70-130		0			
Surr: 4-Bromofluorobenzene	28430	0	27840	0	102	70-130		0			
Surr: Dibromofluoromethane	28520	0	27840	0	102	70-130		0			
Surr: Toluene-d8	27400	0	27840	0	98.4	70-130		0			

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

## QC BATCH REPORT

Batch ID: 143249 Instrument ID VMS6 Method: SW8260C

MSD				Sample ID: 19092031-06A MSD			Units: µg/Kg-dry		Analysis Date: 10/2/2019 09:12 PM	
Client ID: PW Spill Bottom #2 (10')				Run ID: VMS6_191002A			SeqNo: 5963153		Prep Date: 9/30/2019	
									DF: 20	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	31910	830	27740	327.5	114	75-125	30340	5.05	30	
Ethylbenzene	33450	830	27740	4489	104	75-125	32500	2.9	30	
m,p-Xylene	178100	1,700	55480	135900	76.1	80-125	170200	4.56	30	S
o-Xylene	53360	830	27740	25150	102	75-125	49420	7.66	30	
Toluene	43270	830	27740	14680	103	70-125	41220	4.85	30	
Xylenes, Total	231500	2,500	83220	161000	84.6	75-125	219600	5.26	30	
Surr: 1,2-Dichloroethane-d4	26030	0	27740	0	93.8	70-130	26120	0.348	30	
Surr: 4-Bromofluorobenzene	28990	0	27740	0	104	70-130	28430	1.93	30	
Surr: Dibromofluoromethane	27630	0	27740	0	99.6	70-130	28520	3.17	30	
Surr: Toluene-d8	27390	0	27740	0	98.8	70-130	27400	0.0433	30	

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

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

**Client:** XTO Energy  
**Work Order:** 19092031  
**Project:** YCF 3-45-1

## QC BATCH REPORT

Batch ID: **143275**      Instrument ID **WETCHEM**      Method: **SW9045D**

LCS				Sample ID: LCS-143275-143275				Units: s.u.			Analysis Date: 10/1/2019 11:11 AM			
Client ID:				Run ID: WETCHEM_191001G				SeqNo: 5957631			Prep Date: 10/1/2019		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH		3.96	0.10	4	0	99	90-110	0						

DUP				Sample ID: 19091985-01B DUP				Units: s.u.			Analysis Date: 10/1/2019 11:11 AM			
Client ID:				Run ID: WETCHEM_191001G				SeqNo: 5957633			Prep Date: 10/1/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
pH	6.18	0.10	0	0	0	0-0	6.31	2.08	20					
Temperature	21.8	0.10	0	0	0		21.2	2.79						

DUP				Sample ID: 19092031-01A DUP				Units: s.u.			Analysis Date: 10/1/2019 11:11 AM			
Client ID: PW Spill N. Sidewall				Run ID: WETCHEM_191001G				SeqNo: 5957639			Prep Date: 10/1/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
pH	8.74	0.10	0	0	0	0-0	8.78	0.457	20					
Temperature	22.6	0.10	0	0	0		22.5	0.443						

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

## QC BATCH REPORT

Batch ID: **143367** Instrument ID **WETCHEM** Method: **SW7196A**

<b>MBLK</b>		Sample ID: <b>MBLK-143367-143367</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/2/2019 03:00 PM</b>		
Client ID:		Run ID: <b>WETCHEM_191002T</b>		SeqNo: <b>5961818</b>		Prep Date: <b>10/2/2019</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

<b>LCS</b>		Sample ID: <b>LCS-143367-143367</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/2/2019 03:00 PM</b>		
Client ID:		Run ID: <b>WETCHEM_191002T</b>		SeqNo: <b>5961819</b>		Prep Date: <b>10/2/2019</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.54 1.0 5 0 90.8 80-120 0

<b>MS</b>		Sample ID: <b>19091970-01A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/2/2019 03:00 PM</b>		
Client ID:		Run ID: <b>WETCHEM_191002T</b>		SeqNo: <b>5961823</b>		Prep Date: <b>10/2/2019</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.07 1.0 5 0.94 2.6 75-125 0 S

<b>MS</b>		Sample ID: <b>19091970-01A MSI</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/2/2019 03:00 PM</b>		
Client ID:		Run ID: <b>WETCHEM_191002T</b>		SeqNo: <b>5961825</b>		Prep Date: <b>10/2/2019</b>		DF: <b>100</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1715 100 1931 0.94 88.8 75-125 0

<b>MSD</b>		Sample ID: <b>19091970-01A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>10/2/2019 03:00 PM</b>		
Client ID:		Run ID: <b>WETCHEM_191002T</b>		SeqNo: <b>5961824</b>		Prep Date: <b>10/2/2019</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.2 1.0 5 0.94 5.2 75-125 1.07 11.5 20 S

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

# QC BATCH REPORT

Batch ID: 143453 Instrument ID WETCHEM Method: USDA H60 Metho

<b>MBLK</b>		Sample ID: <b>MB-R272081-143453</b>				Units: <b>mmhos/cm @25°</b>		Analysis Date: <b>10/3/2019 04:30 PM</b>		
Client ID:		Run ID: <b>WETCHEM_191003M</b>				SeqNo: <b>5965147</b>		Prep Date: <b>10/3/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Electrical Conductivity @ Saturation U 0.0050

<b>DUP</b>		Sample ID: <b>19092031-03A DUP</b>				Units: <b>mmhos/cm @25°</b>		Analysis Date: <b>10/3/2019 04:30 PM</b>		
Client ID: <b>PW Spill E. Sidewall</b>		Run ID: <b>WETCHEM_191003M</b>				SeqNo: <b>5965152</b>		Prep Date: <b>10/3/2019</b>		DF: <b>20</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Electrical Conductivity @ Saturation 7.06 0.10 0 0 0 5.3 28.5 50

<b>LCS1</b>		Sample ID: <b>LCS 1-143453</b>				Units: <b>mmhos/cm @25°</b>		Analysis Date: <b>10/3/2019 04:30 PM</b>		
Client ID:		Run ID: <b>WETCHEM_191003M</b>				SeqNo: <b>5965148</b>		Prep Date: <b>10/3/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Electrical Conductivity @ Saturation 0.01539 0.0050 0.0149 0 103 92-111 0

<b>LCS2</b>		Sample ID: <b>LCS 2-143453</b>				Units: <b>mmhos/cm @25°</b>		Analysis Date: <b>10/3/2019 04:30 PM</b>		
Client ID:		Run ID: <b>WETCHEM_191003M</b>				SeqNo: <b>5965156</b>		Prep Date: <b>10/3/2019</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Electrical Conductivity @ Saturation 0.589 0.0050 0.592 0 99.5 88-114 0

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A	19092031-05A	19092031-06A

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



Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

# QC BATCH REPORT

Batch ID: **R271913** Instrument ID **MOIST** Method: **SW3550C**

MBLK				Sample ID: WBLKS-R271913				Units: % of sample			Analysis Date: 10/1/2019 12:26 PM			
Client ID:				Run ID: MOIST_191001A				SeqNo: 5960075			Prep Date:		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.10

LCS		Sample ID: LCS-R271913					Units: % of sample		Analysis Date: 10/1/2019 12:26 PM		
Client ID:			Run ID: MOIST_191001A			SeqNo: 5960074		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.10 100 0 100 98-102 0

<b>DUP</b>				Sample ID: <b>19082144-41A DUP</b>				Units: <b>% of sample</b>			Analysis Date: <b>10/1/2019 12:26 PM</b>			
Client ID:				Run ID: <b>MOIST_191001A</b>				SeqNo: <b>5960055</b>			Prep Date:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 17.03 0.10 0 0 0 0-0 17.21 1.05 10 H

DUP				Sample ID: 19082144-46A DUP				Units: % of sample			Analysis Date: 10/1/2019 12:26 PM			
Client ID:				Run ID: MOIST_191001A				SeqNo: 5960063			Prep Date:		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 18.72 0.10 0 0 0 0-0 19.78 5.51 10 H

The following samples were analyzed in this batch:

19092031-01A	19092031-02A	19092031-03A
19092031-04A		

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

Client: XTO Energy  
 Work Order: 19092031  
 Project: YCF 3-45-1

## QC BATCH REPORT

Batch ID: **R271918** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R271918					Units: % of sample		Analysis Date: 10/1/2019 02:55 PM		
Client ID:			Run ID: MOIST_191001C			SeqNo: 5960193		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture U 0.10

LCS		Sample ID: LCS-R271918					Units: % of sample		Analysis Date: 10/1/2019 02:55 PM		
Client ID:			Run ID: MOIST_191001C			SeqNo: 5960192		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.10 100 0 100 98-102 0

DUP				Sample ID: 19092027-01A DUP				Units: % of sample			Analysis Date: 10/1/2019 02:55 PM			
Client ID:				Run ID: MOIST_191001C				SeqNo: 5960179			Prep Date:		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 19.17 0.10 0 0 0 0-0 19.16 0.0522 10

<b>DUP</b>				Sample ID: <b>19092044-01B DUP</b>				Units: <b>% of sample</b>			Analysis Date: <b>10/1/2019 02:55 PM</b>			
Client ID:				Run ID: <b>MOIST_191001C</b>				SeqNo: <b>5960184</b>			Prep Date:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 8.34 0.10 0 0 0 0-0 8.02 3.91 10

The following samples were analyzed in this batch:

19092031-05A	19092031-06A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.



## CHAIN OF CUSTODY

Failure to complete all section of this form may delay analysis.

COC number (for client tracking)

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19042031

[illegible]

Note: (a) DW (Drinking water), SW (Surface water), GW (Ground water), WW (Waste water), S (Soil), SL (Sludge), SE (Sediment), OS (Other solid material)

ALB Technichem (HK) Pty Ltd Address: 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Tel: +852 2610 1044 Fax: +852 2610 2021 Email: HongKong@alglobal.com

SRL 3,4<sup>u</sup>

Sample Receipt Checklist

Client Name: XTO - CO

Date/Time Received: 28-Sep-19 10:00

Work Order: 19092031

Received by: KRW

Checklist completed by Keith Wurenga  
eSignature

30-Sep-19  
Date

Reviewed by: Chad Whelton  
eSignature

30-Sep-19  
Date

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>3.4/3.4 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>9/30/2019 12:51:27 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

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Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: