

State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

402231650

Receive Date:

11/07/2019

Report taken by:

Alex Fischer

Site Investigation and Remediation Workplan (Initial Form)

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. However, this shall not preclude the Operator from taking immediate action to protect public health or safety, the environment, wildlife, or livestock.

This Form 27 describes site conditions as currently understood by the Operator; approval of this Form 27 by COGCC is based on the site conditions accurately described herein; any changes in site conditions identified during or subsequent to the performance of the approved workplan may necessitate additional investigation or remediation which shall be described on a supplemental Form 27. This Form 27 is intended to provide basic information regarding the proposed site investigation and remediation actions, but the workplan may be more fully described in attached documentation.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATION

Name of Operator: <u>XTO ENERGY INC</u>	Operator No: <u>100264</u>	Phone Numbers
Address: <u>110 W 7TH STREET</u>		Phone: <u>(970) 675-4089</u>
City: <u>FORTH WORTH</u> State: <u>TX</u> Zip: <u>76102</u>		Mobile: <u>(970) 250-4867</u>
Contact Person: <u>Natalie Steiner</u>	Email: <u>natalie_steiner@xtoenergy.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: _____ Initial Form 27 Document #: 402231650

PURPOSE INFORMATION

- | | |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination | <input type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water |
| <input type="checkbox"/> 909.c.(1), Rule 905: Pit or PW vessel closure | <input type="checkbox"/> Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b. |
| <input checked="" type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation | <input type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project |
| <input type="checkbox"/> 909.c.(3), Rule 907.e.: Land treatment of oily waste | <input type="checkbox"/> Rule 906.c.: Director request |
| <input type="checkbox"/> 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure | <input type="checkbox"/> Other _____ |

SITE INFORMATION

N Multiple Facilities (in accordance with Rule 909.c.)

Facility Type: <u>LOCATION</u>	Facility ID: <u>316373</u>	API #: _____	County Name: <u>RIO BLANCO</u>
Facility Name: <u>YELLOW CREEK FEDERAL-61S98W 3NESE</u>	Latitude: <u>39.991140</u>	Longitude: <u>-108.370750</u>	
** correct Lat/Long if needed: Latitude: <u>39.990850</u>		Longitude: <u>-108.370360</u>	
QtrQtr: <u>NESE</u>	Sec: <u>3</u>	Twp: <u>1S</u>	Range: <u>98W</u> Meridian: <u>6</u> Sensitive Area? <u>No</u>

SITE CONDITIONS

General soil type - USCS Classifications CL Most Sensitive Adjacent Land Use Non-crop land

Is domestic water well within 1/4 mile? No Is surface water within 1/4 mile? Yes

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

SITE INVESTIGATION PLAN

TYPE OF WASTE:

☒ E&P Waste

☐ Other E&P Waste

☐ Non-E&P Waste

☒ Produced Water

☐ Workover Fluids

☐ Oil

☐ Tank Bottoms

☐ Condensate

☐ Pigging Waste

☐ Drilling Fluids

☐ Rig Wash

☐ Drill Cuttings

☐ Spent Filters

☐ Pit Bottoms

☐ Other (as described by EPA)

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	361'X8'	Soil Sampling

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

Initial spill was reported on 9/26/2019 via Form 19 Doc #402190122. A 2" hole was found in the 3" Shawor poly water line.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

☒ Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

9/27/19 5 initial composite samples were taken (See figure 1). 4 of the 5 samples were above the Table 910-1. 4 of the 5 samples were retaken with additional 3 composite from the access road and sediment trap (See figure 2).

Proposed Groundwater Sampling

☐ Will groundwater samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Proposed Surface Water Sampling

☐ Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Additional Investigative Actions

☐ Additional alternative investigative actions described in attached Site Investigation Plan (summary):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 9

Number of soil samples exceeding 910-1 5

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet) 0

NA / ND

-- Highest concentration of TPH (mg/kg) 3860

-- Highest concentration of SAR 19

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 10

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) \

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 910-1

NA Highest concentration of Benzene (µg/l)

NA Highest concentration of Toluene (µg/l)

NA Highest concentration of Ethylbenzene (µg/l)

NA Highest concentration of Xylene (µg/l)

NA Highest concentration of Methane (mg/l)

Surface Water

0 Number of surface water samples collected

0 Number of surface water samples exceeding 910-1

If surface water is impacted, other agency notification may be required.

OTHER INVESTIGATION INFORMATION

☐ Were impacts to adjacent property or offsite impacts identified?

☐ Were background samples collected as part of this site investigation?

☐ Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards)

Volume of liquid waste (barrels)

☒ Is further site investigation required?

See remedial action plan

REMEDIAL ACTION PLAN

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Impacted material will be excavated and remediation success will be demonstrated through smple collection and laboratory analysis

REMEDIATION SUMMARY

Describe how remediation of existing impacts to soil and groundwater is to be accomplished (i.e. summarize remedial action plan). Provide a brief narrative description including: technical justification, schedule for implementation, estimated time to attain NFA status, plus plans and specifications for the selected remedial action technology.

The petroleum hydrocarbon impacted soil associated with the release will be excavated. composit soil samples will be collected from the sidewalls and bottom of the excavation and submitted for laboratory analysis of constituents of concern

XTO plans to continue excavation until laboratory analytical results indicate Table 910-1 compliance

Soil Remediation Summary

☐ In Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☒ Ex Situ

Yes _____ Excavate and offsite disposal

_____ If Yes: Estimated Volume (Cubic Yards) _____ 160

_____ Name of Licensed Disposal Facility or COGCC Facility ID # _____

No _____ Excavate and onsite remediation

_____ Land Treatment

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Other _____

Groundwater Remediation Summary

☐ _____ Bioremediation (or enhanced bioremediation)

☐ _____ Chemical oxidation

☐ _____ Air sparge / Soil vapor extraction

☐ _____ Natural Attenuation

☐ _____ Other _____

GROUNDWATER MONITORING

If groundwater has been impacted, describe proposed monitoring plan, including # of wells or sample points, monitoring schedule, analytical methods, points of compliance. Attach a groundwater monitoring location diagram.

Groundwater was not encountered during assessment activities

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other Supplemental Form 27

Report Type: ☐ Groundwater Monitoring ☐ Land Treatment Progress Report ☐ O&M Report

☐ Other _____

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? Yes _____

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

Soil removed from the excavation will be mix/blended and processed to below Table 910-1 concentration levels or transported offsite to a permitted disposal/recycling facility. Mix/blend processed material that complies with Table 910-1 concentration levels will be used for onsite fill

Volume of E&P Waste (solid) in cubic yards _____ 0

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels _____ 0

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

RECLAMATION PLAN

RECLAMATION PLANNING

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing.

Any disturbances associated with this project will be reclaimed as specified on the surface use plan and BLM Conditions of Approval

Is the described reclamation complete? _____

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

☐ Interim? ☐ Final?

Did the Surface Owner approve the seed mix? _____

If NO, does the seed mix comply with local soil conservation district recommendations? _____

IMPLEMENTATION SCHEDULE

PRIOR DATES

Date of Surface Owner notification/consultation, if required. 09/24/2019

Actual Spill or Release date, if known. 09/24/2019

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/24/2019

Date of commencement of Site Investigation. _____

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 09/24/2019

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

For reveiw by John Heil

XTO Energy is submitting this workplan for the YCF 3-45-1 produced water release. Facility ID316373, and requesting closure of Form 19 #402196681 and supplemental Form 19 #402196681. Excavated impacted soils and any remaining impacted soils identified will be removed and transported offsite for disposal at Wray Gulch Landfill in Meeker, Co, or remediated to below Table 910-1 standards

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: ` Natalie Steiner

Title: SSHE Technician

Submit Date: ` 11/07/2019

Email: natalie_steiner@xtoenergy.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: _____

Date: _____

Remediation Project Number: _____

COA Type**Description**

--	--

Attachment Check List

Upon approval, the approved Form 27 and all listed attachments will be indexed to the Remediation Project file. Only the approved Form 27 will also be indexed to the related Facilities.

Att Doc Num**Name**

402231650	FORM 27-INITIAL-SUBMITTED
402233763	ANALYTICAL RESULTS
402233764	ANALYTICAL RESULTS
402233765	SOIL SAMPLE LOCATION MAP
402233767	SOIL SAMPLE LOCATION MAP
402233769	OTHER
402233770	OTHER

Total Attach: 7 Files

General Comments**User Group****Comment****Comment Date**

		Stamp Upon Approval
--	--	---------------------

Total: 0 comment(s)

TABLE 1
LABORATORY RESULTS SUMMARY TABLE
YCF 3-45-1
RIO BLANCO COUNTY, COLORADO
XTO ENERGY, INC

PARAMETER	SOIL CONCENTRATIONS															
	COGCC SOIL CONCENTRATION LEVELS	UNITS	PW Spill N. Sidewall	PW Spill S. Sidewall	PW Spill E. Sidewall	PW Spill W. Sidewall	PW Spill Bottom #1 (10')	PW Spill Bottom #2 (10')	S. Sidewall @10'	E. Sidewall @10'	W. Sidewall @ 10'	Bottom #1 @ 14'	Bottom #2 @ 14'	Access Rd. #8	Access Rd. #7	Sed Trap #6
			19092031	19092031	19092031	19092031	19092031	19092031	19101949	19101949	19101949	19101949	19101949	19101949	19101949	19101949
			19092031	19092031	19092031	19092031	19092031	19092031	19101949	19101949	19101949	19101949	19101949	19101949	19101949	19101949
Sample Date									10/22/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019	10/22/2019
Arsenic	0.39	mg/kg	2.1	11	12	2.1	6.2	10	NA	NA	NA	NA	NA	3.9	5.4	3.5
Barium	15,000	mg/kg	140	320	320	520	520	220	NA	NA	NA	NA	NA	200	210	210
Cadmium	70	mg/kg	ND	0.057	0.078	0.17	0.062	0.16	NA	NA	NA	NA	NA	0.043	ND	0.12
Chromium (III)	120,000	mg/kg	25	39	40	29	55	73	NA	NA	NA	NA	NA	35	42	37
Chromium (VI)	23	mg/kg	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Copper	3,100	mg/kg	15	12	15	29	13	25	NA	NA	NA	NA	NA	6.2	8.2	13
Lead	400	mg/kg	11	15	15	15	14	13	NA	NA	NA	NA	NA	7.8	12	12
Mercury	23	mg/kg	0.030	0.015	0.039	0.062	0.040	0.043	NA	NA	NA	NA	NA	0.014	0.013	0.014
Nickel	1,600	mg/kg	22	28	25	29	36	70	NA	NA	NA	NA	NA	14	19	18
Selenium	390	mg/kg	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Silver	390	mg/kg	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Zinc	23,000	mg/kg	58	55	57	60	62	67	NA	NA	NA	NA	NA	32	42	48
EC	4.0	mmhos/cm	1.9	11	5.3	7.4	9.6	7.8	NA	NA	NA	NA	NA	2.1	1.9	1.3
pH	6 - 9	SU	8.78	8.32	8.61	8.78	9.43	7.65	NA	NA	NA	NA	NA	9.20	9.35	8.47
SAR	12	unitless	11	9.8	8.7	7.6	19	8.0	NA	NA	NA	NA	NA	14	13	3.8
TPH-GRO		mg/kg	ND	430	2,600	560	650	1,100	ND	23	81	700	400	ND	ND	ND
TPH-DRO		mg/kg	4.6	87	630	3,300	3,200	1,700	38	670	410	1,300	790	180	30	16
TPH	500	mg/kg	4.6	517	3,230	3,860	3,850	2,800	38	693	491	2,000	1,190	180	30	16
Benzene	0.17	mg/kg	ND	0.0082	1.3	ND	0.13	0.14	NA	ND	NA	NA	NA	ND	ND	ND
Toluene	85	mg/kg	ND	0.91	80	0.13	3.7	15	NA	ND	NA	NA	NA	ND	ND	ND
Ethylbenzene	100	mg/kg	0.016	0.71	8.3	0.021	1.9	2.4	NA	ND	NA	NA	NA	ND	ND	ND
Total Xylenes	175	mg/kg	ND	39	580	47	74	160	NA	ND	NA	NA	NA	ND	ND	ND
Acenaphthene	1000	mg/kg	ND	0.0081	ND	0.15	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Anthracene	1000	mg/kg	ND	ND	0.03	ND	ND	0.027	NA	NA	NA	NA	NA	ND	ND	ND
Benzo(A)anthracene	0.22	mg/kg	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Benzo(B)fluoranthene	0.22	mg/kg	ND	ND	ND	0.0047	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Benzo(K)fluoranthene	2.2	mg/kg	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Benzo(A)pyrene	0.022	mg/kg	ND	ND	ND	0.0035	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Chrysene	22	mg/kg	ND	ND	0.014	0.031	0.0091	0.012	NA	NA	NA	NA	NA	ND	ND	ND
Dibenzo(A,H)anthracene	0.022	mg/kg	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Fluoranthene	1000	mg/kg	ND	ND	0.0087	0.022	0.0066	0.0054	NA	NA	NA	NA	NA	ND	ND	ND
Fluorene	1000	mg/kg	ND	0.13	0.84	1.7	0.48	0.92	NA	NA	NA	NA	NA	0.041	0.019	ND
Indeno(1,2,3,C,D)pyrene	0.22	mg/kg	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND
Naphthalene	23	mg/kg	ND	0.51	7.3	4.5	2.5	6.6	NA	NA	NA	NA	NA	ND	ND	ND
Pyrene	1000	mg/kg	ND	ND	0.014	0.026	0.0099	0.013	NA	NA	NA	NA	NA	ND	ND	ND

NOTES:
ND - analyte not detected above the stated reporting limit
NA - not analyzed
BOLD - indicates result exceeds the COGCC concentration level
BOLD - indicates result is below approved background concentration
COGCC - Colorado Oil and Gas Conservation Commission
EC- electrical conductivity
SAR - sodium adsorption ratio



Yellow Creek Federal 3-45-1

Produced Water Release



Side walls #3-5 sampled at 10'

Sediment trap #6 sampled at 1'

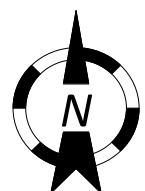
Bottom of excavation #1-2 sampled at 14'

Access road #7-8 sampled at 1'

Figure 2



Yellow Creek Federal 3-45-1
Latitude 39.990850
Longitude: -108.370360
Section 3, Township 1S, Range 97W, 6th P.M



Yellow Creek Federal 3-45-1

Produced Water Release



Side walls sampled at 7'

Bottom of excavation #1-2 sampled at 10'

Figure 1



Yellow Creek Federal 3-45-1
Latitude 39.990850
Longitude: -108.370360
Section 3, Township 1S, Range 97W, 6th P.M





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 

www.alsglobal.com

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.

<u>Qualifier</u>	<u>Description</u>
*	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.

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>
% 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

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
DIESEL RANGE ORGANICS BY GC-FID							
			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
GASOLINE RANGE ORGANICS BY GC-FID							
			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
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/1/19		Analyst: RSB
Mercury	0.030		0.0020	0.020	mg/Kg-dry	1	10/2/2019 09:40
METALS BY ICP-MS							
			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
SOLUBLE CATIONS FOR SAR							
			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
SODIUM ADSORPTION RATIO							
			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
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			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
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 9/30/19		Analyst: MF
Benzene	U		0.0075	0.044	mg/Kg	1	10/1/2019 02:18
Ethylbenzene	0.016	J	0.0092	0.044	mg/Kg	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
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: DVD
Electrical Conductivity @ Saturation	1.9		0.011	0.10	mmhos/cm @25°	20	10/3/2019 16:30
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	25		0.37	1.2	mg/Kg-dry	1	10/2/2019 16:15
CHROMIUM, HEXAVALENT			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
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	17		0.10	0.10	% of sample	1	10/1/2019 12:26
PH			Method: SW9045D		Prep: EXTRACT / 10/1/19		Analyst: DNW
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 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
DIESEL RANGE ORGANICS BY GC-FID							
			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
GASOLINE RANGE ORGANICS BY GC-FID							
			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
MERCURY BY CVAA							
			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
METALS BY ICP-MS							
			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
SOLUBLE CATIONS FOR SAR							
			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
SODIUM ADSORPTION RATIO							
			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
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			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
Fluorene	130		1.7	5.2	µg/Kg-dry	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
Naphthalene	510		2.3	5.2	µg/Kg-dry	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
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 9/30/19		Analyst: MF
Benzene	0.0082	J	0.0076	0.045	mg/Kg	1	10/1/2019 02:35
Ethylbenzene	0.71		0.0094	0.045	mg/Kg	1	10/1/2019 02:35
m,p-Xylene	32		0.30	0.45	mg/Kg	5	10/1/2019 20:35
o-Xylene	4.0		0.017	0.045	mg/Kg	1	10/1/2019 02:35
Toluene	0.91		0.012	0.045	mg/Kg	1	10/1/2019 02:35
Xylenes, Total	39		0.30	0.67	mg/Kg	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
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: DVD
Electrical Conductivity @ Saturation	11		0.011	0.10	mmhos/cm @25°	20	10/3/2019 16:30
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	39		0.40	1.3	mg/Kg-dry	1	10/2/2019 16:15
CHROMIUM, HEXAVALENT			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
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	22		0.10	0.10	% of sample	1	10/1/2019 12:26
PH			Method: SW9045D		Prep: EXTRACT / 10/1/19		Analyst: DNW
pH	8.32		0.10	0.100	s.u.	1	10/1/2019 11:11
Temperature	22.6		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 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
DIESEL RANGE ORGANICS BY GC-FID							
			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
GASOLINE RANGE ORGANICS BY GC-FID							
			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
MERCURY BY CVAA							
			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
METALS BY ICP-MS							
			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
SOLUBLE CATIONS FOR SAR							
			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
SODIUM ADSORPTION RATIO							
			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
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			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
VOLATILE ORGANIC COMPOUNDS			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
ELECTRICAL CONDUCTIVITY (SAR)			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
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	40		0.41	1.3	mg/Kg-dry	1	10/2/2019 16:15
CHROMIUM, HEXAVALENT			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
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	24		0.10	0.10	% of sample	1	10/1/2019 12:26
PH			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
DIESEL RANGE ORGANICS BY GC-FID							
			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
GASOLINE RANGE ORGANICS BY GC-FID							
			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
MERCURY BY CVAA							
			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
METALS BY ICP-MS							
			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
SOLUBLE CATIONS FOR SAR							
			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
SODIUM ADSORPTION RATIO							
			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
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			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
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 9/30/19		Analyst: BCM
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
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: DVD
Electrical Conductivity @ Saturation	7.4		0.011	0.10	mmhos/cm @25°	20	10/3/2019 16:30
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	29		0.38	1.2	mg/Kg-dry	1	10/2/2019 16:15
CHROMIUM, HEXAVALENT			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
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	18		0.10	0.10	% of sample	1	10/1/2019 12:26
PH			Method: SW9045D		Prep: EXTRACT / 10/1/19		Analyst: DNW
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
DIESEL RANGE ORGANICS BY GC-FID							
			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
GASOLINE RANGE ORGANICS BY GC-FID							
			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
MERCURY BY CVAA							
			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
METALS BY ICP-MS							
			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
SOLUBLE CATIONS FOR SAR							
			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
SODIUM ADSORPTION RATIO							
			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
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			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
VOLATILE ORGANIC COMPOUNDS			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
ELECTRICAL CONDUCTIVITY (SAR)			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
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	55		0.35	1.1	mg/Kg-dry	1	10/2/2019 16:15
CHROMIUM, HEXAVALENT			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
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	13		0.10	0.10	% of sample	1	10/1/2019 14:55
PH			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
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/2/19		Analyst: KB
DRO (C10-C28)	1,700		3.3	5.8	mg/Kg-dry	1	10/3/2019 12:07
Surr: 4-Terphenyl-d14	105			33-111	%REC	1	10/3/2019 12:07
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 9/30/19		Analyst: KB
GRO (C6-C10)	1,100		2.9	6.8	mg/Kg	1	10/2/2019 10:54
Surr: Toluene-d8	265	S		71-123	%REC	1	10/2/2019 10:54
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/1/19		Analyst: RSH
Mercury	0.043		0.0022	0.022	mg/Kg-dry	1	10/2/2019 09:51
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/1/19		Analyst: STP
Arsenic	10		0.047	0.40	mg/Kg-dry	1	10/1/2019 22:17
Barium	220		3.6	4.0	mg/Kg-dry	10	10/2/2019 14:44
Boron	6.4		1.5	1.6	mg/Kg-dry	1	10/1/2019 22:17
Cadmium	0.16		0.024	0.16	mg/Kg-dry	1	10/1/2019 22:17
Chromium	73		0.17	0.40	mg/Kg-dry	1	10/1/2019 22:17
Copper	25		4.0	4.0	mg/Kg-dry	10	10/2/2019 17:31
Lead	13		0.19	0.40	mg/Kg-dry	1	10/1/2019 22:17
Nickel	70		2.1	4.0	mg/Kg-dry	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
Zinc	67		7.7	7.9	mg/Kg-dry	10	10/2/2019 14:44
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 10/3/19		Analyst: STP
Calcium	590		2.5	5.0	mg/L	10	10/3/2019 15:46
Magnesium	75		0.50	2.0	mg/L	10	10/3/2019 15:46
Sodium	770		0.45	2.0	mg/L	10	10/3/2019 15:46
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/3/19		Analyst: ABL
Sodium Adsorption Ratio	8.0		0.010	0.010	none	1	10/3/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 10/1/19		Analyst: EEW
Acenaphthene	U		0.93	4.8	µg/Kg-dry	1	10/2/2019 21:08
Anthracene	27		1.6	4.8	µg/Kg-dry	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
Chrysene	12		0.99	4.8	µg/Kg-dry	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
VOLATILE ORGANIC COMPOUNDS			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
ELECTRICAL CONDUCTIVITY (SAR)			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
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: MB
Chromium, Trivalent	73		0.37	1.2	mg/Kg-dry	1	10/2/2019 16:15
CHROMIUM, HEXAVALENT			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
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	16		0.10	0.10	% of sample	1	10/1/2019 14:55
PH			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: DBLKS1-143288-143288				Units: mg/Kg		Analysis Date: 10/3/2019 06:47 AM		
Client ID:		Run ID: GC8_191002A				SeqNo: 5964188		Prep Date: 10/2/2019		DF: 1
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: DLCSS1-143288-143288				Units: mg/Kg		Analysis Date: 10/3/2019 07:16 AM		
Client ID:		Run ID: GC8_191002A				SeqNo: 5964189		Prep Date: 10/2/2019		DF: 1
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: 19091742-01B MS				Units: mg/Kg		Analysis Date: 10/3/2019 08:14 AM		
Client ID:		Run ID: GC8_191002A				SeqNo: 5964191		Prep Date: 10/2/2019		DF: 1
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: 19091742-01B MSD				Units: mg/Kg		Analysis Date: 10/3/2019 08:43 AM		
Client ID:		Run ID: GC8_191002A				SeqNo: 5964192		Prep Date: 10/2/2019		DF: 1
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

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

MBLK		Sample ID: MBLK-143204-143204				Units: µg/Kg-dry		Analysis Date: 9/30/2019 01:42 PM		
Client ID:		Run ID: GC9_190930A				SeqNo: 5955427		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

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

LCS		Sample ID: LCS-143204-143204				Units: µg/Kg-dry		Analysis Date: 9/30/2019 01:12 PM		
Client ID:		Run ID: GC9_190930A				SeqNo: 5955426		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

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

MS		Sample ID: 19091970-01A MS				Units: µg/Kg-dry		Analysis Date: 10/1/2019 08:33 AM		
Client ID:		Run ID: GC9_190930A				SeqNo: 5958291		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

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

MSD		Sample ID: 19091970-01A MSD				Units: µg/Kg-dry		Analysis Date: 10/1/2019 09:03 AM		
Client ID:		Run ID: GC9_190930A				SeqNo: 5958292		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

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

MBLK		Sample ID: MBLK-143293-143293				Units: mg/Kg		Analysis Date: 10/1/2019 09:33 PM		
Client ID:		Run ID: ICPMS3_191001B				SeqNo: 5959681		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	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								

MBLK		Sample ID: MBLK-143293-143293				Units: mg/Kg		Analysis Date: 10/2/2019 05:18 PM		
Client ID:		Run ID: ICPMS4_191002B				SeqNo: 5962503		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
Copper	U	0.25								

LCS		Sample ID: LCS-143293-143293				Units: mg/Kg		Analysis Date: 10/1/2019 09:35 PM		
Client ID:		Run ID: ICPMS3_191001B				SeqNo: 5959682		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	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			SO
Chromium	64.69	0.36	7.174	61.31	47	75-125	0			
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

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								
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>974.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>97.4</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>967.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>96.8</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: Dibromofluoromethane</i>	<i>868</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>86.8</i>	<i>70-130</i>	<i>0</i>			
<i>Surr: Toluene-d8</i>	<i>957</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>95.7</i>	<i>70-130</i>	<i>0</i>			

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**

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

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-143367-143367				Units: mg/Kg		Analysis Date: 10/2/2019 03:00 PM		
Client ID:		Run ID: WETCHEM_191002T		SeqNo: 5961819		Prep Date: 10/2/2019		DF: 1		
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

MS		Sample ID: 19091970-01A MS				Units: mg/Kg		Analysis Date: 10/2/2019 03:00 PM		
Client ID:		Run ID: WETCHEM_191002T		SeqNo: 5961823		Prep Date: 10/2/2019		DF: 1		
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

MS		Sample ID: 19091970-01A MSI				Units: mg/Kg		Analysis Date: 10/2/2019 03:00 PM		
Client ID:		Run ID: WETCHEM_191002T		SeqNo: 5961825		Prep Date: 10/2/2019		DF: 100		
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

MSD		Sample ID: 19091970-01A MSD				Units: mg/Kg		Analysis Date: 10/2/2019 03:00 PM		
Client ID:		Run ID: WETCHEM_191002T		SeqNo: 5961824		Prep Date: 10/2/2019		DF: 1		
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**

MBLK		Sample ID: MB-R272081-143453				Units: mmhos/cm @25°		Analysis Date: 10/3/2019 04:30 PM		
Client ID:		Run ID: WETCHEM_191003M				SeqNo: 5965147		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

Electrical Conductivity @ Saturation U 0.0050

DUP		Sample ID: 19092031-03A DUP				Units: mmhos/cm @25°		Analysis Date: 10/3/2019 04:30 PM		
Client ID: PW Spill E. Sidewall		Run ID: WETCHEM_191003M				SeqNo: 5965152		Prep Date: 10/3/2019		DF: 20
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

LCS1		Sample ID: LCS 1-143453				Units: mmhos/cm @25°		Analysis Date: 10/3/2019 04:30 PM		
Client ID:		Run ID: WETCHEM_191003M				SeqNo: 5965148		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

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

LCS2		Sample ID: LCS 2-143453				Units: mmhos/cm @25°		Analysis Date: 10/3/2019 04:30 PM		
Client ID:		Run ID: WETCHEM_191003M				SeqNo: 5965156		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

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

DUP				Sample ID: 19082144-41A DUP				Units: % of sample			Analysis Date: 10/1/2019 12:26 PM			
Client ID:				Run ID: MOIST_191001A				SeqNo: 5960055			Prep Date:		DF: 1	
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

DUP				Sample ID: 19092044-01B DUP				Units: % of sample			Analysis Date: 10/1/2019 02:55 PM												
Client ID:				Run ID: MOIST_191001C				SeqNo: 5960184			Prep Date:		DF: 1										
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
--------------	--------------

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)

Page 1 of 1

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@albglobal.com

SRL 3.4"

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:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



01-Nov-2019

Natalie Steiner
XTO Energy
21459 CR5
Rifle, CO 81650

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

Work Order: **19101949**

Dear Natalie,

ALS Environmental received 8 samples on 24-Oct-2019 09:30 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 31.

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 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: XTO Energy
Project: YCF 3-45-1
Work Order: 19101949

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>
19101949-01	S. Sidewall	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-02	E. Sidewall	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-03	W. Sidewall	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-04	Bottom #1	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-05	Bottom #2	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-06	Access Rd. #8	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-07	Access Rd. #7	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>
19101949-08	Sed Trap #6	Soil		10/22/2019 09:00	10/24/2019 09:30	<input type="checkbox"/>

Client: XTO Energy**Project:** YCF 3-45-1**Work Order:** 19101949**Case Narrative**

Batch 144634, Method GRO_8015_S, Samples 19101949-04A and -05A: GRO surrogate recoveries high due to matrix interference.

<u>Qualifier</u>	<u>Description</u>
*	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.

<u>Acronym</u>	<u>Description</u>
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

<u>Units Reported</u>	<u>Description</u>
% 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

none	
s.u.	Standard Units

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy

Project: YCF 3-45-1

Sample ID: S. Sidewall

Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949

Lab ID: 19101949-01

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	38		3.5	6.2	mg/Kg-dry	1	10/29/2019 20:38
Surr: 4-Terphenyl-d14	79.6			33-111	%REC	1	10/29/2019 20:38
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	U		3,200	7,600	µg/Kg-dry	1	10/27/2019 20:37
Surr: Toluene-d8	94.4			71-123	%REC	1	10/27/2019 20:37
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	20		0.10	0.10	% of sample	1	10/24/2019 16:18

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: E. Sidewall
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	670		3.7	6.6	mg/Kg-dry	1	10/29/2019 21:07
Surr: 4-Terphenyl-d14	72.4			33-111	%REC	1	10/29/2019 21:07
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	23,000		3,700	8,900	µg/Kg-dry	1	10/27/2019 21:37
Surr: Toluene-d8	99.2			71-123	%REC	1	10/27/2019 21:37
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260C		Prep: SW5035 / 10/25/19		Analyst: JNS
Benzene	U		9.1	53	µg/Kg-dry	1	10/31/2019 23:50
Ethylbenzene	U		11	53	µg/Kg-dry	1	10/31/2019 23:50
m,p-Xylene	U		71	110	µg/Kg-dry	1	10/31/2019 23:50
o-Xylene	U		21	53	µg/Kg-dry	1	10/31/2019 23:50
Toluene	U		15	53	µg/Kg-dry	1	10/31/2019 23:50
Xylenes, Total	U		71	160	µg/Kg-dry	1	10/31/2019 23:50
Surr: 1,2-Dichloroethane-d4	91.8			70-130	%REC	1	10/31/2019 23:50
Surr: 4-Bromofluorobenzene	96.9			70-130	%REC	1	10/31/2019 23:50
Surr: Dibromofluoromethane	89.5			70-130	%REC	1	10/31/2019 23:50
Surr: Toluene-d8	95.8			70-130	%REC	1	10/31/2019 23:50
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	26		0.10	0.10	% of sample	1	10/24/2019 16:18

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy

Project: YCF 3-45-1

Sample ID: W. Sidewall

Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949

Lab ID: 19101949-03

Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	410		3.8	6.6	mg/Kg-dry	1	10/29/2019 21:36
Surr: 4-Terphenyl-d14	77.3			33-111	%REC	1	10/29/2019 21:36
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	81,000		3,700	8,800	µg/Kg-dry	1	10/27/2019 22:07
Surr: Toluene-d8	105			71-123	%REC	1	10/27/2019 22:07
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	25		0.10	0.10	% of sample	1	10/24/2019 16:18

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
 Project: YCF 3-45-1
 Sample ID: Bottom #1
 Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
 Lab ID: 19101949-04
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	1,300		3.5	6.1	mg/Kg-dry	1	10/29/2019 22:05
Surr: 4-Terphenyl-d14	78.0			33-111	%REC	1	10/29/2019 22:05
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	700,000		3,000	7,200	µg/Kg-dry	1	10/27/2019 22:36
Surr: Toluene-d8	144	S		71-123	%REC	1	10/27/2019 22:36
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	19		0.10	0.10	% of sample	1	10/24/2019 16:18

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
 Project: YCF 3-45-1
 Sample ID: Bottom #2
 Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
 Lab ID: 19101949-05
 Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	790		3.6	6.2	mg/Kg-dry	1	10/29/2019 23:04
Surr: 4-Terphenyl-d14	75.6			33-111	%REC	1	10/29/2019 23:04
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	400,000		3,500	8,300	µg/Kg-dry	1	10/27/2019 23:06
Surr: Toluene-d8	124	S		71-123	%REC	1	10/27/2019 23:06
MOISTURE							
			Method: SW3550C				Analyst: KTP
Moisture	22		0.10	0.10	% of sample	1	10/28/2019 10:55

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Access Rd. #8
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	180		3.4	6.0	mg/Kg-dry	1	10/29/2019 23:33
Surr: 4-Terphenyl-d14	59.9			33-111	%REC	1	10/29/2019 23:33
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	U		3.1	7.4	mg/Kg	1	10/27/2019 23:36
Surr: Toluene-d8	97.0			71-123	%REC	1	10/27/2019 23:36
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/29/19		Analyst: RSH
Mercury	0.014	J	0.0021	0.021	mg/Kg-dry	1	10/29/2019 17:18
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/30/19		Analyst: STP
Arsenic	3.9		0.058	0.48	mg/Kg-dry	1	10/30/2019 21:57
Barium	200		4.4	4.8	mg/Kg-dry	10	10/31/2019 14:01
Boron	9.2		1.8	1.9	mg/Kg-dry	1	10/30/2019 21:57
Cadmium	0.043	J	0.029	0.19	mg/Kg-dry	1	10/30/2019 21:57
Chromium	35		2.1	4.8	mg/Kg-dry	10	10/31/2019 14:01
Copper	6.2		0.48	0.48	mg/Kg-dry	1	10/30/2019 21:57
Lead	7.8		0.23	0.48	mg/Kg-dry	1	10/30/2019 21:57
Nickel	14		0.25	0.48	mg/Kg-dry	1	10/30/2019 21:57
Selenium	U		0.44	0.48	mg/Kg-dry	1	10/30/2019 21:57
Silver	U		0.064	0.48	mg/Kg-dry	1	10/30/2019 21:57
Zinc	32		9.5	9.6	mg/Kg-dry	10	10/31/2019 14:01
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Calcium	51		2.5	5.0	mg/L	10	10/30/2019 15:24
Magnesium	3.9		0.50	2.0	mg/L	10	10/30/2019 15:24
Sodium	370		0.45	2.0	mg/L	10	10/30/2019 15:24
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Sodium Adsorption Ratio	14		0.010	0.010	none	1	10/30/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 10/25/19		Analyst: EEW
Acenaphthene	U		0.97	5.0	µg/Kg-dry	1	10/25/2019 16:31
Anthracene	U		1.7	5.0	µg/Kg-dry	1	10/25/2019 16:31
Benzo(a)anthracene	U		2.1	5.0	µg/Kg-dry	1	10/25/2019 16:31
Benzo(a)pyrene	U		1.4	5.0	µg/Kg-dry	1	10/25/2019 16:31
Benzo(b)fluoranthene	U		1.2	5.0	µg/Kg-dry	1	10/25/2019 16:31
Benzo(k)fluoranthene	U		1.5	5.0	µg/Kg-dry	1	10/25/2019 16:31
Chrysene	U		1.0	5.0	µg/Kg-dry	1	10/25/2019 16:31
Dibenzo(a,h)anthracene	U		1.2	5.0	µg/Kg-dry	1	10/25/2019 16:31

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Access Rd. #8
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.92	5.0	µg/Kg-dry	1	10/25/2019 16:31
Fluorene	41		1.7	5.0	µg/Kg-dry	1	10/25/2019 16:31
Indeno(1,2,3-cd)pyrene	U		1.8	5.0	µg/Kg-dry	1	10/25/2019 16:31
Naphthalene	U		2.2	5.0	µg/Kg-dry	1	10/25/2019 16:31
Pyrene	U		0.83	5.0	µg/Kg-dry	1	10/25/2019 16:31
Surr: 2-Fluorobiphenyl	63.9			20-140	%REC	1	10/25/2019 16:31
Surr: 4-Terphenyl-d14	38.3			22-172	%REC	1	10/25/2019 16:31
Surr: Nitrobenzene-d5	62.5			28-140	%REC	1	10/25/2019 16:31
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 10/25/19		Analyst: JNS
Benzene	U		0.0076	0.045	mg/Kg	1	10/31/2019 21:57
Ethylbenzene	U		0.0094	0.045	mg/Kg	1	10/31/2019 21:57
m,p-Xylene	U		0.059	0.089	mg/Kg	1	10/31/2019 21:57
o-Xylene	U		0.017	0.045	mg/Kg	1	10/31/2019 21:57
Toluene	U		0.012	0.045	mg/Kg	1	10/31/2019 21:57
Xylenes, Total	U		0.059	0.13	mg/Kg	1	10/31/2019 21:57
Surr: 1,2-Dichloroethane-d4	91.8			70-130	%REC	1	10/31/2019 21:57
Surr: 4-Bromofluorobenzene	94.8			70-130	%REC	1	10/31/2019 21:57
Surr: Dibromofluoromethane	88.6			70-130	%REC	1	10/31/2019 21:57
Surr: Toluene-d8	96.2			70-130	%REC	1	10/31/2019 21:57
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: QTN
Electrical Conductivity @ Saturation	2.1		0.011	0.10	mmhos/cm @25°	20	10/30/2019 10:18
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	35		0.38	1.2	mg/Kg-dry	1	11/1/2019 11:15
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/29/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	10/29/2019 15:55
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	18		0.10	0.10	% of sample	1	10/28/2019 10:55
PH			Method: SW9045D		Prep: EXTRACT / 10/24/19		Analyst: DNW
pH	9.20		0.10	0.100	s.u.	1	10/25/2019 09:00
Temperature	20.8		0.10	0.100	°C	1	10/25/2019 09:00

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Access Rd. #7
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	30		3.5	6.1	mg/Kg-dry	1	10/30/2019 12:02
Surr: 4-Terphenyl-d14	72.7			33-111	%REC	1	10/30/2019 12:02
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	U		3.3	7.9	mg/Kg	1	10/28/2019 12:06
Surr: Toluene-d8	100			71-123	%REC	1	10/28/2019 12:06
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/29/19		Analyst: RSB
Mercury	0.013	J	0.0018	0.018	mg/Kg-dry	1	10/29/2019 17:20
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/30/19		Analyst: STP
Arsenic	5.4		0.054	0.45	mg/Kg-dry	1	10/30/2019 21:59
Barium	210		4.2	4.5	mg/Kg-dry	10	10/31/2019 14:02
Boron	11		1.7	1.8	mg/Kg-dry	1	10/30/2019 21:59
Cadmium	U		0.027	0.18	mg/Kg-dry	1	10/30/2019 21:59
Chromium	42		2.0	4.5	mg/Kg-dry	10	10/31/2019 14:02
Copper	8.2		0.45	0.45	mg/Kg-dry	1	10/30/2019 21:59
Lead	12		0.22	0.45	mg/Kg-dry	1	10/30/2019 21:59
Nickel	19		2.4	4.5	mg/Kg-dry	10	10/31/2019 14:02
Selenium	U		0.42	0.45	mg/Kg-dry	1	10/30/2019 21:59
Silver	U		0.060	0.45	mg/Kg-dry	1	10/30/2019 21:59
Zinc	42		8.9	9.0	mg/Kg-dry	10	10/31/2019 14:02
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Calcium	46		2.5	5.0	mg/L	10	10/30/2019 15:25
Magnesium	5.9		0.50	2.0	mg/L	10	10/30/2019 15:25
Sodium	350		0.45	2.0	mg/L	10	10/30/2019 15:25
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Sodium Adsorption Ratio	13		0.010	0.010	none	1	10/30/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 10/25/19		Analyst: EEW
Acenaphthene	U		0.95	4.9	µg/Kg-dry	1	10/25/2019 16:46
Anthracene	U		1.7	4.9	µg/Kg-dry	1	10/25/2019 16:46
Benzo(a)anthracene	U		2.0	4.9	µg/Kg-dry	1	10/25/2019 16:46
Benzo(a)pyrene	U		1.3	4.9	µg/Kg-dry	1	10/25/2019 16:46
Benzo(b)fluoranthene	U		1.2	4.9	µg/Kg-dry	1	10/25/2019 16:46
Benzo(k)fluoranthene	U		1.4	4.9	µg/Kg-dry	1	10/25/2019 16:46
Chrysene	U		1.0	4.9	µg/Kg-dry	1	10/25/2019 16:46
Dibenzo(a,h)anthracene	U		1.2	4.9	µg/Kg-dry	1	10/25/2019 16:46

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Access Rd. #7
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.91	4.9	µg/Kg-dry	1	10/25/2019 16:46
Fluorene	19		1.6	4.9	µg/Kg-dry	1	10/25/2019 16:46
Indeno(1,2,3-cd)pyrene	U		1.8	4.9	µg/Kg-dry	1	10/25/2019 16:46
Naphthalene	U		2.1	4.9	µg/Kg-dry	1	10/25/2019 16:46
Pyrene	U		0.81	4.9	µg/Kg-dry	1	10/25/2019 16:46
Surr: 2-Fluorobiphenyl	57.2			20-140	%REC	1	10/25/2019 16:46
Surr: 4-Terphenyl-d14	34.3			22-172	%REC	1	10/25/2019 16:46
Surr: Nitrobenzene-d5	54.3			28-140	%REC	1	10/25/2019 16:46
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 10/25/19		Analyst: JNS
Benzene	U		0.0081	0.048	mg/Kg	1	10/31/2019 22:20
Ethylbenzene	U		0.010	0.048	mg/Kg	1	10/31/2019 22:20
m,p-Xylene	U		0.063	0.095	mg/Kg	1	10/31/2019 22:20
o-Xylene	U		0.018	0.048	mg/Kg	1	10/31/2019 22:20
Toluene	U		0.013	0.048	mg/Kg	1	10/31/2019 22:20
Xylenes, Total	U		0.063	0.14	mg/Kg	1	10/31/2019 22:20
Surr: 1,2-Dichloroethane-d4	92.9			70-130	%REC	1	10/31/2019 22:20
Surr: 4-Bromofluorobenzene	94.9			70-130	%REC	1	10/31/2019 22:20
Surr: Dibromofluoromethane	90.0			70-130	%REC	1	10/31/2019 22:20
Surr: Toluene-d8	95.5			70-130	%REC	1	10/31/2019 22:20
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: QTN
Electrical Conductivity @ Saturation	1.9		0.011	0.10	mmhos/cm @25°	20	10/30/2019 10:18
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	42		0.38	1.2	mg/Kg-dry	1	11/1/2019 11:15
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/29/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	10/29/2019 15:55
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	18		0.10	0.10	% of sample	1	10/28/2019 10:55
PH			Method: SW9045D		Prep: EXTRACT / 10/24/19		Analyst: DNW
pH	9.35		0.10	0.100	s.u.	1	10/25/2019 09:00
Temperature	20.9		0.10	0.100	°C	1	10/25/2019 09:00

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Sed Trap #6
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015M		Prep: SW3550 / 10/29/19		Analyst: KB
DRO (C10-C28)	16		3.5	6.2	mg/Kg-dry	1	10/30/2019 12:31
Surr: 4-Terphenyl-d14	75.1			33-111	%REC	1	10/30/2019 12:31
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/25/19		Analyst: KB
GRO (C6-C10)	U		3.3	8.0	mg/Kg	1	10/28/2019 12:35
Surr: Toluene-d8	100			71-123	%REC	1	10/28/2019 12:35
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/29/19		Analyst: RSB
Mercury	0.014	J	0.0020	0.020	mg/Kg-dry	1	10/29/2019 17:28
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/30/19		Analyst: STP
Arsenic	3.5		0.060	0.50	mg/Kg-dry	1	10/30/2019 22:04
Barium	210		4.6	5.0	mg/Kg-dry	10	10/31/2019 14:04
Boron	7.2		1.9	2.0	mg/Kg-dry	1	10/30/2019 22:04
Cadmium	0.12	J	0.030	0.20	mg/Kg-dry	1	10/30/2019 22:04
Chromium	37		2.2	5.0	mg/Kg-dry	10	10/31/2019 14:04
Copper	13		0.50	0.50	mg/Kg-dry	1	10/30/2019 22:04
Lead	12		0.24	0.50	mg/Kg-dry	1	10/30/2019 22:04
Nickel	18		0.26	0.50	mg/Kg-dry	1	10/30/2019 22:04
Selenium	U		0.46	0.50	mg/Kg-dry	1	10/30/2019 22:04
Silver	U		0.066	0.50	mg/Kg-dry	1	10/30/2019 22:04
Zinc	48		9.8	10	mg/Kg-dry	10	10/31/2019 14:04
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Calcium	100		2.5	5.0	mg/L	10	10/30/2019 15:27
Magnesium	7.2		0.50	2.0	mg/L	10	10/30/2019 15:27
Sodium	150		0.45	2.0	mg/L	10	10/30/2019 15:27
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: STP
Sodium Adsorption Ratio	3.8		0.010	0.010	none	1	10/30/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW846 8270D		Prep: SW3546 / 10/25/19		Analyst: EEW
Acenaphthene	U		1.0	5.1	µg/Kg-dry	1	10/25/2019 17:02
Anthracene	U		1.7	5.1	µg/Kg-dry	1	10/25/2019 17:02
Benzo(a)anthracene	U		2.1	5.1	µg/Kg-dry	1	10/25/2019 17:02
Benzo(a)pyrene	U		1.4	5.1	µg/Kg-dry	1	10/25/2019 17:02
Benzo(b)fluoranthene	U		1.2	5.1	µg/Kg-dry	1	10/25/2019 17:02
Benzo(k)fluoranthene	U		1.5	5.1	µg/Kg-dry	1	10/25/2019 17:02
Chrysene	U		1.1	5.1	µg/Kg-dry	1	10/25/2019 17:02
Dibenzo(a,h)anthracene	U		1.2	5.1	µg/Kg-dry	1	10/25/2019 17:02

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

ALS Group, USA

Date: 01-Nov-19

Client: XTO Energy
Project: YCF 3-45-1
Sample ID: Sed Trap #6
Collection Date: 10/22/2019 09:00 AM

Work Order: 19101949
Lab ID: 19101949-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.95	5.1	µg/Kg-dry	1	10/25/2019 17:02
Fluorene	U		1.7	5.1	µg/Kg-dry	1	10/25/2019 17:02
Indeno(1,2,3-cd)pyrene	U		1.8	5.1	µg/Kg-dry	1	10/25/2019 17:02
Naphthalene	U		2.2	5.1	µg/Kg-dry	1	10/25/2019 17:02
Pyrene	U		0.85	5.1	µg/Kg-dry	1	10/25/2019 17:02
Surr: 2-Fluorobiphenyl	74.5			20-140	%REC	1	10/25/2019 17:02
Surr: 4-Terphenyl-d14	48.1			22-172	%REC	1	10/25/2019 17:02
Surr: Nitrobenzene-d5	74.3			28-140	%REC	1	10/25/2019 17:02
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 10/25/19		Analyst: JNS
Benzene	U		0.0082	0.048	mg/Kg	1	11/1/2019 12:13
Ethylbenzene	U		0.010	0.048	mg/Kg	1	11/1/2019 12:13
m,p-Xylene	U		0.064	0.096	mg/Kg	1	11/1/2019 12:13
o-Xylene	U		0.019	0.048	mg/Kg	1	11/1/2019 12:13
Toluene	U		0.013	0.048	mg/Kg	1	11/1/2019 12:13
Xylenes, Total	U		0.064	0.14	mg/Kg	1	11/1/2019 12:13
Surr: 1,2-Dichloroethane-d4	92.8			70-130	%REC	1	11/1/2019 12:13
Surr: 4-Bromofluorobenzene	94.0			70-130	%REC	1	11/1/2019 12:13
Surr: Dibromofluoromethane	90.3			70-130	%REC	1	11/1/2019 12:13
Surr: Toluene-d8	95.6			70-130	%REC	1	11/1/2019 12:13
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/30/19		Analyst: QTN
Electrical Conductivity @ Saturation	1.3		0.011	0.10	mmhos/cm @25°	20	10/30/2019 10:18
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	37		0.38	1.2	mg/Kg-dry	1	11/1/2019 11:15
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/29/19		Analyst: RZM
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	10/29/2019 15:55
MOISTURE			Method: SW3550C				Analyst: KTP
Moisture	20		0.10	0.10	% of sample	1	10/28/2019 10:55
PH			Method: SW9045D		Prep: EXTRACT / 10/24/19		Analyst: DNW
pH	8.47		0.10	0.100	s.u.	1	10/25/2019 09:00
Temperature	20.6		0.10	0.100	°C	1	10/25/2019 09:00

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

Client: XTO Energy
Work Order: 19101949
Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144777** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-144777-144777				Units: mg/Kg		Analysis Date: 10/29/2019 05:43 P		
Client ID:		Run ID: GC8_191029A				SeqNo: 6021405		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	U	5.0								
<i>Surr: 4-Terphenyl-d14</i>	2.643	0	3.33	0	79.4	33-111	0			

LCS		Sample ID: DLCSS1-144777-144777				Units: mg/Kg		Analysis Date: 10/29/2019 06:12 P		
Client ID:		Run ID: GC8_191029A				SeqNo: 6021406		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	339.2	5.0	333	0	102	58-111	0			
<i>Surr: 4-Terphenyl-d14</i>	2.413	0	3.33	0	72.5	33-111	0			

MS		Sample ID: 19101947-01A MS				Units: mg/Kg		Analysis Date: 10/29/2019 07:10 P		
Client ID:		Run ID: GC8_191029A				SeqNo: 6021408		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	478.4	4.9	326.2	168.3	95	58-111	0			
<i>Surr: 4-Terphenyl-d14</i>	6.431	0	3.262	0	197	33-111	0			S

MSD		Sample ID: 19101947-01A MSD				Units: mg/Kg		Analysis Date: 10/29/2019 07:39 P		
Client ID:		Run ID: GC8_191029A				SeqNo: 6021409		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	449.6	5.0	331.7	168.3	84.8	58-111	478.4	6.21	30	
<i>Surr: 4-Terphenyl-d14</i>	8.452	0	3.317	0	255	33-111	6.431	27.2	30	S

The following samples were analyzed in this batch:

19101949-01A	19101949-02A	19101949-03A
19101949-04A	19101949-05A	19101949-06A
19101949-07A	19101949-08A	

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144634** Instrument ID **GC10** Method: **SW8015D**

MBLK		Sample ID: MBLK-144634-144634				Units: µg/Kg-dry		Analysis Date: 10/27/2019 12:11 P		
Client ID:		Run ID: GC10_191027A				SeqNo: 6015625		Prep Date: 10/25/2019		DF: 1
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	5198	0	5000	0	104	71-123	0			

LCS		Sample ID: LCS-144634-144634				Units: µg/Kg-dry		Analysis Date: 10/27/2019 11:11 A		
Client ID:		Run ID: GC10_191027A				SeqNo: 6015623		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	441900	5,000	500000	0	88.4	71-123	0			
Surr: Toluene-d8	5400	0	5000	0	108	71-123	0			

MS		Sample ID: 19101947-01A MS				Units: µg/Kg-dry		Analysis Date: 10/28/2019 02:34 A		
Client ID:		Run ID: GC10_191027A				SeqNo: 6015649		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	853700	7,000	701600	10470	120	71-123	0			
Surr: Toluene-d8	7749	0	7016	0	110	71-123	0			

MSD		Sample ID: 19101947-01A MSD				Units: µg/Kg-dry		Analysis Date: 10/28/2019 03:04 A		
Client ID:		Run ID: GC10_191027A				SeqNo: 6015650		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	829500	7,200	716700	10470	114	71-123	853700	2.87	30	
Surr: Toluene-d8	7729	0	7167	0	108	71-123	7749	0.257	30	

The following samples were analyzed in this batch:

19101949-01A	19101949-02A	19101949-03A
19101949-04A	19101949-05A	19101949-06A
19101949-07A	19101949-08A	

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

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144788** Instrument ID **HG4** Method: **SW7471B**

MBLK		Sample ID: MBLK-144788-144788				Units: mg/Kg		Analysis Date: 10/29/2019 04:43 P		
Client ID:		Run ID: HG4_191029A				SeqNo: 6021254		Prep Date: 10/29/2019		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-144788-144788				Units: mg/Kg		Analysis Date: 10/29/2019 04:45 P		
Client ID:		Run ID: HG4_191029A				SeqNo: 6021256		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1769 0.020 0.1665 0 106 80-120 0

MS		Sample ID: 19101628-01CMS				Units: mg/Kg		Analysis Date: 10/29/2019 04:51 P		
Client ID:		Run ID: HG4_191029A				SeqNo: 6021261		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1844 0.017 0.1446 0.04369 97.3 75-125 0

MSD		Sample ID: 19101628-01CMSD				Units: mg/Kg		Analysis Date: 10/29/2019 04:53 P		
Client ID:		Run ID: HG4_191029A				SeqNo: 6021263		Prep Date: 10/29/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1664 0.016 0.1363 0.04369 90.1 75-125 0.1844 10.2 35

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
--------------	--------------	--------------

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

Client: XTO Energy
Work Order: 19101949
Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144829** Instrument ID **ICPMS3** Method: **SW6020A**

DUP		Sample ID: 19102081-03ADUP				Units: mg/L		Analysis Date: 10/30/2019 03:45 P		
Client ID:		Run ID: ICPMS3_191030A				SeqNo: 6022979		Prep Date: 10/30/2019		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	132.1	5.0	0	0	0	0-0	146.3	10.2		
Magnesium	18.08	2.0	0	0	0	0-0	20.15	10.9		
Sodium	11.94	2.0	0	0	0	0-0	13.33	11		

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
--------------	--------------	--------------

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

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144854** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK		Sample ID: MBLK-144854-144854				Units: mg/Kg		Analysis Date: 10/30/2019 04:38 P		
Client ID:		Run ID: ICPMS3_191030B				SeqNo: 6023330		Prep Date: 10/30/2019		DF: 1
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								
Copper	U	0.25								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.25								
Silver	U	0.25								
Zinc	U	0.50								

LCS		Sample ID: LCS-144854-144854				Units: mg/Kg		Analysis Date: 10/30/2019 04:40 P		
Client ID:		Run ID: ICPMS3_191030B				SeqNo: 6023333		Prep Date: 10/30/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.921	0.25	5	0	98.4	80-120	0			
Barium	5.149	0.25	5	0	103	80-120	0			
Boron	24.22	1.0	25	0	96.9	80-120	0			
Cadmium	4.93	0.10	5	0	98.6	80-120	0			
Chromium	5.081	0.25	5	0	102	80-120	0			
Copper	5.018	0.25	5	0	100	80-120	0			
Lead	5.057	0.25	5	0	101	80-120	0			
Nickel	4.948	0.25	5	0	99	80-120	0			
Selenium	4.889	0.25	5	0	97.8	80-120	0			
Silver	5.156	0.25	5	0	103	80-120	0			
Zinc	5.087	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: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144854** Instrument ID **ICPMS3** Method: **SW6020A**

MS					Sample ID: 19102263-02AMS		Units: mg/Kg		Analysis Date: 10/30/2019 05:09 P		
Client ID:			Run ID: ICPMS3_191030B			SeqNo: 6023377		Prep Date: 10/30/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	17.63	0.40	7.974	9.932	96.6	75-125	0				
Barium	93.35	0.40	7.974	76.82	207	75-125	0			SO	
Boron	53.96	1.6	39.87	12.08	105	75-125	0				
Cadmium	7.244	0.16	7.974	0.1414	89.1	75-125	0				
Chromium	21.97	0.40	7.974	12.08	124	75-125	0				
Copper	22.7	0.40	7.974	16.83	73.6	75-125	0			S	
Lead	95.29	0.40	7.974	96.5	-15.2	75-125	0			SO	
Nickel	20.93	0.40	7.974	11.44	119	75-125	0				
Selenium	7.919	0.40	7.974	0.7239	90.2	75-125	0				
Silver	7.342	0.40	7.974	0.04176	91.5	75-125	0				
Zinc	187.9	0.80	7.974	175.8	152	75-125	0			SEO	

MSD				Sample ID: 19102263-02AMSD				Units: mg/Kg		Analysis Date: 10/30/2019 05:10 P	
Client ID:			Run ID: ICPMS3_191030B			SeqNo: 6023379		Prep Date: 10/30/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	17.41	0.41	8.104	9.932	92.2	75-125	17.63	1.31	20		
Barium	93.37	0.41	8.104	76.82	204	75-125	93.35	0.0199	20	SO	
Boron	54.16	1.6	40.52	12.08	104	75-125	53.96	0.375	20		
Cadmium	7.256	0.16	8.104	0.1414	87.8	75-125	7.244	0.164	20		
Chromium	21.73	0.41	8.104	12.08	119	75-125	21.97	1.11	20		
Copper	22.35	0.41	8.104	16.83	68.1	75-125	22.7	1.53	20	S	
Lead	97.62	0.41	8.104	96.5	13.8	75-125	95.29	2.41	20	SO	
Nickel	20.66	0.41	8.104	11.44	114	75-125	20.93	1.28	20		
Selenium	8.229	0.41	8.104	0.7239	92.6	75-125	7.919	3.83	20		
Silver	7.412	0.41	8.104	0.04176	90.9	75-125	7.342	0.945	20		
Zinc	219.9	0.81	8.104	175.8	545	75-125	187.9	15.7	20	SEO	

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
--------------	--------------	--------------

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

Client: XTO Energy
Work Order: 19101949
Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144829** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP				Sample ID: 19102081-03ADUP				Units: none			Analysis Date: 10/30/2019			
Client ID:				Run ID: SAR_191030A				SeqNo: 6023286			Prep Date: 10/30/2019		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Sodium Adsorption Ratio		0.2584	0.010	0	0	0		0.274	5.83	50				

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
--------------	--------------	--------------

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

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144631** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-144631-144631				Units: µg/Kg		Analysis Date: 10/25/2019 02:58 P		
Client ID:		Run ID: SVMS6_191025A				SeqNo: 6013715		Prep Date: 10/25/2019		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	2694	0	3333	0	80.8	20-140	0			
Surr: 4-Terphenyl-d14	1798	0	3333	0	54	22-172	0			
Surr: Nitrobenzene-d5	2664	0	3333	0	79.9	28-140	0			

LCS		Sample ID: SLCSS1-144631-144631				Units: µg/Kg		Analysis Date: 10/25/2019 03:14 P		
Client ID:		Run ID: SVMS6_191025A				SeqNo: 6013716		Prep Date: 10/25/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	993.3	4.2	1333	0	74.5	40-140	0			
Anthracene	1092	4.2	1333	0	81.9	40-140	0			
Benzo(a)anthracene	1041	4.2	1333	0	78.1	40-140	0			
Benzo(a)pyrene	1106	4.2	1333	0	83	40-140	0			
Benzo(b)fluoranthene	994.3	4.2	1333	0	74.6	40-140	0			
Benzo(k)fluoranthene	960.2	4.2	1333	0	72	40-140	0			
Chrysene	983.3	4.2	1333	0	73.8	40-140	0			
Dibenzo(a,h)anthracene	1373	4.2	1333	0	103	40-140	0			
Fluoranthene	1086	4.2	1333	0	81.5	40-140	0			
Fluorene	1055	4.2	1333	0	79.2	40-140	0			
Indeno(1,2,3-cd)pyrene	1513	4.2	1333	0	113	40-140	0			
Naphthalene	1038	4.2	1333	0	77.8	40-140	0			
Pyrene	805.2	4.2	1333	0	60.4	40-140	0			
Surr: 2-Fluorobiphenyl	2707	0	3333	0	81.2	20-140	0			
Surr: 4-Terphenyl-d14	1703	0	3333	0	51.1	22-172	0			
Surr: Nitrobenzene-d5	2224	0	3333	0	66.7	28-140	0			

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

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144631** Instrument ID **SVMS6** Method: **SW846 8270D**

MS				Sample ID: 19101968-01B MS			Units: µg/Kg		Analysis Date: 10/25/2019 03:45 P		
Client ID:			Run ID: SVMS6_191025A			SeqNo: 6015879		Prep Date: 10/25/2019		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1009	4.0	1277	0	79	40-140	0				
Anthracene	1097	4.0	1277	0	85.9	40-140	0				
Benzo(a)anthracene	1069	4.0	1277	0	83.7	40-140	0				
Benzo(a)pyrene	1146	4.0	1277	0	89.7	40-140	0				
Benzo(b)fluoranthene	1066	4.0	1277	0	83.4	40-140	0				
Benzo(k)fluoranthene	950.4	4.0	1277	0	74.4	40-140	0				
Chrysene	999	4.0	1277	0	78.2	40-140	0				
Dibenzo(a,h)anthracene	1388	4.0	1277	0	109	40-140	0				
Fluoranthene	1043	4.0	1277	0	81.7	40-140	0				
Fluorene	1084	4.0	1277	0	84.9	40-140	0				
Indeno(1,2,3-cd)pyrene	1554	4.0	1277	0	122	40-140	0				
Naphthalene	1067	4.0	1277	0	83.5	40-140	0				
Pyrene	796	4.0	1277	0	62.3	40-140	0				
Surr: 2-Fluorobiphenyl	2732	0	3194	0	85.5	20-140	0				
Surr: 4-Terphenyl-d14	1672	0	3194	0	52.4	22-172	0				
Surr: Nitrobenzene-d5	2277	0	3194	0	71.3	28-140	0				

MSD				Sample ID: 19101968-01B MSD			Units: µg/Kg		Analysis Date: 10/25/2019 04:00 P		
Client ID:		Run ID: SVMS6_191025A			SeqNo: 6015880		Prep Date: 10/25/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1031	4.0	1292	0	79.8	40-140	1009	2.13	30		
Anthracene	1178	4.0	1292	0	91.2	40-140	1097	7.08	30		
Benzo(a)anthracene	1077	4.0	1292	0	83.3	40-140	1069	0.674	30		
Benzo(a)pyrene	1123	4.0	1292	0	87	40-140	1146	2.03	30		
Benzo(b)fluoranthene	1030	4.0	1292	0	79.7	40-140	1066	3.39	30		
Benzo(k)fluoranthene	964.3	4.0	1292	0	74.6	40-140	950.4	1.44	30		
Chrysene	1005	4.0	1292	0	77.8	40-140	999	0.558	30		
Dibenzo(a,h)anthracene	1338	4.0	1292	0	104	40-140	1388	3.65	30		
Fluoranthene	1151	4.0	1292	0	89.1	40-140	1043	9.79	30		
Fluorene	1095	4.0	1292	0	84.8	40-140	1084	0.986	30		
Indeno(1,2,3-cd)pyrene	1474	4.0	1292	0	114	40-140	1554	5.3	30		
Naphthalene	1111	4.0	1292	0	86	40-140	1067	4.02	30		
Pyrene	823.3	4.0	1292	0	63.7	40-140	796	3.38	30		
Surr: 2-Fluorobiphenyl	2789	0	3230	0	86.4	20-140	2732	2.09	0		
Surr: 4-Terphenyl-d14	1717	0	3230	0	53.2	22-172	1672	2.63	0		
Surr: Nitrobenzene-d5	2598	0	3230	0	80.4	28-140	2277	13.2	0		

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
--------------	--------------	--------------

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

Client: XTO Energy
Work Order: 19101949
Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144600** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-144600-144600				Units: s.u.			Analysis Date: 10/25/2019 09:00 A			
Client ID:				Run ID: WETCHEM_191025B				SeqNo: 6011273			Prep Date: 10/24/2019		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH		3.95	0.10	4	0	98.8	90-110	0						

DUP		Sample ID: 19101948-01A DUP				Units: s.u.		Analysis Date: 10/25/2019 09:00 A		
Client ID:		Run ID: WETCHEM_191025B				SeqNo: 6011280		Prep Date: 10/24/2019		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.54	0.10	0	0	0	0-0	7.49	0.665	20	
Temperature	20.6	0.10	0	0	0		20.6	0		

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
--------------	--------------	--------------

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

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **144821** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-144821-144821				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020103		Prep Date: 10/29/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-144821-144821				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020104		Prep Date: 10/29/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.8 1.0 5 0 96 80-120 0

MS		Sample ID: 19102078-01A MS				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020109		Prep Date: 10/29/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.8 1.0 5 0.6733 82.5 75-125 0

MS		Sample ID: 19102078-01A MSI				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020111		Prep Date: 10/29/2019		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2422 100 2349 0.6733 103 75-125 0

MSD		Sample ID: 19102078-01A MSD				Units: mg/Kg		Analysis Date: 10/29/2019 03:55 P		
Client ID:		Run ID: WETCHEM_191029L		SeqNo: 6020110		Prep Date: 10/29/2019		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 5.111 1.0 5.051 0.6733 87.9 75-125 4.8 6.28 20

The following samples were analyzed in this batch:

19101949-06A	19101949-07A	19101949-08A
--------------	--------------	--------------

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

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **R273782** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R273782				Units: % of sample		Analysis Date: 10/24/2019 04:18 P		
Client ID:		Run ID: MOIST_191024C				SeqNo: 6011970		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-R273782					Units: % of sample		Analysis Date: 10/24/2019 04:18 P		
Client ID:			Run ID: MOIST_191024C			SeqNo: 6011969		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: 19101902-03A DUP					Units: % of sample		Analysis Date: 10/24/2019 04:18 P		
Client ID:			Run ID: MOIST_191024C			SeqNo: 6011950		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 4.32 0.10 0 0 0 0-0 4.37 1.15 10

DUP				Sample ID: 19101913-05A DUP				Units: % of sample			Analysis Date: 10/24/2019 04:18 P			
Client ID:				Run ID: MOIST_191024C				SeqNo: 6011957			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 12.24 0.10 0 0 0 0-0 10.69 13.5 10 R

The following samples were analyzed in this batch:

19101949-01A	19101949-02A	19101949-03A
19101949-04A		

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

Client: XTO Energy
 Work Order: 19101949
 Project: YCF 3-45-1

QC BATCH REPORT

Batch ID: **R274010** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R274010				Units: % of sample		Analysis Date: 10/28/2019 10:55 A		
Client ID:		Run ID: MOIST_191028B		SeqNo: 6018546		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-R274010				Units: % of sample		Analysis Date: 10/28/2019 10:55 A		
Client ID:		Run ID: MOIST_191028B		SeqNo: 6018545		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: 19101991-03A DUP				Units: % of sample		Analysis Date: 10/28/2019 10:55 A		
Client ID:		Run ID: MOIST_191028B		SeqNo: 6018538		Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 9.58 0.10 0 0 0 0-0 9.68 1.04 10

DUP		Sample ID: 19101993-01B DUP				Units: % of sample		Analysis Date: 10/28/2019 10:55 A		
Client ID:		Run ID: MOIST_191028B		SeqNo: 6018540		Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 4.58 0.10 0 0 0 0-0 4.27 7.01 10

The following samples were analyzed in this batch:

19101949-05A	19101949-06A	19101949-07A
19101949-08A		

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)

190949

Page 1 of 1

[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)

ALS Technichem (HK) Pty Ltd Address: 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong Tel: +852 2810 1044 Fax: +852 2810 2021 Email: HongKong@alsglobal.com

502 3.2°C

Sample Receipt Checklist

Client Name: **XTO - CO**

Date/Time Received: **24-Oct-19 09:30**

Work Order: **19101949**

Received by: **DS**

Checklist completed by Diane Shaw 24-Oct-19
eSignature Date

Reviewed by: Chad Whelton 24-Oct-19
eSignature 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>3.2/3.2 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>10/24/2019 2:18:34 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:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: