District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: XTO Energy, Inc.	Contact: James McDaniel
Address: 382 Road 3100, Aztec, New Mexico 87410	Telephone No.: (505) 333-3701
Facility Name: OH Randel #5	Facility Type: Gas Well (Basin Dakota)

Surface Owner: Tribal	Mineral Owner	API No.: 30-045-05964

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	10	26N	11W	990	FNL	990	FWL	San Juan

Latitude 36.5065753 **Longitude** -107.996552

NATURE OF RELEASE

Type of Release: Produced Oil / Produced Water	Volume of Release: 32.5 BBL's	Volume Recovered: 0 BBL's
Source of Release: 2" Drain Valve on Production Tank	Date and Hour of Occurrence: Unknown Time: Unknown	Date and Hour of Discovery: 1/18/2016 2:56pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Cory Smith (NMOCD)	
By Whom? Rex Farnsworth (EH&S Technician)	Date and Hour: 1/19/2016 @ 7:53am	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

OIL CONS. DIV DIST. 3

JUL 13 2017

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

On Monday, 1-18-2016 an XTO Lease Operator discovered a release at the OH Randel #5. The 2" drain valve on the 100 bbl production tank froze, splitting the valve body and releasing fluid on the ground. An estimated 27 bbls of produced oil and 5.5 bbls of produced water leaked onto the ground with no fluids being recovered. The 2" drain valve has been replaced. The site was then ranked according to the NMOCD Guidelines for the Remediation of Leaks, Spills and Releases. The site was ranked a 0 due to an estimated depth to groundwater is greater than 100 feet and an arroyo over 1000 feet. This set the closure standard to 5000 ppm TPH, 10 ppm benzene, and 50 ppm total BTEX. XTO has utilized a soil vapor extraction system for the remediation of this release collected soil sampling on April 19-24, 2017.

Describe Area Affected and Cleanup Action Taken. *

Please reference the attached *Remediation Soil Sampling and Proposed Supplemental Work Plan*

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Initial Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION Approved by Environmental Specialist:	
Printed Name: James McDaniel		
Title: EH&S Supervisor	Approval Date: 7/25/17	Expiration Date:
E-mail Address: james_mcdaniel@xtoenergy.com	Conditions of Approval:	Attached ☒
Date: 7/12/2017 Phone: 505-333-3701		

* Attach Additional Sheets If Necessary

#NUF1602039091

(123)

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Tuesday, July 25, 2017 10:13 AM
To: 'McDaniel, James'
Cc: Nee, Martin; Hixon, Logan; 'Ashley Ager (aager@ltenv.com)'; 'Devin Hencmann (dhencmann@ltenv.com)'; Powell, Brandon, EMNRD; Fields, Vanessa, EMNRD
Subject: RE: O H Randel #5 Sampling Results and Additional Work Plan

James,

The OCD has reviewed the C-141 work plan received on July 13, 2017 and has approved the work plan with the following conditions of approval:

- XTO will recommence the previous approved remediation operations of the SVE within the areas that were not successfully remediated following the April, 2017 confirmation sampling as soon as practicable but no later than August 15, 2017.
- XTO will notify the OCD within 72 hours but no more than 1 week prior to the start of additional delineation.
- As per the work plan XTO will commence Delineation within 30 days of approval (July 25, 2017)
- IF XTO proposed additional delineation bore holes fail to fully delineate the site additional delineation will be required.

If you have additional questions please let me know.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: McDaniel, James [mailto:James_McDaniel@xtoenergy.com]
Sent: Thursday, June 29, 2017 4:10 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>; Powell, Brandon, EMNRD <Brandon.Powell@state.nm.us>
Cc: Nee, Martin <Martin_Nee@xtoenergy.com>; Hixon, Logan <Logan_Hixon@xtoenergy.com>; 'Ashley Ager (aager@ltenv.com)' <aager@ltenv.com>; 'Devin Hencmann (dhencmann@ltenv.com)' <dhencmann@ltenv.com>
Subject: O H Randel #5 Sampling Results and Additional Work Plan

Cory,
Please find attached the LT Environmental report outlining the results obtained during the closure sampling at the O H Randel #5 well site on 4/219-24/2017, and a work plan for additional delineation activities at this location. Please do not hesitate to contact me with additional questions regarding this site. Thank you.

James McDaniel
EH&S Supervisor
CHMM #15676

COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental, Inc.
848 2nd Avenue
Durango, Colorado 81301
T 970.385.1096 / F 970.385.1873

June 29, 2017

Mr. Cory Smith
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, NM 87410

RE: Remediation Soil Sampling and Proposed Supplemental Work Plan
XTO Energy, Inc.
OH Randel #5, API # 30-045-05964
San Juan County, New Mexico

Dear Mr. Smith:

LT Environmental, Inc. (LTE), on behalf of XTO Energy, Inc. (XTO), presents the following summary report summarizing remediation monitoring and soil sampling activities performed on April 19, 2017 through April 24, 2017, to evaluate remediation progress and delineate remaining extent of petroleum hydrocarbon impacted soil at the OH Randel #5 natural gas production well (Site). The Site is located west of Highway 550 near Huerfano, New Mexico in Unit D of Section 10 of Township 26 North and Range 11 West (Figure 1).

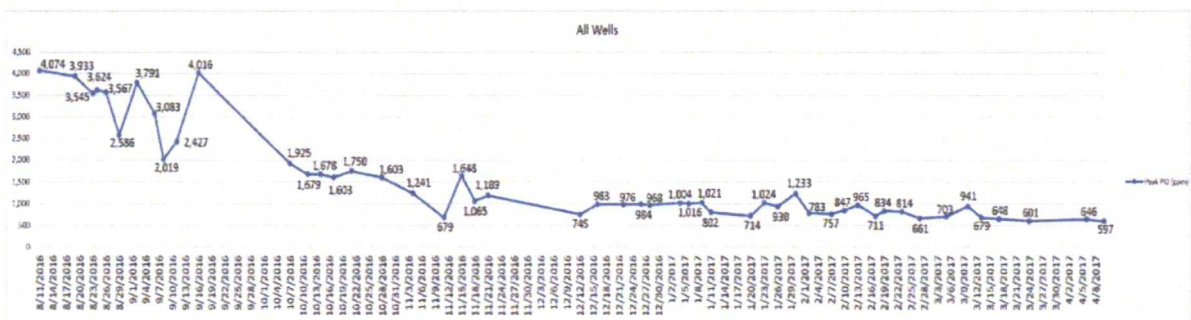
Background

On January 18, 2016, XTO discovered a frozen valve on a 100-barrel (bbl) production tank that resulted in approximately 27 bbl of condensate and 5.5 bbl of produced water draining onto the ground and infiltrating into the subsurface. The release was contained within the bermed area and no liquids were recovered. The Site was ranked a zero pursuant to the New Mexico Oil Conservation Division's (NMOCD) 1993 *Guidelines for Remediation of Leaks, Spills and Releases*. As such, the remediation action levels applied to the Site are 5,000 parts per million (ppm) total petroleum hydrocarbons (TPH), 10 ppm benzene, and 50 ppm total for the sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX).

On January 19, 2016, XTO conducted a subsurface assessment using a hand auger. During the assessment, a photo-ionization detector (PID) was utilized to field screen for volatile organic compounds (VOCs) in soil samples collected from within the release footprint. Samples were collected at the surface and intermittently to 9.5 feet below ground surface (bgs). Samples were collected from four different borehole locations and field screened. Samples from two boreholes were submitted for laboratory analysis of BTEX according to United States Environmental Protection Agency (USEPA) Method 8021 and TPH according to USEPA Method 8015. Field screening and laboratory analytical results indicated that impacted soil exceeding NMOCD standards at the release location extended from the ground surface to 9.5 feet bgs vertically with a lateral extent of approximately 300 square feet. The location of the hand auger borings is depicted in Figure 2 and laboratory analytical results are summarized in Table 1.

On August 3, through August 8, 2016, LTE conducted delineation and concurrently installed a soil vapor extraction (SVE) system for remediation. LTE advanced ten delineation boreholes (HA 1 through HA 5, and BH-6 through BH-10) to depths ranging from 10 feet to 20 feet bgs: one borehole was placed in each cardinal direction from the source area, then additional boreholes were installed outward as impacted soil was encountered (Figure 2). The soil from the delineation boreholes was described and field screened with a PID at one-foot intervals (Attachment A). Soil samples were collected from the interval with the highest Organic Vapor Measurement (OVM) observed and from the bottom of each borehole to confirm the vertical impact to the soil has been delineated. Soil samples were analyzed for BTEX using EPA Method 8021 and TPH using EPA Method 8015. If field screening results indicated that no impacted soil was present, no laboratory analysis was conducted (HA 2, HA 3, HA 4, and BH-10).

Based on the preliminary field screening and laboratory analytical results obtained by XTO and additional delineation data collected by LTE, six SVE wells were installed (Figure 2). SVE wells were screened at intervals spanning the impacted zones and placed so their radius of influence would affect the impacted soil encountered during delineation. The SVE system operated from August 11, 2016 until April 19, 2017, with greater than 92 percent (%) run time. XTO monitored OVM at each SVE well periodically to assess system performance and effectiveness. Below is a graph presenting OVM readings from the main line where vapors from all 6 SVE wells are routed. The graph presents data spanning the course of operation.



At start up, OVM readings exceeded 4,000 parts per million (ppm) and steadily declined during system operation to 512 ppm. The decline in OVM readings measured from the combined wells prompted XTO to conduct soil sampling to evaluate the site for closure and assess residual impacts.

On November 18, 2016, XTO utilized a hand auger to advance two boreholes, one in the original source area (BH-6) and one to the northeast of the source area (BH-5), to assess decline in TPH and BTEX concentrations in soil. Soil samples were collected from each borehole where elevated OVM readings were encountered and from the bottom of the boring. Soil samples were analyzed for BTEX using EPA Method 8021 and TPH using EPA Method 8015 (Table 1). Soil analyzed from these borings was below NMOCD closure standards for this Site. These preliminary results combined with reduced OVM readings from the SVE system prompted further evaluation and were proposed in a sampling plan submitted to the NMOCD and dated December 30, 2016.

Remediation Soil Sampling

On April 19, 2017 through April 24, 2017, LTE utilized a CME 75 hollow stem auger drill rig to advance nine boreholes (BH-11 through BH-19) with depths varying from 25 feet to 35 feet below ground surface (bgs). Boreholes were located in areas where impacted soil was encountered during previous investigations and within the radius of influence of the SVE wells (Figure 2). Additional boreholes were drilled outside of the SVE wells' radius of influence to confirm the subsurface impact was fully delineated during previous investigations. Continuous soil samples were logged by an LTE geologist and described using the Unified Soil Classification System (USCS). The intervals from immediately beneath the ground surface to 10 feet bgs and then every five-foot interval thereafter were composited and screened for volatile aromatic hydrocarbons. Screening was conducted with a PID in accordance with the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases*. Soil with field screening results exceeding 100 ppm or that was stained or wet was collected for laboratory analysis of BTEX and TPH (GRO, DRO, and MRO).

Remediation Soil Sampling Results

Soil samples collected during advancement of the soil borings were predominantly composed of silt and sand mixtures from the ground surface to approximately 25 to 35 feet bgs. A semi-consolidated weathered sandstone was encountered at approximately 30 to 35 feet bgs in BH-12, BH-13, BH-18, and BH-19. Field-identified soil impacts consisting of visual staining, hydrocarbon odors, and/or elevated field screening results were observed in BH-12 (13.5 feet to 18 feet bgs and 28 feet to 35 feet bgs), BH-13 (23 feet to 35 feet bgs), BH-15 (10 feet to 32 feet bgs), and BH-16 (12 feet to 29 feet bgs). Bore logs are included as Attachment A.

Laboratory analytical results indicated that soil samples from BH-12 exceeded the NMOCD action level of 5,000 mg/kg for TPH with a concentration of 12,114 mg/kg. Soils samples from BH-12, BH-13, BH-15 and BH-16 exceeded the NMOCD action level of 50 mg/kg for total BTEX with concentrations ranging from 61.3 mg/kg to 990 mg/kg. A benzene concentration exceeding the NMOCD action level of 10 mg/kg was detected at BH-12 with a concentration of 63 mg/kg. The soil analytical results as compared to the NMOCD action levels are presented in Table 1 and results exceeding NMOCD standards are depicted in Figure 3. The ESC laboratory analytical report is included as Attachment B.

Proposed Supplemental Work Plan

Soil sampling conducted to evaluate progress of remediation indicated residual BTEX concentrations slightly exceeding the NMOCD action level of 50 mg/kg and consisting primarily of the total xylenes constituent remain in the original source area and northeast of the source area from approximately 15 to 27 feet bgs. Additional vertical delineation in the northeastern portion of the Site identified a second, deeper interval of impact at 30 feet to 35 feet bgs with TPH exceeding the NMOCD Action Level of 5,000 mg/kg and higher BTEX concentrations. In order to address the remaining soil impact at the source and the deeper impact recently identified, LTE proposes more delineation boreholes and utilizing that data to evalute closure scenarios.

LTE proposes to utilize a hollow stem auger drill rig to advance 5 boreholes to 40 feet below ground surface (bgs) or to the depth of impact, whichever is greater. Boreholes will be located in in the northeast, where impacted soil was not delineated during prior investigations (Figure 3). Should field screening indicate lateral extent of soil impact has not been defined, LTE will step out with additional boreholes.

Continuous soil samples will be logged by an LTE geologist and described using the Unified Soil Classification System (USCS). The intervals from immediately beneath the ground surface to 10 feet bgs and then every five-foot interval thereafter will be composited and screened for volatile aromatic hydrocarbons. Screening will be conducted with a PID in accordance with the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases*. Soil with field screening results exceeding 100 ppm or that is stained or wet will be collected for laboratory analysis of BTEX, TPH (GRO, DRO, and MRO). Site data will be evaluated for possible risk-based closure or continued SVE once full delineation is achieved. XTO intends to begin future delineation within 30 days of receiving approval of this work plan.

LTE appreciates the opportunity to provide this remediation work plan to the NMOCD. If you have any questions or comments regarding this work plan, do not hesitate to contact me at (970) 385-1096 or via email at dhencmann@ltenv.com or James McDaniel at (505) 419-0915 or at james_mcdaniel@xtoenergy.com.

Sincerely,

LT ENVIRONMENTAL, INC.

Devin Hencmann
Project Geologist

Ashley L. Ager, M.S., P.G.
Senior Geologist

Attachments:

Figure 1 – Site Map
Figure 2 – Site Map
Figure 3 – Proposed Supplemental Work Plan
Table 1 – Borehole Soil Analytical Results
Appendix A– Soil Borehole Logs
Appendix B – Analytical Laboratory Report

FIGURES

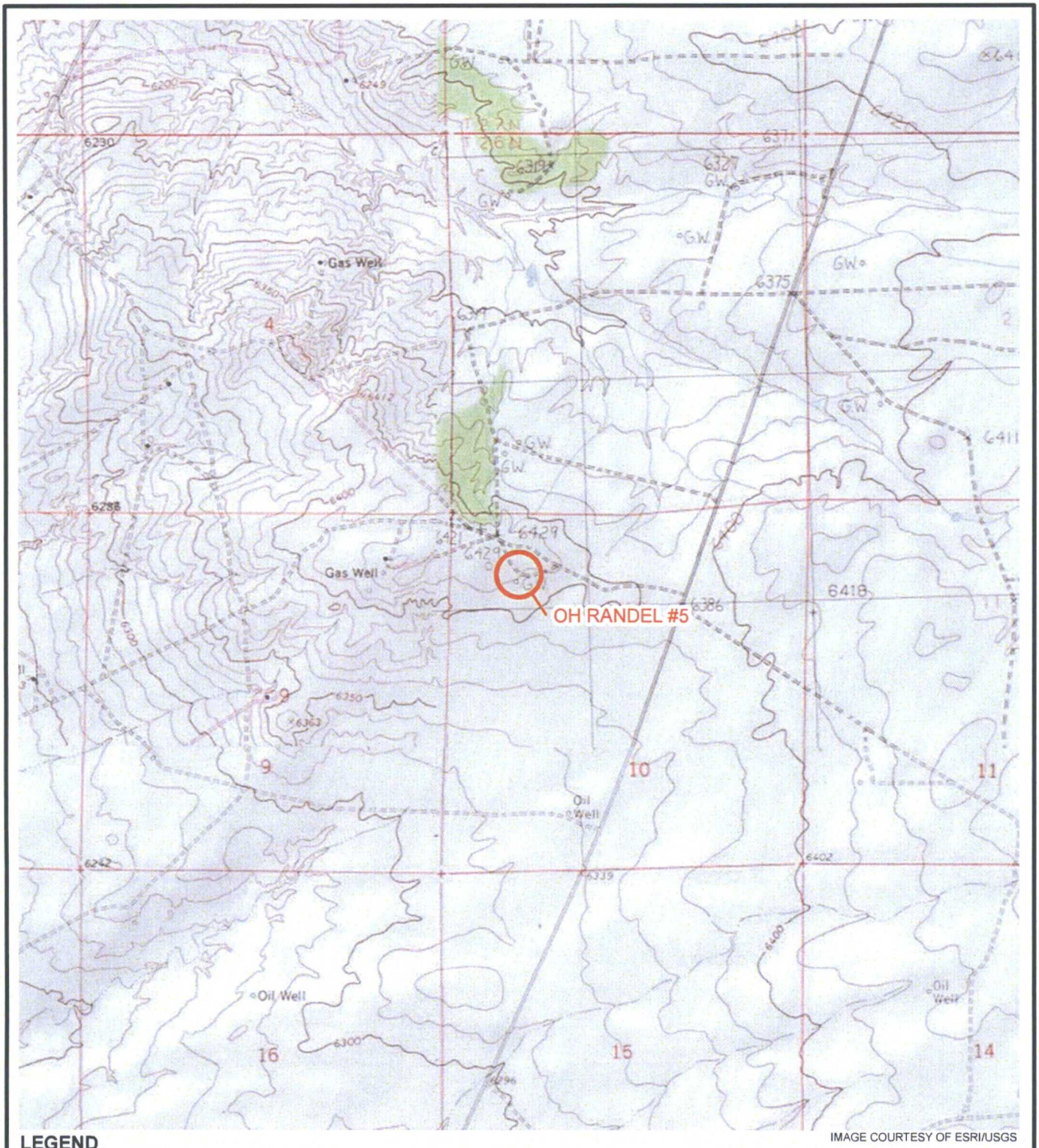


IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

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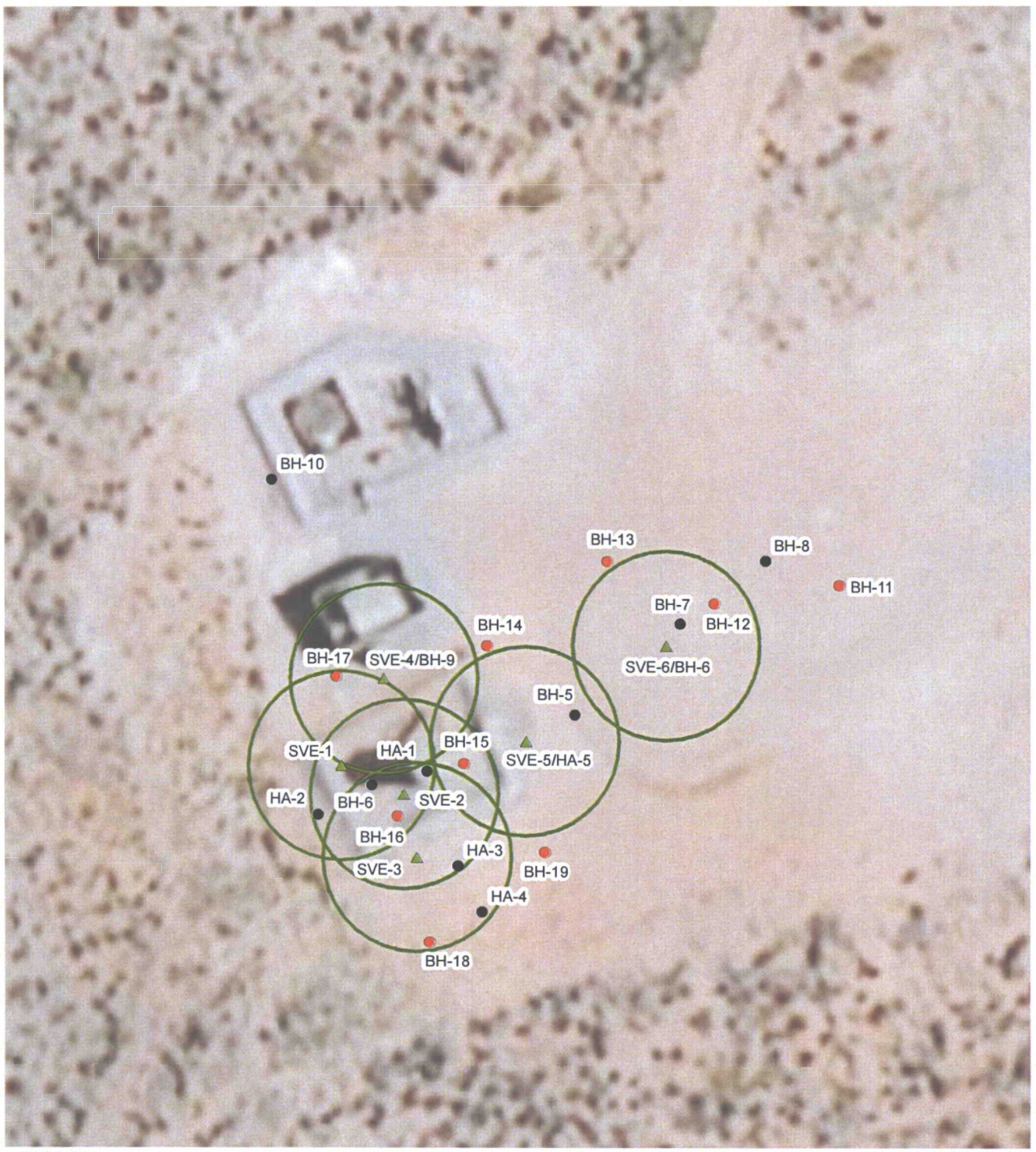

LEGEND

- EXISTING BOREHOLE
- NEW BOREHOLE
- SOIL VAPOR EXTRACTION (SVE) WELL
- 20 FOOT RADIUS OF INFLUENCE

IMAGE COURTESY OF ESRI

0 30 60
Feet

N

FIGURE 2
SITE MAP
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012916007\012916007_OH RANDEL #5_FIG02_SITE_170624.mxd

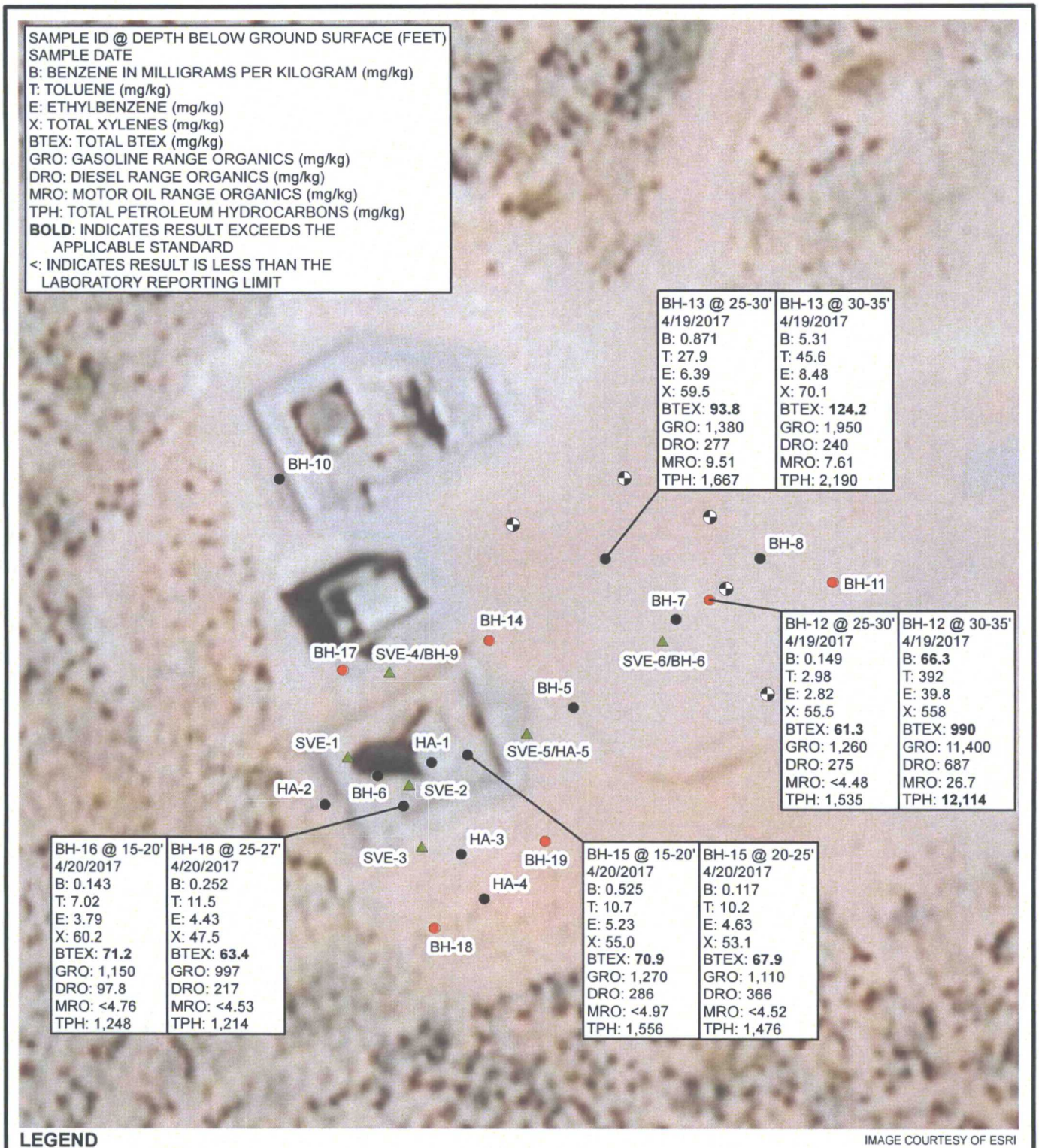

FIGURE 3
PROPOSED SUPPLEMENTAL WORK PLAN
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012916007\012916007_OH RANDEL #5_FIG03_PROP_WORK_PLAN.mxd

TABLES

TABLE 1
BOREHOLE SOIL ANALYTICAL RESULTS
OH RANDEL #5
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC

Soil Sample ID	Sample Date	Depth (feet)	Vapor (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	TPH (mg/kg)
HA 1	7/5/2016	20	2,886	5.1	56	7.3	74	**142.4**	810	17	NA	827
HA 5	7/5/2016	16	2,356	0.21	3.5	1.3	15	20.01	310	150	NA	460
HA 5	7/5/2016	21.5	1,922	<0.10	2.4	1.0	12	15.4	260	66	NA	326
BH-5 @ 9.2'	8/2/2016	9.2	2,494	<0.121	<1.21	<0.121	9.2	9.2	783	137	NA	920
BH-5 @ 13'	8/2/2016	13	3,172	0.314	<2.45	1.28	25.9	27.494	633	54.1	NA	687.1
BH-6 @ 9'	8/2/2016	9	2,197	<0.0495	<0.495	<0.0495	<0.148	<0.148	51.1	17.9	NA	69
BH-6 @ 10'	8/2/2016	10	2,980	0.0218	<0.00500	0.188	0.0413	0.2511	138	9.27	NA	147.27
BH-6 @ 12.6'	8/2/2016	12.6	2,347	<0.0122	<0.122	<0.0122	<0.0368	<0.122	53.9	5.81	NA	59.71
*BH-6	11/18/2016	9	3,128	<0.49	1.8	1.7	20	23.5	840	140	NA	980
	11/18/2016	18	1,922	<0.49	7.3	2.4	27	36.7	1,000	120	NA	1,120
*BH-7	11/18/2016	11	3,159	<0.42	2.6	3.6	39	45.2	1,700	400	NA	2,100
	11/18/2016	12	3,128	<0.42	9.4	8.3	94	**111.7**	2,600	350	NA	2,950
*BH-8	11/18/2016	16	3,125	<0.47	<0.94	1.3	12	13.3	560	340	NA	900
*BH-9	11/18/2016	16	2,413	<1.0	23	8.7	100	**131.7**	2,200	240	NA	2,440
BH-11 @ 20-25'	4/19/2017	20-25	0.6	<0.000612	<0.00612	<0.000612	0.00220	0.00220	<0.122	<4.95	<4.95	<4.95
BH-12 @ 0-10'	4/19/2017	0-10	51.4	<0.000538	<0.00538	<0.000538	<0.00161	<0.00538	<0.108	5.66	<4.44	5.66
BH-12 @ 10-15'	4/19/2017	10-15	1,001	<0.110	<1.10	0.403	2.11	2.51	401	39.7	4.39	441
BH-12 @ 15-20'	4/19/2017	15-20	73.1	0.000728	0.00750	0.00379	0.0779	0.0892	2.36	508	8.00	518
BH-12 @ 20-25'	4/19/2017	20-25	269	0.00535	0.0218	0.0114	0.156	0.189	4.02	67.1	<4.48	71.1
BH-12 @ 25-30'	4/19/2017	25-30	1,904	0.149	2.98	2.82	55.5	**61.3**	1,260	275	<4.48	1,535
BH-12 @ 30-35'	4/19/2017	30-35	1,632	**66.3**	392	39.8	558	**990**	11,400	687	26.7	**12,114**
BH-13 @ 0-10'	4/19/2017	0-10	0.7	<0.000570	<0.00570	<0.000570	<0.00171	<0.00570	<0.114	<4.65	<4.65	<4.65
BH-13 @ 10-15'	4/19/2017	10-15	1.4	0.00113	<0.00567	<0.000567	0.0444	0.0455	1.32	<4.63	<4.63	1.32
BH-13 @ 15-20'	4/19/2017	15-20	68.1	<0.000590	<0.00590	<0.000590	0.0132	0.0132	0.672	8.14	<4.72	8.81
BH-13 @ 20-25'	4/19/2017	20-25	3,040	<0.114	<1.14	1.59	31.6	33.2	698	120	5.29	823
BH-13 @ 25-30'	4/19/2017	25-30	2,562	0.871	27.9	6.39	59.5	**93.8**	1,380	277	9.51	1,667
BH-13 @ 30-35'	4/19/2017	30-35	1,694	5.31	45.6	8.48	70.1	**124.2**	1,950	240	7.61	2,190
BH-14 @ 15'-20'	4/20/2017	15-20	231	0.00116	<0.00586	0.0175	0.0491	0.0666	0.966	<4.78	<4.78	0.966
BH-14 @ 20'-25'	4/20/2017	20-25	16.0	<0.000529	<0.00529	<0.000529	0.00185	0.00185	<0.106	<4.50	<4.50	<4.50
BH-15 @ 0-10'	4/20/2017	0-10	2,949	<0.0277	<0.277	<0.0277	2.04	2.04	61.8	50.5	<4.48	112
BH-15 @ 10-15'	4/20/2017	10-15	3,386	<0.0572	3.87	2.82	29.7	36.4	651	147	<4.67	798
BH-15 @ 15-20'	4/20/2017	15-20	2,479	0.525	10.7	5.23	55.0	**70.9**	1,270	286	<4.97	1,556
BH-15 @ 20-25'	4/20/2017	20-25	2,192	0.117	10.2	4.63	53.1	**67.9**	1,110	366	<4.52	1,476
BH-15 @ 30-32'	4/20/2017	30-32	1,051	0.812	3.53	1.16	12.5	17.2	549	25.6	<4.43	575
BH-16 @ 0-10'	4/20/2017	0-10	164	<0.000552	<0.00552	<0.000552	0.00315	0.00315	<0.110	7.67	<4.50	7.67
BH-16 @ 10-15'	4/20/2017	10-15	2,133	<0.000558	0.00694	0.0352	0.442	0.484	11.5	22.7	<4.70	34
BH-16 @ 15-20'	4/20/2017	15-20	2,488	0.143	7.02	3.79	60.2	**71.2**	1,150	97.8	<4.76	1,248
BH-16 @ 23-25'	4/20/2017	23-25	2,606	<0.115	2.37	1.36	17.6	21.3	399	169	<4.59	568
BH-16 @ 25-27'	4/20/2017	25-27	2,968	0.252	11.5	4.43	47.5	**63.4**	997	217	<4.53	1,214
BH-16 @ 27-29'	4/20/2017	27-29	2,784	0.107	5.72	2.14	17.2	25.1	600	51.0	<4.51	651
BH-16 @ 33-35'	4/20/2017	33-35	374	0.0252	0.242	0.0393	0.343	0.624	5.34	32.9	<4.41	38.2
BH-17 @ 20-25'	4/21/2017	20-25	362	0.000588	0.00605	0.00778	0.150	0.164	5.52	5.26	<4.51	10.78
BH-18 @ 30-32'	4/21/2017	30-32	9.8	<0.000522	<0.00522	<0.000522	0.00646	0.00646	<1.04	<4.26	<4.26	<4.26
BH-19 @ 30-35'	4/21/2017	30-35	113	0.000866	<0.00521	<0.000521	0.00464	0.00464	<0.104	<4.30	<4.30	<4.30
NMOCD Closure Criteria				**10**	**NE**	**NE**	**NE**	**50**	**NE**	**NE**	**NE**	**5,000**

NOTES:

< - indicates result is less than the stated laboratory reporting limit

* - Boreholes drilled by XTO

Bold - indicates value exceeds stated NMOCD standard

BTEX - Benzene, Toluene, Ethylbenzene, Total Xylenes analyzed by EPA method 8021

DRO - diesel range organics analyzed by EPA Modified Method 8015

ESC - ESC Laboratory Sciences

GRO - gasoline range organics analyzed by EPA Modified Method 8015

Hall- Hall Environmental Analysis Laboratory

mg/kg - milligrams per kilogram

NA - not analyzed

NE - Not established

NMOCD - New Mexico Oil Conservation Division

ppm - parts per million

TPH- total petroleum hydrocarbons

APPENDIX A

Compliance « Engineering « Remediation
LT Environmental, Inc.
848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-1	Project: OH Randel #5
Date: 6/29/2016	Project Number: 12916007
Logged By: Josh Adams/Devin Hencmann	Drilled By: Josh Adams/Devin Hencmann
Elevation:	Detector: Mini Rae Lite
Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA Slot: NA	Diameter: NA Length: NA
Total Depth: 19.5'	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
		4187	yes		1	0-1'				
		2822	yes		2	1-2'				
		483	yes		3	2-3'				
		859	yes		4	3-4'				
	dry	473	yes		5	4-5'		SM	silty sand, 40% silt, 40% sand 10% mud brown, hc oder , HC stains 10YR7/4	
		564	no		6	5-6'				
		273	yes		7	6-7'				
		785	yes		8	7-8'				
		999	yes		9	8-9'				
		3066	yes		10	9-10'				
	dry	3746	yes		11	10-11'		ML	silty sand 35% silt, 40% fine sand 10% med sand, 5% course grey color, HC oder and stains seems to be historic, becoming more consolidated 10YR 7/1	
		3584	yes		12	11-12'				
	dry	2655	yes		13	12-13'		SM	grey, stained, mc clay compact 10YR 6/1	
		3384	yes		14	13-14'				
	dry	3441	yes		15	14-15'		ML	transition to a silty clay	

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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	dry							ML	Light brown silty clay, ml compact 10YR 7/4	
		2886	yes		16	15-16'				
		2322	yes		17	16-17'				
	dry	1977	yes		18	17-18'		ML	light brown silty sand, loose, ml 10YR 7/4	
		2886	yes		19	18-19.5'				
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-2	Project: OH Randel #5
Date: 6/29/2016	Project Number: 12916007
Logged By: Josh Adams/Devin Hencmann	Drilled By: Josh Adams/Devin Hencmann
Elevation:	Detector: Mini Rae Lite
Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA / Length: NA
Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA
Total Depth: 17.5	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	dry	0	no		1	0-1'		SM	silty sand, 40% silt, 60% sand light brown 10YR7/4	
		0	no		2	1-2'				
		0	no		3	2-3'				
	dry	0	no		4	3-4'		SM	silty sand, 40%silt, 50% clean sand, 10% lithics, light brown to pale red color, reduced 5YR 6/6	
		0	no		5	4-5'				
		0	no		6	5-6'				
		0	no		7	6-7'				
		0	no		8	7-8'				
	dry	0	no		9	8-9'		SM	silty sand, 60% sand 40% silt, light grey color 10YR 7/1	
		0	no		10	9-10'				
	moist	0	no		11	10-11'				
					12	11-12'				
	moist	1.3	no		13	12-13'		SM	same lith as above, orange staining/stringers, slight HC oder 10YR 7/1 and 5YR 7/8	
		324	no		14	13-14'				
		34.8	no		15	14-15'				

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Project:	
Project #	
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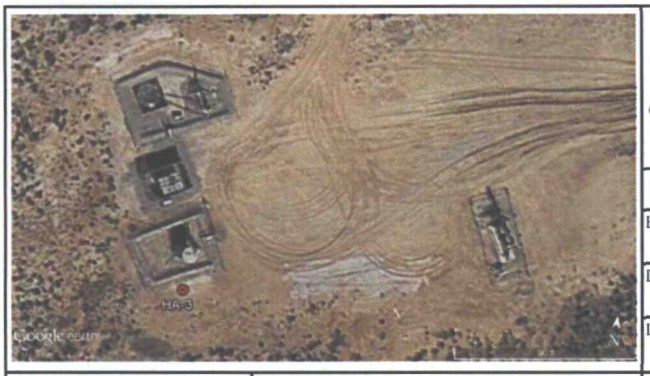
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	moist	3.2	no		16	15-16'		SM	same lith as above, orange staining/stringers, slight HC oder 10YR 7/1 and 5YR 7/8	
		0	no		17	16-17'				
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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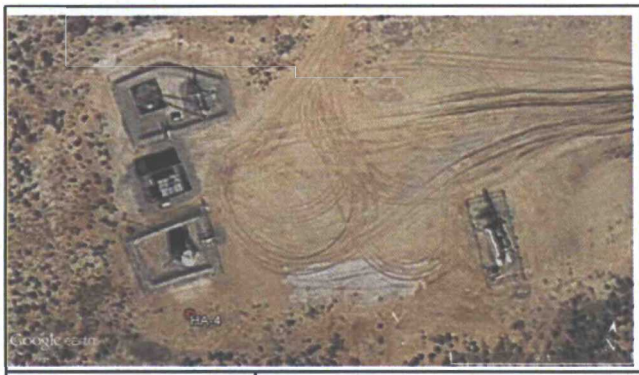
BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-3	Project: OH Randel #5
Date: 6/29/2016	Project Number: 12916007
Logged By: Josh Adams/Devin Hencmann	Drilled By: Josh Adams/Devin Hencmann
Elevation:	Detector: Mini Rae Lite
Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA	Slot: NA Diameter: NA Length: NA
Total Depth: 10	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
		0	no		1	0-1'				
		0	no		2	1-2'				
		0	no		3	2-3'				
		0	no		4	3-4'				
	dry	0	no		5	4-5'		SM	silty sand, 40% silt, 50% clean sand 10% lithics light brown 10YR 7/4	
		0	no		6	5-6'				
		0	no		7	6-7'				
		65	no		8	7-8'				
		907	no		9	8-9'				
		3062	yes		10	9-10'				
									rock encountered, drilling advanced stopped	



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-4		Project: OH Randel #5	
Date: 6/29/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Josh Adams/Devin Hencmann	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3-inch / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 13 / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
		0	no		1	0-1'				
		0	no		2	1-2'				
		0	no		3	2-3'				
		0	no		4	3-4'				
	dry	0	no		5	4-5'		SM	silty sand, 40% silt, 50% clean sand 10% lithics light brown 10YR 7/4	
		0	no		6	5-6'				
		0	no		7	6-7'				
		0	no		8	7-8'				
		0	no		9	8-9'				
		0	no		10	9-10'				
	moist	0	no		11			ML	silty/clay rich sand, cohesive, light brown 10YR 7/4	
		0	no		12					
	moist	0	no		13			SM	silty sand, 40% silt, 50% clean sand 10% lithics light brown 10YR 7/4	
					14					
					15					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-5		Project: OH Randel #5	
Date: 7/5/2016		Project Number: 12916007	
Logged By: Josh Adams/Alex Crooks		Drilled By: Josh Adams/Alex Crooks	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA	Seal: NA	Grout: NA	
Casing Type: NA	Diameter: NA Length: NA	Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA Slot: NA	Diameter: NA Length: NA	Total Depth: 21.5	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	dry	0	no		1	0-1'		SM	silty sand with some gravel, 70% sand, 25% silt 5% gravel med-fine grained subrounded, pale red brown 2.5YR 6/8	
		0	no		2	1-2'				
	dry	0	no		3	2-3'		SM	Same as above except no gravel 70% sand 30% silt 2.5YR 6/8	
		0	no		4	3-4'				
		0	no		5	4-5'				
	dry	0	no		6	5-6'		SM	fine grained silty sand 60% sand 40% silt, subrounded, light golden tan 10YR 7/6	
		0	no		7	6-7'				
	dry	0	no		8	7-8'		SM	silty sand with clay 60% sand 30% silt 10% clay light tan grey 10YR 7/3	
		0	no		9	8-9'				
	dry	0	no		10	9-10'		SM	same lith as above, orange stainning/stringers 10YR 7/2 and 5YR7/8	
		0	no		11	10-11'				
		0	no		12	11-12'				
		164	no		13	12-13'				
	dry	427	no		14	13-14'		SM	silty sand with clay 60% sand 30% silt 10% clay very fine to fine grained sand, dark golden brown 10YR 6/8	
		2241	yes		15	14-15'				

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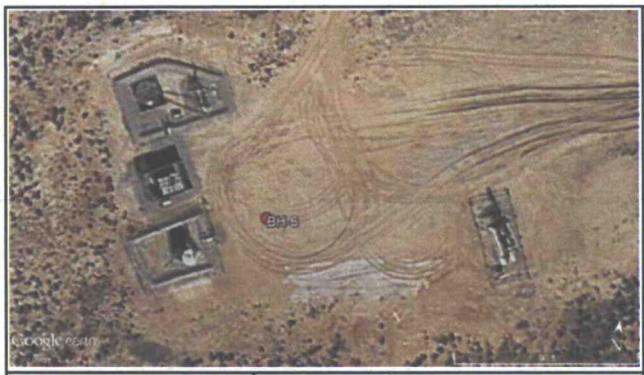
Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	dry	2356	yes		16	15-16'		ML	increase in clay content, silty sand with clay 55% sand 30% silt 15%clay, no staining	
		2017	yes		17	16-17'				
		1857	yes		18	17-18'				
		1993	yes		19	18-19'				
	dry	2168	yes		20	19-20'		SM	silty sand with clay 60% sand, 30% silt, 10% clay light tan grey 10YR7/2	
	dry	1922	yes		21	20-21.5'		SM	silty sand with gravel 55% sand 35% silt, 10% gravel well rounded, very fine to fine grainded sand light brown grey 10YR 7/2	
		1116	yes							
					22				rock encountered, drilling advance stopped	
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-6	Project: OH Randel #5
Date: 8/2/2016	Project Number: 12916007
Logged By: Josh Adams/Devin Hencmann	Drilled By: Louis Trujillo
Elevation:	Detector: Mini Rae Lite
Drilling Method: Geo Probe	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA Slot: NA	Diameter: NA Length: NA
Total Depth: 18	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			SM		
		0	no		1	0-1'				
		0	no		2	1-2'				
		0	no		3	2-3'				
	dry	0	no		4	3-4'			silty sand, 40% silt, 50% fine sand 10% lithics light brown 10YR 7/4	
		0	no		5	4-5'				
		0	no		6	5-6'				
		0	no		7	6-7'				
		1034	yes		8	7-8'				
		3128	yes		9	8-9'				
		2390	yes		10	9-10'				
	dry	3010	yes		11	10-11'			silty sand, 30% silt, 30% fine sand, 30%med sand 10% lithics light brown 10YR 7/4	
		2654	yes		12	11-12'				
		1884	yes		13	12-13'				
		1927	yes		14	13-14'				
	dry								silty sand 45% silt 50% fine sand 5%med sand light grey brown 10YR 7/2	
		3025	yes		15	14-15'				

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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	dry	2390	yes		16	15-16'			silty sand 45% silt 50% fine sand 5%med sand light grey brown 10YR 7/2	
		2425	yes		17	16-17'				
		1922	yes		18	17-18'				
									refusal at 18'	
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-7	Project: OH Randel #5
Date: 8/2/2016	Project Number: 12916007
Logged By: Josh Adams/Devin Hencmann	Drilled By: Louis Trujillo
Elevation:	Detector: Mini Rae Lite
Drilling Method: Geo probe	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA Slot: NA	Diameter: NA Length: NA
Total Depth: 12	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1	0-1'	NR		no recovery	
					2	1-2'				
	dry	108	no		3	2-3'		SM	silty sand with gravel , 60%sand 30% silt 10% gravel light brown 10YR7/4	
		3.5	no		4	3-4'				
					5	4-5'	NR		no recovery	
					6	5-6'				
	dry	13.9	no		7	6-7'		SM	silty sand 40% silt, 30% fine sand 20% med sand minor course light brown 10YR 7/4	
		34	no		8	7-8'				
					9	8-9'				
	dry	1805	yes		10	9-10'		SM	silty sand 30% silt 30% med sand 40% fine sand minor course, HC oder light grey brown 10YR 7/2	
		3159	yes		11	10-11'				
		3128	yes		12	11-12'				
									refusal at 12'	

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-8	Project: OH Randel #5
Date: 8/2/2016	Project Number: 12916007
Logged By: Josh Adams/Devin Hencmann	Drilled By: Louis Trujillo
Elevation:	Detector: Mini Rae Lite
Drilling Method: Geo probe	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA Slot: NA	Diameter: NA Length: NA
Total Depth: 16	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1	0-1'	N R		no recovery	
					2	1-2'				
		0	no		3	2-3'				
	dry	3	no		4	3-4'		SM	silty sand with surface gravel light brown 10YR 7/4	
					5	4-5'	NR		no recovery	
					6	5-6'				
		5.3	no		7	6-7'				
	dry	1.5	no		8	7-8'		SM	silty sand 60% sand 40% silt light brown 10YR 7/4	
		2	no		9	8-9'				
		2.2	no		10	9-10'				
		468	no		11	10-11'				
		772	no		12	11-12'				
	moist				13	12-13'		ML	silty sand with clay 50% sand 40% silt 10% clay, light grey brown 10YR 7/2	
		88	no		14	13-14'				
					15	14-15'				

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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	moist							ML	silty sand with clay 50% sand 40% silt 10% clay	
		3125	yes		16	15-16'			, light grey brown 10YR 7/2	
									refusal at 16'	
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-9		Project: OH Randel #5	
Date: 8/2/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Louis Trujillo	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Geo probe	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 16	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1	0-1'	NR		no recovery	
					2	1-2'				
					3	2-3'				
	dry	0	no		4	3-4'		SM	silty sand with surface gravel light brown 10YR 7/4	
		0	no		5	4-5'				
		0	no		6	5-6'				
		0.4	no		7	6-7'				
	dry	0.6	no		8	7-8'		SM	silty sand 40% silt 40% fine sand 20% med sand light brown 10YR7/4	
		0	no		9	8-9'				
		3.7	no		10	9-10'				
		13.5	no		11	10-11'				
		776	yes		12	11-12'				
		1927	yes		13	12-13'				
	dry	2355	yes		14	13-14'		SM	silty sand 50% med sand 20% fine sand 30% silt light grey 10YR7/2 hc oder and staining	
		2114	yes		15	14-15'				

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Boring/Well #	
Project:	
Project #	
Date	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	dry							SM	silty sand 50% med sand 20% fine sand 30% silt light grey 10YR7/2 hc oder and staining	
		2413	yes		16	15-16'				
									refusal at 16'	
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-10		Project: OH Randel #5	
Date: 8/2/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Louis Trujillo	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Geo Probe	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3-inch / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 12 / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
		0	no		1	0-1'				
		0	no		2	1-2'				
		0	no		3	2-3'				
	dry	0	no		4	3-4'		SM	silty sand, 40% silt, 50% clean sand 10% surface gravel light brown 10YR 7/4	
		0	no		5	4-5'				
		0	no		6	5-6'				
		0	no		7	6-7'				
		0	no		8	7-8'				
		0	no		9	8-9'				
	dry	0	no		10	9-10'		ML	silty sand with clay 50% sand 40% silt 10% clay cohesive, light grey 10YR7/2	
		0	no		11	10-11'				
		0	no		12	11-12'				
									refusal at 12'	

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-11	Project: OH Randel #5
Date: 4/19/2017	Project Number: 12916007
Logged By: D. Burns	Drilled By: GEOMAT
Elevation: 6,424'	Detector: Mini Rae Lite PID
Drilling Method: Hollowstem Auger	Sampling Method: 2' Split Spoon
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 6.25"	Depth to Liquid: NA
Screen Type: NA Slot: NA	Diameter: NA Length: NA
Total Depth: 25'	Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	Dry	0.0	No		1 2 3			SW-SM	Well graded SAND with silt, 10 YR 4/3	Bentonite Cap
	Dry	0.0	No	BH-11 0-10'	5			SM	SILTY SAND, yellowish grey, 2.5 YR 6/3	
		0.3	No		6					
	Dry	0.3	No		7 8 9			SM	Dense, SILTY SAND, greyish brown and tan	Cuttings
	Dry	0.0	No	BH-11 10-15'	10 11			SP	Coarse SAND, orangish tan (oxidized)	
	Dry	0.3	No		12 13					
					14			SP	Medium to coarse SAND, greyish tan	
	Dry	0.3			15			ML	SILT with SAND, brownish olive	

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Boring/Well #	BH-11
Project:	OH Randel #5
Project #	12916007
Date	4/19/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16			ML	SILT with SAND, brownish red and olive	
	Dry	0.5	No	BH-11 15-20'	17					Cuttings
					18					
					19					
					20			ML	SILTSTONE with sand, gray, lightly cemented	
					21					
					22					
	Dry	0.6	No	BH-11 20-25'	23					
					24			SP-SM	SILTY SAND, light brown and tan, some consolidation	Hydrated bentonite chips
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-12		Project: OH Randel #5	
Date: 4/19/2017		Project Number: 12916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation: 6,424'	Detector: Mini Rae Lite PID	Drilling Method: Hollow Stem Auger	Sampling Method: 2' Split Spoon
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 6.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 35' / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	Moist	0.1	No	BH-12 0-10'	1			SP-SM	Medium grained SAND with SILT, reddish brown, some carbonate material at 4.5'	
					2					
	Moist	0.0	No		3					
					4					
					5					
	Dry	0.8	No		6					
					7					
					8					
	Dry	51.4	Slight Odor		9			SP-SM	SILTY SAND, light gray, dense, slight to moderate sweet degraded gas odor	
					10					
	Dry	656	Slight Odor	BH-12 10-15'	11					
					12					
					13					
	Dry	1,001	Mod. Odor		14					
					15					

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Boring/Well #	BH-12
Project:	OH Randel #5
Project #	12916007
Date	4/19/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
				BH-11 15-20'	15 16 17 18				No recovery	
	Dry	73.1	No		19 20			ML	SILT with SAND, brownish gray with oxidation and some cementation, mild hydrocarbon odor	
				BH-11 20-25'	21 22 23				No recovery	
	Dry	269	No		24 25			SP-SM	SAND with SILT, light tan, slight odor	
				BH-12 25-30'	26 27 28				No recovery	
	Dry	1,904	No		29 30			SP-SM	SAND with SILT, light tan, slight odor	
					31 32				No recovery	
	Dry	1,632	No	BH-12 30-35'	33 34			SP-SM	SAND, medium to coarse grained, light tan to gray coarsening with gravel, oxidation, lenses of moderate odor.	
					35			SW	Coarse SANDSTONE, weathered, medium dense	
					36 37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-13	Project: OH Randel #5
Date: 4/19/2017	Project Number: 12916007
Logged By: D. Burns	Drilled By: GEOMAT
Elevation: 6,424'	Detector: Mini Rae Lite PID
Drilling Method: Hollow Stem Auger	Sampling Method: 2' Split Spoon
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA / Length: NA
Hole Diameter: 6.25"	Depth to Liquid:
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA
Total Depth: 35'	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1				No Recovery	
					2					
					3					
	Moist	0.1	No		4			SP-SM	SAND with SILT, reddish brown	
				BH-12 0-10'	5				SAND with SILT, olive brown, trace carbonate	
					6					
					7				No Recovery	
					8					
					9					
	Moist	0.7	No		10			SP-SM	SAND with SILT, olive brown	
					11					
					12				No Recovery	
				BH-12 10-15'	13					
					14					
	Dry	1.4	No		15			SP-SM	SAND with SILT, light gray with oxidation	

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Boring/Well #	BH-13
Project:	OH Randel #5
Project #	12916007
Date	4/19/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks
				BH-11 15-20'	15 16 17 18				No Recovery
	Dry	68.1	No		19			SP-SM	SAND with SILT, brownish gray and olive
					20			ML	SILT with SAND, light grayish olive
				BH-11 20-25'	21 22 23				No Recovery
	Dry	3,040	No		24 25			SP-SM	SAND with SILT, light olive and brown, moderate odor
				BH-12 25-30'	26 27				No Recovery
	Dry	2,562	No		28 29 30			SP-SM	Medium grained SAND with SILT, brown, moderate odor
				BH-12 30-35'	31 32				No recovery
	Dry	1,694	No		33 34 35			SW	Medium to coarse grained SAND with GRAVEL, very light gray
					36 37				

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-14			Project: OH Randel #5
Date: 4/19/2017			Project Number: 12916007
Logged By: D. Burns			Drilled By: GEOMAT
Elevation: 6,424'	Detector: Mini Rae Lite PID	Drilling Method: Hollow Stem Auger	Sampling Method: 2' Split Spoon
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 6.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 25' / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1				No Recovery	
					2					
					3					
	Damp	0.0	No		4			SP-SM	SAND with SILT, reddish brown	
				BH-14 0-10'	5				SAND with SILT, brown, trace carbonate	
					6					
					7				No Recovery	
					8					
					9					
	Dry	0.0	No		10			SP-SM	Medium grained SAND with SILT, brown	
					11					
					12				No Recovery	
				BH-14 10-15'	13					
					14					
	Dry	0.1	No		15			SP-SM	SAND with SILT, gray, some cementation and oxidation	

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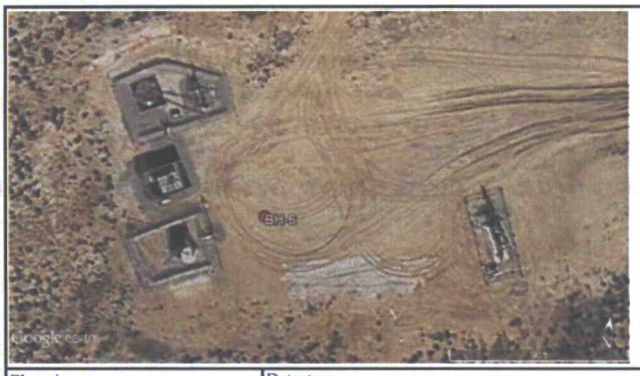
Boring/Well #	BH-14
Project:	OH Randel #5
Project #	12916007
Date	4/19/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
				BH-14 15-20'	15				No Recovery	
					16					
					17					
					18					
					19					
	Dry	231	No		20			SP-SM	SILTY SAND, light grayish olive	
				BH-14 20-25'	21				No Recovery	
					22					
	Dry	9.1	No		23			ML	SANDY SILT, light gray with oxidation, partial cementation, light salty odor	
	Dry	16.0	No		24			SP-SM	SILTY SAND, light grayish brown, no odor	
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-15		Project: OH Randel #5	
Date: 4/20/2017		Project Number: 12916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation: 6,424'	Detector: Mini Rae Lite PID	Drilling Method: Hollow Stem Auger	Sampling Method: 2' Split Spoon
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 6.25"	Depth to Liquid: NA
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 35'	Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1					
					2					
	Moist	0.4	No		3			SP-SM	SAND with SILT, reddish brown	
					4					
				BH-15 0-10'	5					
					6					
					7			SP-SM	Medium grained SAND with SILT, reddish brown	
	Moist	1.8	No		8					
					9					
	Dry	2,949	Yes		10					
					11			ML	SILTY SAND, oxidation and carboante. Light gray to gray.	
					12					
				BH-15 10-15'	13					
	Moist	3,386	Yes		14			SP-SM	Medium grained SILTY SAND, light gray to dark gray.	
	Moist	2,785	Yes		15					

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Boring/Well #	BH-15
Project:	OH Randel #5
Project #	12916007
Date	4/19/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
				BH-15 15-20'	15 16 17 18 19			ML	SILTY SAND, brownish olive.	
	Dry	2,479	Yes		20					
				BH-15 20-25'	21 22 23			ML	SILTY SAND, olive gray brown.	
	Dry	2,192	No		24 25					
	Dry	2,568		BH-15 25-32'	26 27 28 29					
	Dry	1,051	No		30 31 32				Possible slough, mix of light brown SILTY SAND and uncosolidated brown and tan coarse sand.	
					33 34 35 36 37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-16			Project: OH Randel #5
Date: 4/20/2017			Project Number: 12916007
Logged By: D. Burns			Drilled By: GEOMAT
Elevation: 6,424'	Detector: Mini Rae Lite PID	Drilling Method: Hollow Stem Auger	Sampling Method: 2' Split Spoon
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 6.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 35' / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	PID Composite	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1				No Recovery	
					2					
					3					
	Dry	0.7	No		4			SP-SM	SAND with SILT, reddish brown	
				BH-16	5					
				0-10'	6	35.8			No Recovery	
					7					
	Moist	164	no		8			SP-SM	SAND with SILT, reddish brown	
					9					
	Dry		yes		10			ML	SILTY SAND, gray	
					11				No Recovery	
		787	slight		12			ML	SILTY SAND, light gray to olive	
		2,133	mod	BH-16 10-15'	13	1,352		SP-SM	SAND, gray, medium to coarse grained	
					14					
		2,039	yes		15					

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Boring/Well #	BH-16
Project:	OH Randel #5
Project #	12916007
Date	4/20/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	PID Composite	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
				BH-16 15-20'	15 16 17 18 19	2,488			No Recovery	
	Dry	2,488	yes		20			ML	SILTY SAND, brown to dark gray, slight odor	
				BH-16 20-25'	21 22 23	2,192			No Recovery	
	Dry	2,606	no		24 25			ML	SAND with SILT, light olive brown, fine to medium grained, slight odor	
	Dry	2968	no	BH-16 25-27'	26 27			SP-SM	SAND with SILT, light brown to tan, moderate odor	
	Dry	2,784	no	BH-16 27-29'	28 29			SP-SM	SAND with SILT, light brownish gray, medium to coarse sand, moderate odor	
					30 31 32 33				No Recovery	
	Dry	374	no	BH-16 33-35'	34 35			SP-SM	SAND with SILT, light brownish gray, medium to coarse sand, slight odor	
					36 37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-17			Project: OH Randel #5
Date: 4/20/2017			Project Number: 12916007
Logged By: D. Burns			Drilled By: GEOMAT
Elevation: 6,424'	Detector: Mini Rae Lite PID	Drilling Method: Hollow Stem Auger	Sampling Method: 2' Split Spoon
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 6.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 30' / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	PID Composite	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1				No Recovery	
					2					
	Moist	0.5	No		3			SP-SM	SAND with SILT, reddish brown	
					4					
				SP	5					
					6				No Recovery	
					7					
	Moist	0.0	No		8			SP-SM	SAND with SILT, reddish brown	
					9			ML	SILT with SAND, light brown with some carbonate and oxidation	
					10					
					11				No Recovery	
					12					
				BH-16 10-15'	13			SP-SM	SAND with SILT, light gray	
	Dry	0.3	No		14					
					15			ML	SILTY SAND, light brownish gray, very dense	

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Boring/Well #	BH-17
Project:	OH Randel #5
Project #	12916007
Date	4/20/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	PID Composite	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
				BH-16 15-20'	15 16 17 18 19				No Recovery	
	Moist	0.0	No		20			SP	SAND, light gray and tan, medium grained	
				BH-16 20-25'	21 22 23				No Recovery	
	Dry	362	No		24 25			SP-SM	SAND with SILT, light brown, fine grained, semi-dense	
				BH-16 25-30'	26 27 28				No Recovery	
	Dry	NA	No		29 30			SP-SM	SAND with SILT, light brownish gray, medium to coarse sand, moderate odor	
					31 32 33 34 35 36 37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-18	Project: OH Randel #5
Date: 4/21/2017	Project Number: 12916007
Logged By: D. Burns	Drilled By: GEOMAT

Elevation: 6,424'	Detector: Mini Rae Lite PID	Drilling Method: Hollow Stem Auger	Sampling Method: 2' Split Spoon
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 6.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 32' / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	PID Composite	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1				No Recovery	
					2					
					3					
	Dry	0.7	No		4			SP-SM	SAND with SILT, reddish brown	
					5			ML	SILTY SAND, light gray, organics, carbonate	
				SP	6				No Recovery	
					7					
					8					
	Dry	0.0	No		9			ML	SILTY SAND, light gray, organics, carbonate	
					10			SP-SM	SAND with SILT, light gray, some oxidation	
					11					
					12				No Recovery	
				BH-16 10-15'	13					
					14					
	Dry	0.0	No		15			SP	SILTY SAND, light brownish gray, very dense	

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Boring/Well #	BH-18
Project:	OH Randel #5
Project #	12916007
Date	4/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	PID Composite	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
				BH-16 15-20'	15				No Recovery	
					16					
					17					
					18					
	Dry	0.0	No		19			ML	SANDY SILT, light brown, partial cement lens	
					20			SP-SM	SAND with SILT, light brown	
				BH-16 20-25'	21				No Recovery	
					22					
					23					
	Dry	6.4	No		24			SP-SM	SAND, tan, medium grained, well graded, partially cemented with light sweet odor	
					25					
				BH-16 25-30'	26				No Recovery	
	Dry	3.2	No		27			SW	SAND, tan, medium grained, slightly consolidated	
					28					
					29					
					30					
	Dry	9.8	No		31			SW	SAND, tan, medium to coarse grained with gravel, partial cement	
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-19	Project: OH Randel #5
Date: 4/24/2017	Project Number: 12916007
Logged By: D. Burns	Drilled By: GEOMAT
Elevation: 6,424' / Detector: Mini Rae Lite PID	Drilling Method: Hollow Stem Auger / Sampling Method: 2' Split Spoon
Gravel Pack: NA	Seal: NA / Grout: NA
Casing Type: NA / Diameter: NA / Length: NA	Hole Diameter: 6.25" / Depth to Liquid: NA
Screen Type: NA / Slot: NA / Diameter: NA / Length: NA	Total Depth: 35' / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	PID Composite	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1				No Recovery	
					2					
	Dry	0.7	no		3			SP-SM	SAND with SILT, reddish brown	
					4					
				BH-19 0-10'	5					
					6				No Recovery	
					7					
	Dry	0.1	no		8			SP-SM	SAND with SILT, reddish brown	
					9					
					10			SP-SM	SAND with SILT, light gray, medium grained	
					11				No Recovery	
					12					
	Dry	0.0	no	BH-19 10-15'	13			SP	SAND with SILT, light gray, medium grained	
					14					
					15			ML	SANDY SILT, brown, some oxidation	

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Boring/Well #	BH-19
Project:	OH Randel #5
Project #	12916007
Date	4/24/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	PID Composite	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
				BH-19 15-20'	15				No Recovery	
					16					
					17					
					18					
	Dry	0.4	no		19			ML	SILTY SAND, tan to light brown	
					20					
				BH-19 20-25'	21				No Recovery	
					22					
	Dry	5.4	no		23			ML	SILTY SAND, tan to light brown	
					24					
					25					
				BH-19 25-30'	26				No Recovery	
					27					
	Dry	109	no		28					
					29			SW	SAND, light brown and gray, medium to coarse grained, slight gas (xylenes) odor	
					30					
				BH-19 30-35'	31				No Recovery	
					32					
	Dry	113	no		33			SW	SAND, light brownish gray, medium to coarse sand. Slight sweet gas smell	
					34					
					35					
					36					
					37					

APPENDIX B

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 07, 2016

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Aztec, NM 87410
TEL: (505) 787-0519
FAX (505) 333-3280

RE: OH Randel #5 OrderNo.: 1607132

Dear Ashley Ager:

Hall Environmental Analysis Laboratory received 3 sample(s) on 7/6/2016 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1607132**
Date Reported: **7/7/2016**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1607132-001 **Matrix:** SOIL

Client Sample ID: HA 5 @ 16'
Collection Date: 7/5/2016 11:55:00 AM
Received Date: 7/6/2016 7:35:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	150	10		mg/Kg	1	7/6/2016 10:55:46 AM	26242
Surr: DNOP	90.4	70-130		%Rec	1	7/6/2016 10:55:46 AM	26242
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	310	21		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Surr: BFB	354	80-120	S	%Rec	5	7/6/2016 11:30:14 AM	26229
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.21	0.10		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Toluene	3.5	0.21		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Ethylbenzene	1.3	0.21		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Xylenes, Total	15	0.42		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Surr: 4-Bromofluorobenzene	120	80-120	S	%Rec	5	7/6/2016 11:30:14 AM	26229

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1607132-002 **Matrix:** SOIL

Client Sample ID: HA 5 @ 21.5'
Collection Date: 7/5/2016 1:00:00 PM
Received Date: 7/6/2016 7:35:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	66	10		mg/Kg	1	7/6/2016 11:17:24 AM	26242
Surr: DNOP	91.7	70-130		%Rec	1	7/6/2016 11:17:24 AM	26242
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	260	20		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Surr: BFB	299	80-120	S	%Rec	5	7/6/2016 11:53:42 AM	26229
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.10		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Toluene	2.4	0.20		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Ethylbenzene	1.0	0.20		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Xylenes, Total	12	0.41		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	5	7/6/2016 11:53:42 AM	26229

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1607132-003 **Matrix:** SOIL

Client Sample ID: HA 1 @ 20'
Collection Date: 7/5/2016 4:00:00 PM
Received Date: 7/6/2016 7:35:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	17	9.9		mg/Kg	1	7/6/2016 11:39:25 AM	26242
Surr: DNOP	90.7	70-130		%Rec	1	7/6/2016 11:39:25 AM	26242
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	810	65		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Surr: BFB	166	80-120	S	%Rec	20	7/6/2016 12:17:10 PM	26229
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	5.1	0.32		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Toluene	56	0.65		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Ethylbenzene	7.3	0.65		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Xylenes, Total	74	1.3		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Surr: 4-Bromofluorobenzene	113	80-120		%Rec	20	7/6/2016 12:17:10 PM	26229

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1607132**

07-Jul-16

Client: XTO Energy
Project: OH Randel #5

Sample ID **LCS-26242**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **26242**	RunNo: **35436**
Prep Date: **7/6/2016**	Analysis Date: **7/6/2016**	SeqNo: **1096556** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	84.1	62.6	124			
Surr: DNOP	4.4		5.000		87.7	70	130			

Sample ID **MB-26242**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **26242**	RunNo: **35436**
Prep Date: **7/6/2016**	Analysis Date: **7/6/2016**	SeqNo: **1096557** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	9.5		10.00		95.4	70	130			

Sample ID **MB-26224**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **26224**	RunNo: **35437**
Prep Date: **7/5/2016**	Analysis Date: **7/6/2016**	SeqNo: **1096560** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.5		10.00		94.6	70	130			

Sample ID **LCS-26224**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **26224**	RunNo: **35437**
Prep Date: **7/5/2016**	Analysis Date: **7/6/2016**	SeqNo: **1096561** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.1		5.000		82.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1607132**

07-Jul-16

Client: XTO Energy
Project: OH Randel #5

Sample ID **MB-26229**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **26229**	RunNo: **35443**
Prep Date: **7/5/2016**	Analysis Date: **7/6/2016**	SeqNo: **1097615** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		95.5	80	120			

Sample ID **LCS-26229**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **26229**	RunNo: **35443**
Prep Date: **7/5/2016**	Analysis Date: **7/6/2016**	SeqNo: **1097616** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	80	120			
Surr: BFB	1100		1000		108	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1607132**

07-Jul-16

Client: XTO Energy
Project: OH Randel #5

Sample ID **MB-26229**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **26229**	RunNo: **35443**
Prep Date: **7/5/2016**	Analysis Date: **7/6/2016**	SeqNo: **1097633** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.93		1.000		92.8	80	120			

Sample ID **LCS-26229**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **26229**	RunNo: **35443**
Prep Date: **7/5/2016**	Analysis Date: **7/6/2016**	SeqNo: **1097635** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.8	75.3	123			
Toluene	0.97	0.050	1.000	0	96.9	80	124			
Ethylbenzene	0.99	0.050	1.000	0	99.4	82.8	121			
Xylenes, Total	3.0	0.10	3.000	0	99.2	83.9	122			
Surr: 4-Bromofluorobenzene	0.99		1.000		98.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: XTO Energy | Work Order Number: 1607132 | RcptNo: 1

Received by/date: AT 07/06/16

Logged By: Anne Thorne 7/6/2016 7:35:00 AM Anne Thorne

Completed By: Anne Thorne 7/6/2016 Anne Thorne

Reviewed By: IO 07/06/16

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client:	XTO energy
	James McDaniel
Mailing Address:	382 Rd 3100
	Aztec, NM 87410
Phone #:	505-419-0915
email or Fax#:	
QA/QC Package:	☑ Standard ☐ Level 4 (Full Validation)
Accreditation	☑ NELAP ☐ Other
EDD (Type)	

Turn-Around Time:	Same Day
	☐ Standard ☑ Rush 24 hours
Project Name:	OH Randel #5
Project #:	
Project Manager:	Ashley Ager
Sampler:	Josh Adams & Alex Cross
On Ice:	☑ Yes ☐ No
Sample Temperature:	1.0°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1606132	BTEX + ~~MTBE + TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO ~~MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
7/5/16	1155	Soil	HA SQ 16'	1/4oz jar	Cool	001	X		X									
7/5/16	1300	Soil	HA SQ 21.5'	1/4oz jar	Cool	002	X		X									
7/5/16	1600	Soil	HA SQ 20'	1/4oz jar	Cool	003	X		X									

Date: 7/5/16	Time: 1715	Relinquished by:	Received by:	Date 7/5/16	Time 1715
Date: 7/6/16	Time: 1841	Relinquished by:	Received by:	Date 07/06/16	Time 0735

Remarks:

HA SQ 16' = FARAC-7516-1155

HA SQ 21.5' = FARAC-7516-1300

HA SQ 20' = FARAC-7516-1600

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 09, 2016

James McDaniel

XTO Energy
382 County Road 3100
Aztec, NM 87410
TEL: (505) 787-0519
FAX (505) 333-3280

RE: OH Randel #5 OrderNo.: 1608126

Dear James McDaniel:

Hall Environmental Analysis Laboratory received 6 sample(s) on 8/3/2016 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1608126**
Date Reported: **8/9/2016**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-001 **Matrix:** SOIL

Client Sample ID: BH-6@9'
Collection Date: 8/2/2016 1:00:00 PM
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	140	9.7		mg/Kg	1	8/3/2016 1:23:47 PM	26760
Surr: DNOP	105	70-130		%Rec	1	8/3/2016 1:23:47 PM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	840	99		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Surr: BFB	302	49.4-163	S	%Rec	20	8/5/2016 2:53:37 PM	26763
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.49		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Toluene	1.8	0.99		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Ethylbenzene	1.7	0.99		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Xylenes, Total	20	2.0		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	20	8/5/2016 2:53:37 PM	26763

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-002 **Matrix:** SOIL

Client Sample ID: BH-6@18'
Collection Date: 8/2/2016 1:05:00 PM
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	120	9.5		mg/Kg	1	8/3/2016 2:29:08 PM	26760
Surr: DNOP	107	70-130		%Rec	1	8/3/2016 2:29:08 PM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1000	98		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Surr: BFB	226	49.4-163	S	%Rec	20	8/5/2016 3:17:13 PM	26763
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.49		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Toluene	7.3	0.98		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Ethylbenzene	2.4	0.98		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Xylenes, Total	27	2.0		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	20	8/5/2016 3:17:13 PM	26763

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-003
Matrix: MEOH (SOIL)
Client Sample ID: BH-7@11'
Collection Date: 8/2/2016 12:50:00 PM
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	400	10		mg/Kg	1	8/3/2016 10:03:18 AM	26760
Surr: DNOP	103	70-130		%Rec	1	8/3/2016 10:03:18 AM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1700	84		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Surr: BFB	617	49.4-163	S	%Rec	20	8/3/2016 9:32:24 AM	26741
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.42		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Toluene	2.6	0.84		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Ethylbenzene	3.6	0.84		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Xylenes, Total	39	1.7		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Surr: 4-Bromofluorobenzene	127	80-120	S	%Rec	20	8/3/2016 9:32:24 AM	26741

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-004

Client Sample ID: BH-7@12'
Collection Date: 8/2/2016 12:55:00 PM
Matrix: MEOH (SOIL) **Received Date:** 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	350	10		mg/Kg	1	8/3/2016 10:25:02 AM	26760
Surr: DNOP	102	70-130		%Rec	1	8/3/2016 10:25:02 AM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2600	84		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Surr: BFB	691	49.4-163	S	%Rec	20	8/3/2016 9:55:52 AM	26741
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.42		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Toluene	9.4	0.84		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Ethylbenzene	8.3	0.84		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Xylenes, Total	94	1.7		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Surr: 4-Bromofluorobenzene	137	80-120	S	%Rec	20	8/3/2016 9:55:52 AM	26741

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-005 **Matrix:** SOIL

Client Sample ID: BH-8@16'
Collection Date: 8/2/2016 12:45:00 PM
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	340	9.5		mg/Kg	1	8/3/2016 2:50:55 PM	26760
Surr: DNOP	107	70-130		%Rec	1	8/3/2016 2:50:55 PM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	560	94		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Surr: BFB	296	49.4-163	S	%Rec	20	8/4/2016 6:27:38 PM	26763
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.47		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Toluene	ND	0.94		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Ethylbenzene	1.3	0.94		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Xylenes, Total	12	1.9		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Surr: 4-Bromofluorobenzene	109	80-120		%Rec	20	8/4/2016 6:27:38 PM	26763

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-006
Client Sample ID: BH-9@16'
Collection Date: 8/2/2016 12:40:00 PM
Matrix: MEOH (SOIL)
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	240	9.5		mg/Kg	1	8/3/2016 10:46:38 AM	26760
Surr: DNOP	94.4	70-130		%Rec	1	8/3/2016 10:46:38 AM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2200	210		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Surr: BFB	237	49.4-163	S	%Rec	50	8/3/2016 10:19:20 AM	26741
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Toluene	23	2.1		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Ethylbenzene	8.7	2.1		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Xylenes, Total	100	4.1		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	50	8/3/2016 10:19:20 AM	26741

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608126**

09-Aug-16

Client: XTO Energy
Project: OH Randel #5

Sample ID **LCS-26760**	SampType: **LCS**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID: **LCSS**	Batch ID: **26760**			RunNo: **36186**					
Prep Date: **8/3/2016**	Analysis Date: **8/3/2016**			SeqNo: **1120950**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	10	50.00	0	79.1	62.6	124			
Surr: DNOP	4.5		5.000		90.1	70	130			

Sample ID **MB-26760**	SampType: **MBLK**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID: **PBS**	Batch ID: **26760**			RunNo: **36186**					
Prep Date: **8/3/2016**	Analysis Date: **8/3/2016**			SeqNo: **1120951**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	8.5		10.00		85.0	70	130			

Sample ID **1608126-001AMS**	SampType: **MS**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID: **BH-6@9'**	Batch ID: **26760**			RunNo: **36185**					
Prep Date: **8/3/2016**	Analysis Date: **8/3/2016**			SeqNo: **1121248**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	170	9.8	49.12	138.0	60.9	33.9	141			
Surr: DNOP	5.3		4.912		107	70	130			

Sample ID **1608126-001AMSD**	SampType: **MSD**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID: **BH-6@9'**	Batch ID: **26760**			RunNo: **36185**					
Prep Date: **8/3/2016**	Analysis Date: **8/3/2016**			SeqNo: **1121249**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	150	9.2	46.21	138.0	33.3	33.9	141	9.01	20	S
Surr: DNOP	4.9		4.621		106	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608126**

09-Aug-16

Client: XTO Energy
Project: OH Randel #5

Sample ID **MB-26741**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **26741**	RunNo: **36191**
Prep Date: **8/2/2016**	Analysis Date: **8/3/2016**	SeqNo: **1121472** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.4	49.4	163			

Sample ID **LCS-26741**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **26741**	RunNo: **36191**
Prep Date: **8/2/2016**	Analysis Date: **8/3/2016**	SeqNo: **1121473** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	102	80	120			
Surr: BFB	1100		1000		106	49.4	163			

Sample ID **MB-26763**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **26763**	RunNo: **36215**
Prep Date: **8/3/2016**	Analysis Date: **8/4/2016**	SeqNo: **1122450** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		97.0	49.4	163			

Sample ID **LCS-26763**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **26763**	RunNo: **36215**
Prep Date: **8/3/2016**	Analysis Date: **8/4/2016**	SeqNo: **1122452** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	102	80	120			
Surr: BFB	1000		1000		105	49.4	163			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608126**

09-Aug-16

Client: XTO Energy
Project: OH Randel #5

Sample ID **MB-26741**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **26741**	RunNo: **36191**
Prep Date: **8/2/2016**	Analysis Date: **8/3/2016**	SeqNo: **1121479** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.91		1.000		91.5	80	120			

Sample ID **LCS-26741**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **26741**	RunNo: **36191**
Prep Date: **8/2/2016**	Analysis Date: **8/3/2016**	SeqNo: **1121480** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	101	75.3	123			
Toluene	0.98	0.050	1.000	0	97.6	80	124			
Ethylbenzene	1.0	0.050	1.000	0	101	82.8	121			
Xylenes, Total	3.0	0.10	3.000	0	100	83.9	122			
Surr: 4-Bromofluorobenzene	0.96		1.000		96.5	80	120			

Sample ID **MB-26763**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **26763**	RunNo: **36215**
Prep Date: **8/3/2016**	Analysis Date: **8/4/2016**	SeqNo: **1122473** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.92		1.000		91.5	80	120			

Sample ID **LCS-26763**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **26763**	RunNo: **36215**
Prep Date: **8/3/2016**	Analysis Date: **8/4/2016**	SeqNo: **1122474** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.025	1.000	0	94.4	75.3	123			
Toluene	0.92	0.050	1.000	0	91.9	80	124			
Ethylbenzene	0.96	0.050	1.000	0	95.8	82.8	121			
Xylenes, Total	2.9	0.10	3.000	0	96.4	83.9	122			
Surr: 4-Bromofluorobenzene	0.95		1.000		95.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **XTO Energy** Work Order Number: **1608126** RcptNo: **1**

Received by/date: 08/03/16

Logged By: **Lindsay Mangin** 8/3/2016 7:20:00 AM

Completed By: **Lindsay Mangin** 8/3/2016 7:44:40 AM

Reviewed By: TO 08/03/16

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.7	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client:	XTO Energy Inc
	James McDaniel
Mailing Address:	382 County Road 3100
	Aztec, NM 87410
Phone #:	505-419-0315
email or Fax#:	
QA/QC Package:	☑ Standard ☐ Level 4 (Full Validation)
Accreditation	☑ NELAP ☐ Other
EDD (Type)	

Turn-Around Time:	See Remarks
	~~Standard~~ ☒ Rush Same Day
Project Name:	OH Randel #5
Project #:	012916007
Project Manager:	Devin Hencmann
Sampler:	Devin Hencmann / Josh Adams
On Ice:	☑ Yes ☐ No
Sample Temperature:	1.7

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1608126	BTEX + ~~MTBE + TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / ~~MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_2,NO_3,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
8-16	1300	soil	BH-6 @ 9'	(1) 4oz.	cool	-001	X		X													
	1305		BH-6 @ 18'			-002	X		X													
	1250		BH-7 @ 11'			-003	X		X													
	1255		BH-7 @ 12'			-004	X		X													
	1245		BH-8 @ 16'			-005	X		X													
✓	1240	✓	BH-9 @ 16'	✓	✓	-006	X		X													

Date: 8/2/16	Time: 1611	Relinquished by:	Received by:	Date: 8/2/16	Time: 1611
Date: 8/2/16	Time: 1834	Relinquished by:	Received by:	Date: 08/03/16	Time: 0720

Remarks: same day on BH-7 & BH-9 only

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

ESC LAB SCIENCES
YOUR LAB OF CHOICE

ANALYTICAL REPORT

May 05, 2017

myESC
REAL TIME DATA ACCESS

XTO Energy - San Juan Division

Sample Delivery Group:	L905176
Samples Received:	04/26/2017
Project Number:	
Description:	
Site:	OH RANDEL #5
Report To:	James McDaniel 382 County Road 3100 Aztec, NM 87410

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Technical Service Representative

TABLE OF CONTENTS

ONE LAB. NATIONWIDE.

BH-11 20-25' L905176-01 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 12:15 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.99	05/02/17 09:39	05/03/17 16:49	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 09:26	ACM

BH-12 0-10' L905176-02 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 13:00 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.97	05/02/17 09:39	05/03/17 17:11	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 10:07	ACM

BH-12 10-15' L905176-03 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 13:15 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	200	05/02/17 09:39	05/03/17 13:29	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 10:20	ACM

BH-12 15-20' L905176-04 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 13:25 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.93	05/02/17 09:39	05/03/17 17:33	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 10:34	ACM
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	10	05/01/17 21:13	05/02/17 12:10	ACM

BH-12 20-25' L905176-05 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 13:40 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.98	05/02/17 09:39	05/03/17 17:55	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 10:47	ACM

BH-12 25-30' L905176-06 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 14:00 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	196	05/02/17 09:39	05/03/17 23:15	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:01	ACM

BH-12 30-35' L905176-07 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 14:35 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	2475	05/02/17 09:39	05/03/17 23:36	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 15:10	ACM
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	20	05/01/17 21:13	05/02/17 15:24	ACM

BH-13 0-10' L905176-08 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 15:40 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.98	05/02/17 09:39	05/03/17 23:36	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:15	ACM

BH-13 10-15' L905176-09 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 15:50 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.98	05/02/17 09:39	05/03/17 19:23	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:28	ACM

BH-13 15-20' L905176-10 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 16:00 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	1	05/02/17 09:39	05/03/17 19:45	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:42	ACM

BH-13 20-25' L905176-11 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 16:10 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	200	05/02/17 09:39	05/03/17 23:57	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:57	ACM

BH-13 25-30' L905176-12 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 16:20 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	200	05/02/17 09:39	05/03/17 20:29	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 13:06	ACM

BH-13 30-35' L905176-13 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 16:35 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	194	05/02/17 09:39	05/03/17 20:51	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 13:18	ACM

BH-14 15-20' L905176-14 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 09:30 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015	WG975972	.97	05/02/17 09:39	05/03/17 21:13	BMB
Volatile Organic Compounds (GC) by Method 8021	WG975972	.98	05/02/17 09:39	05/04/17 04:25	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 13:33	ACM

BH-14 20-25' L905176-15 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 09:45 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.94	05/02/17 09:39	05/03/17 23:58	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 13:46	ACM

BH-15 0-10' L905176-16 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 11:30 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	49.5	05/02/17 09:39	05/04/17 18:39	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:00	ACM

BH-15 10-15' L905176-17 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 11:40 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	98	05/02/17 09:39	05/04/17 19:01	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:14	ACM

BH-15 15-20' L905176-18 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 11:45 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	196	05/02/17 09:39	05/04/17 01:05	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:27	ACM

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

BH-15 20-25' L905176-19 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 12:00 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	198	05/02/17 09:39	05/04/17 01:27	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:41	ACM

BH-15 30-32' L905176-20 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 13:20 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	49	05/02/17 09:39	05/04/17 19:24	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:55	ACM

BH-16 0-10' L905176-21 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 14:20 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.98	05/02/17 09:39	05/03/17 03:38	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 13:39	KLM

BH-16 10-15' L905176-22 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 14:30 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.95	05/02/17 09:39	05/03/17 04:00	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 13:53	KLM

BH-16 15-20' L905176-23 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 14:40 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	495	05/02/17 09:39	05/04/17 19:46	BMB
Volatile Organic Compounds (GC) by Method 8021	WG975980	24.75	05/02/17 09:39	05/04/17 02:33	GLN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 13:26	KLM

BH-16 23-25' L905176-24 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 15:15 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	200	05/02/17 09:39	05/03/17 01:03	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:58	KLM

BH-16 25-27' L905176-25 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 15:30 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	200	05/02/17 09:39	05/03/17 04:44	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 13:12	KLM

BH-16 27-29' L905176-26 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 15:40 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015	WG975980	500	05/02/17 09:39	05/04/17 20:08	BMB
Volatile Organic Compounds (GC) by Method 8021	WG975980	25	05/02/17 09:39	05/04/17 02:55	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:31	KLM

BH-16 33-35' L905176-27 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 16:05 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.97	05/02/17 09:39	05/03/17 05:28	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 11:50	KLM

BH-17 20-25' L905176-28 Solid

Collected by: D. Burns | Collected date/time: 04/21/17 10:30 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	1	05/02/17 09:39	05/03/17 05:50	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:45	KLM

BH-18 30-32' L905176-29 Solid

Collected by: D. Burns | Collected date/time: 04/24/17 09:00 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.98	05/02/17 09:39	05/04/17 03:17	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:18	KLM

BH-19 30-35' L905176-30 Solid

Collected by: D. Burns | Collected date/time: 04/24/17 10:25 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.97	05/02/17 09:39	05/04/17 03:40	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:04	KLM

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	80.9		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000612	.99	05/03/2017 16:49	WG975972
Toluene	ND		0.00612	.99	05/03/2017 16:49	WG975972
Ethylbenzene	ND		0.000612	.99	05/03/2017 16:49	WG975972
Total Xylene	0.00220	B	0.00184	.99	05/03/2017 16:49	WG975972
TPH (GC/FID) Low Fraction	ND		0.122	.99	05/03/2017 16:49	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*99.4*		*77.0-120*		*05/03/2017 16:49*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.9*		*75.0-128*		*05/03/2017 16:49*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.95	1	05/02/2017 09:26	WG975037
C28-C40 Oil Range	ND		4.95	1	05/02/2017 09:26	WG975037
(S) o-Terphenyl	*70.0*		*18.0-148*		*05/02/2017 09:26*	WG975037

Cp
Tc
Ss
Cn
Sr
Qc
Gl
Al
Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.1		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000538	.97	05/03/2017 17:11	WG975972
Toluene	ND		0.00538	.97	05/03/2017 17:11	WG975972
Ethylbenzene	ND		0.000538	.97	05/03/2017 17:11	WG975972
Total Xylene	ND		0.00161	.97	05/03/2017 17:11	WG975972
TPH (GC/FID) Low Fraction	ND		0.108	.97	05/03/2017 17:11	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/03/2017 17:11*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.2*		*75.0-128*		*05/03/2017 17:11*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	5.66		4.44	1	05/02/2017 10:07	WG975037
C28-C40 Oil Range	ND		4.44	1	05/02/2017 10:07	WG975037
(S) o-Terphenyl	*68.5*		*18.0-148*		*05/02/2017 10:07*	WG975037

Cp
Tc
Ss
Cn
Sr
Qc
Gl
Al
Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.1		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.110	200	05/03/2017 13:29	WG975972
Toluene	ND		1.10	200	05/03/2017 13:29	WG975972
Ethylbenzene	0.403		0.110	200	05/03/2017 13:29	WG975972
Total Xylene	2.11	B	0.329	200	05/03/2017 13:29	WG975972
TPH (GC/FID) Low Fraction	401		22.0	200	05/03/2017 13:29	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*103*		*77.0-120*		*05/03/2017 13:29*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*93.3*		*75.0-128*		*05/03/2017 13:29*	WG975972

Sample Narrative:

8015/8021 L905176-03 WG975972: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	39.7		4.39	1	05/02/2017 10:20	WG975037
C28-C40 Oil Range	ND		4.39	1	05/02/2017 10:20	WG975037
(S) o-Terphenyl	*70.7*		*18.0-148*		*05/02/2017 10:20*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.9		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.000728		0.000535	.93	05/03/2017 17:33	WG975972
Toluene	0.00750		0.00535	.93	05/03/2017 17:33	WG975972
Ethylbenzene	0.00379		0.000535	.93	05/03/2017 17:33	WG975972
Total Xylene	0.0779		0.00161	.93	05/03/2017 17:33	WG975972
TPH (GC/FID) Low Fraction	2.36		0.107	.93	05/03/2017 17:33	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/03/2017 17:33*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.9*		*75.0-128*		*05/03/2017 17:33*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	508		46.0	10	05/02/2017 12:10	WG975037
C28-C40 Oil Range	8.00		4.60	1	05/02/2017 10:34	WG975037
(S) o-Terphenyl	*72.6*		*18.0-148*		*05/02/2017 10:34*	WG975037
(S) o-Terphenyl	*63.2*		*18.0-148*		*05/02/2017 12:10*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.4		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00535		0.000548	.98	05/03/2017 17:55	WG975972
Toluene	0.0218		0.00548	.98	05/03/2017 17:55	WG975972
Ethylbenzene	0.0114		0.000548	.98	05/03/2017 17:55	WG975972
Total Xylene	0.156		0.00164	.98	05/03/2017 17:55	WG975972
TPH (GC/FID) Low Fraction	4.02		0.110	.98	05/03/2017 17:55	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*99.4*		*77.0-120*		*05/03/2017 17:55*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.8*		*75.0-128*		*05/03/2017 17:55*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	67.1		4.48	1	05/02/2017 10:47	WG975037
C28-C40 Oil Range	ND		4.48	1	05/02/2017 10:47	WG975037
(S) o-Terphenyl	*62.1*		*18.0-148*		*05/02/2017 10:47*	WG975037

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.2		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.149		0.110	196	05/03/2017 23:15	WG975972
Toluene	2.98		1.10	196	05/03/2017 23:15	WG975972
Ethylbenzene	2.82		0.110	196	05/03/2017 23:15	WG975972
Total Xylene	55.5		0.330	196	05/03/2017 23:15	WG975972
TPH (GC/FID) Low Fraction	1260		22.0	196	05/03/2017 23:15	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*102*		*77.0-120*		*05/03/2017 23:15*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*05/03/2017 23:15*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	275		4.48	1	05/02/2017 11:01	WG975037
C28-C40 Oil Range	ND		4.48	1	05/02/2017 11:01	WG975037
(S) o-Terphenyl	*70.2*		*18.0-148*		*05/02/2017 11:01*	WG975037

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.8		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	66.3		1.33	2475	05/03/2017 23:36	WG975972
Toluene	392		13.3	2475	05/03/2017 23:36	WG975972
Ethylbenzene	39.8		1.33	2475	05/03/2017 23:36	WG975972
Total Xylene	558		4.00	2475	05/03/2017 23:36	WG975972
TPH (GC/FID) Low Fraction	11400		267	2475	05/03/2017 23:36	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*93.5*		*77.0-120*		*05/03/2017 23:36*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*103*		*75.0-128*		*05/03/2017 23:36*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	687		86.2	20	05/02/2017 15:24	WG975037
C28-C40 Oil Range	26.7		4.31	1	05/02/2017 15:10	WG975037
(S) o-Terphenyl	*81.2*		*18.0-148*		*05/02/2017 15:10*	WG975037
(S) o-Terphenyl	*54.8*	J7	*18.0-148*		*05/02/2017 15:24*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.0		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000570	.98	05/03/2017 23:36	WG975972
Toluene	ND		0.00570	.98	05/03/2017 23:36	WG975972
Ethylbenzene	ND		0.000570	.98	05/03/2017 23:36	WG975972
Total Xylene	ND		0.00171	.98	05/03/2017 23:36	WG975972
TPH (GC/FID) Low Fraction	ND		0.114	.98	05/03/2017 23:36	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/03/2017 23:36*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.3*		*75.0-128*		*05/03/2017 23:36*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.65	1	05/02/2017 11:15	WG975037
C28-C40 Oil Range	ND		4.65	1	05/02/2017 11:15	WG975037
(S) o-Terphenyl	*65.0*		*18.0-148*		*05/02/2017 11:15*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.5		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00113		0.000567	.98	05/03/2017 19:23	WG975972
Toluene	ND		0.00567	.98	05/03/2017 19:23	WG975972
Ethylbenzene	ND		0.000567	.98	05/03/2017 19:23	WG975972
Total Xylene	0.0444		0.00170	.98	05/03/2017 19:23	WG975972
TPH (GC/FID) Low Fraction	1.32		0.113	.98	05/03/2017 19:23	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*98.3*		*77.0-120*		*05/03/2017 19:23*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*90.1*		*75.0-128*		*05/03/2017 19:23*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.63	1	05/02/2017 11:28	WG975037
C28-C40 Oil Range	ND		4.63	1	05/02/2017 11:28	WG975037
(S) o-Terphenyl	*72.6*		*18.0-148*		*05/02/2017 11:28*	WG975037

Cp
Tc
Ss
Cn
Sr
Qc
Gl
Al
Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.7		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000590	1	05/03/2017 19:45	WG975972
Toluene	ND		0.00590	1	05/03/2017 19:45	WG975972
Ethylbenzene	ND		0.000590	1	05/03/2017 19:45	WG975972
Total Xylene	0.0132		0.00177	1	05/03/2017 19:45	WG975972
TPH (GC/FID) Low Fraction	0.672		0.118	1	05/03/2017 19:45	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*98.9*		*77.0-120*		*05/03/2017 19:45*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*90.1*		*75.0-128*		*05/03/2017 19:45*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	8.14		4.72	1	05/02/2017 11:42	WG975037
C28-C40 Oil Range	ND		4.72	1	05/02/2017 11:42	WG975037
(S) o-Terphenyl	*58.1*		*18.0-148*		*05/02/2017 11:42*	WG975037

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.1		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.114	200	05/03/2017 23:57	WG975972
Toluene	ND		1.14	200	05/03/2017 23:57	WG975972
Ethylbenzene	1.59		0.114	200	05/03/2017 23:57	WG975972
Total Xylene	31.6		0.341	200	05/03/2017 23:57	WG975972
TPH (GC/FID) Low Fraction	698		22.7	200	05/03/2017 23:57	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*103*		*77.0-120*		*05/03/2017 23:57*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*05/03/2017 23:57*	WG975972

Sample Narrative:

8015/8021 L905176-11 WG975972: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	120		4.54	1	05/02/2017 11:57	WG975037
C28-C40 Oil Range	5.29		4.54	1	05/02/2017 11:57	WG975037
(S) o-Terphenyl	*67.2*		*18.0-148*		*05/02/2017 11:57*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.8		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.871		0.114	200	05/03/2017 20:29	WG975972
Toluene	27.9		1.14	200	05/03/2017 20:29	WG975972
Ethylbenzene	6.39		0.114	200	05/03/2017 20:29	WG975972
Total Xylene	59.5		0.342	200	05/03/2017 20:29	WG975972
TPH (GC/FID) Low Fraction	1380		22.8	200	05/03/2017 20:29	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*90.8*		*77.0-120*		*05/03/2017 20:29*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.0*		*75.0-128*		*05/03/2017 20:29*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	277		4.56	1	05/02/2017 13:06	WG975037
C28-C40 Oil Range	9.51		4.56	1	05/02/2017 13:06	WG975037
(S) o-Terphenyl	*67.5*		*18.0-148*		*05/02/2017 13:06*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.1		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	5.31		0.104	194	05/03/2017 20:51	WG975972
Toluene	45.6		1.04	194	05/03/2017 20:51	WG975972
Ethylbenzene	8.48		0.104	194	05/03/2017 20:51	WG975972
Total Xylene	70.1		0.313	194	05/03/2017 20:51	WG975972
TPH (GC/FID) Low Fraction	1950		20.8	194	05/03/2017 20:51	WG975972
(S) α,α,α-Trifluorotoluene(FID)	*92.3*		*77.0-120*		*05/03/2017 20:51*	WG975972
(S) α,α,α-Trifluorotoluene(PID)	*96.1*		*75.0-128*		*05/03/2017 20:51*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	240		4.30	1	05/02/2017 13:18	WG975037
C28-C40 Oil Range	7.61		4.30	1	05/02/2017 13:18	WG975037
(S) o-Terphenyl	*70.0*		*18.0-148*		*05/02/2017 13:18*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	83.7		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00116		0.000586	.98	05/04/2017 04:25	WG975972
Toluene	ND		0.00586	.98	05/04/2017 04:25	WG975972
Ethylbenzene	0.0175		0.000586	.98	05/04/2017 04:25	WG975972
Total Xylene	0.0491		0.00176	.98	05/04/2017 04:25	WG975972
TPH (GC/FID) Low Fraction	0.966		0.116	.97	05/03/2017 21:13	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*97.9*		*77.0-120*		*05/03/2017 21:13*	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*100*		*77.0-120*		*05/04/2017 04:25*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*90.1*		*75.0-128*		*05/03/2017 21:13*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.3*		*75.0-128*		*05/04/2017 04:25*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.78	1	05/02/2017 13:33	WG975037
C28-C40 Oil Range	ND		4.78	1	05/02/2017 13:33	WG975037
(S) o-Terphenyl	*62.7*		*18.0-148*		*05/02/2017 13:33*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.8		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000529	.94	05/03/2017 23:58	WG975972
Toluene	ND		0.00529	.94	05/03/2017 23:58	WG975972
Ethylbenzene	ND		0.000529	.94	05/03/2017 23:58	WG975972
Total Xylene	0.00185	B	0.00159	.94	05/03/2017 23:58	WG975972
TPH (GC/FID) Low Fraction	ND		0.106	.94	05/03/2017 23:58	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*102*		*77.0-120*		*05/03/2017 23:58*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.0*		*75.0-128*		*05/03/2017 23:58*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.50	1	05/02/2017 13:46	WG975037
C28-C40 Oil Range	ND		4.50	1	05/02/2017 13:46	WG975037
(S) o-Terphenyl	*71.0*		*18.0-148*		*05/02/2017 13:46*	WG975037

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.2		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.0277	49.5	05/04/2017 18:39	WG975972
Toluene	ND		0.277	49.5	05/04/2017 18:39	WG975972
Ethylbenzene	ND		0.0277	49.5	05/04/2017 18:39	WG975972
Total Xylene	2.04		0.0832	49.5	05/04/2017 18:39	WG975972
TPH (GC/FID) Low Fraction	61.8		5.55	49.5	05/04/2017 18:39	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*103*		*77.0-120*		*05/04/2017 18:39*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*93.5*		*75.0-128*		*05/04/2017 18:39*	WG975972

Sample Narrative:

8015/8021 L905176-16 WG975972: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	50.5		4.48	1	05/02/2017 14:00	WG975037
C28-C40 Oil Range	ND		4.48	1	05/02/2017 14:00	WG975037
(S) o-Terphenyl	*74.5*		*18.0-148*		*05/02/2017 14:00*	WG975037

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.6		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.0572	98	05/04/2017 19:01	WG975972
Toluene	3.87		0.572	98	05/04/2017 19:01	WG975972
Ethylbenzene	2.82		0.0572	98	05/04/2017 19:01	WG975972
Total Xylene	29.7		0.172	98	05/04/2017 19:01	WG975972
TPH (GC/FID) Low Fraction	651		11.4	98	05/04/2017 19:01	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*100*		*77.0-120*		*05/04/2017 19:01*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.2*		*75.0-128*		*05/04/2017 19:01*	WG975972

Sample Narrative:

8015/8021 L905176-17 WG975972: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	147		4.67	1	05/02/2017 14:14	WG975037
C28-C40 Oil Range	ND		4.67	1	05/02/2017 14:14	WG975037
(S) o-Terphenyl	*74.3*		*18.0-148*		*05/02/2017 14:14*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	80.4		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.525		0.122	196	05/04/2017 01:05	WG975972
Toluene	10.7		1.22	196	05/04/2017 01:05	WG975972
Ethylbenzene	5.23		0.122	196	05/04/2017 01:05	WG975972
Total Xylene	55.0		0.366	196	05/04/2017 01:05	WG975972
TPH (GC/FID) Low Fraction	1270		24.4	196	05/04/2017 01:05	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*92.5*		*77.0-120*		*05/04/2017 01:05*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.3*		*75.0-128*		*05/04/2017 01:05*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	286		4.97	1	05/02/2017 14:27	WG975037
C28-C40 Oil Range	ND		4.97	1	05/02/2017 14:27	WG975037
(S) o-Terphenyl	*72.9*		*18.0-148*		*05/02/2017 14:27*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.5		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.117		0.112	198	05/04/2017 01:27	WG975972
Toluene	10.2		1.12	198	05/04/2017 01:27	WG975972
Ethylbenzene	4.63		0.112	198	05/04/2017 01:27	WG975972
Total Xylene	53.1		0.335	198	05/04/2017 01:27	WG975972
TPH (GC/FID) Low Fraction	1110		22.4	198	05/04/2017 01:27	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*99.4*		*77.0-120*		*05/04/2017 01:27*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*90.9*		*75.0-128*		*05/04/2017 01:27*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	366		4.52	1	05/02/2017 14:41	WG975037
C28-C40 Oil Range	ND		4.52	1	05/02/2017 14:41	WG975037
(S) o-Terphenyl	*82.4*		*18.0-148*		*05/02/2017 14:41*	WG975037

Cp
Tc
Ss
Cn
Sr
Qc
Gl
Al
Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.3		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.812		0.0271	49	05/04/2017 19:24	WG975972
Toluene	3.53		0.271	49	05/04/2017 19:24	WG975972
Ethylbenzene	1.16		0.0271	49	05/04/2017 19:24	WG975972
Total Xylene	12.5		0.0814	49	05/04/2017 19:24	WG975972
TPH (GC/FID) Low Fraction	549		5.43	49	05/04/2017 19:24	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*92.4*		*77.0-120*		*05/04/2017 19:24*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.3*		*75.0-128*		*05/04/2017 19:24*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	25.6		4.43	1	05/02/2017 14:55	WG975037
C28-C40 Oil Range	ND		4.43	1	05/02/2017 14:55	WG975037
(S) o-Terphenyl	*68.4*		*18.0-148*		*05/02/2017 14:55*	WG975037

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.8		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000552	.98	05/03/2017 03:38	WG975980
Toluene	ND		0.00552	.98	05/03/2017 03:38	WG975980
Ethylbenzene	ND		0.000552	.98	05/03/2017 03:38	WG975980
Total Xylene	0.00315	B	0.00165	.98	05/03/2017 03:38	WG975980
TPH (GC/FID) Low Fraction	ND		0.110	.98	05/03/2017 03:38	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/03/2017 03:38*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.6*		*75.0-128*		*05/03/2017 03:38*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	7.67		4.50	1	05/01/2017 13:39	WG975038
C28-C40 Oil Range	ND		4.50	1	05/01/2017 13:39	WG975038
(S) o-Terphenyl	*94.6*		*18.0-148*		*05/01/2017 13:39*	WG975038

Cp
Tc
Ss
Cn
Sr
Qc
Gl
Al
Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.1		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000558	.95	05/03/2017 04:00	WG975980
Toluene	0.00694		0.00558	.95	05/03/2017 04:00	WG975980
Ethylbenzene	0.0352		0.000558	.95	05/03/2017 04:00	WG975980
Total Xylene	0.442		0.00167	.95	05/03/2017 04:00	WG975980
TPH (GC/FID) Low Fraction	11.5		0.112	.95	05/03/2017 04:00	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*88.9*		*77.0-120*		*05/03/2017 04:00*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.0*		*75.0-128*		*05/03/2017 04:00*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	22.7		4.70	1	05/01/2017 13:53	WG975038
C28-C40 Oil Range	ND		4.70	1	05/01/2017 13:53	WG975038
(S) o-Terphenyl	*95.1*		*18.0-148*		*05/01/2017 13:53*	WG975038

Cp
1 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.1		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.143		0.0147	24.75	05/04/2017 02:33	WG975980
Toluene	7.02		0.147	24.75	05/04/2017 02:33	WG975980
Ethylbenzene	3.79		0.0147	24.75	05/04/2017 02:33	WG975980
Total Xylene	60.2		0.883	495	05/04/2017 19:46	WG975980
TPH (GC/FID) Low Fraction	1150		58.9	495	05/04/2017 19:46	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*99.6*		*77.0-120*		*05/04/2017 19:46*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.5*		*75.0-128*		*05/04/2017 02:33*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*92.2*		*75.0-128*		*05/04/2017 19:46*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	97.8		4.76	1	05/01/2017 13:26	WG975038
C28-C40 Oil Range	ND		4.76	1	05/01/2017 13:26	WG975038
(S) o-Terphenyl	*91.2*		*18.0-148*		*05/01/2017 13:26*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.1		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.115	200	05/03/2017 01:03	WG975980
Toluene	2.37		1.15	200	05/03/2017 01:03	WG975980
Ethylbenzene	1.36		0.115	200	05/03/2017 01:03	WG975980
Total Xylene	17.6		0.344	200	05/03/2017 01:03	WG975980
TPH (GC/FID) Low Fraction	399		23.0	200	05/03/2017 01:03	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*98.7*		*77.0-120*		*05/03/2017 01:03*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.0*		*75.0-128*		*05/03/2017 01:03*	WG975980

Sample Narrative:

8015/8021 L905176-24 WG975980: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	169		4.59	1	05/01/2017 12:58	WG975038
C28-C40 Oil Range	ND		4.59	1	05/01/2017 12:58	WG975038
(S) o-Terphenyl	*99.8*		*18.0-148*		*05/01/2017 12:58*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.4		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.252		0.113	200	05/03/2017 04:44	WG975980
Toluene	11.5		1.13	200	05/03/2017 04:44	WG975980
Ethylbenzene	4.43		0.113	200	05/03/2017 04:44	WG975980
Total Xylene	47.5		0.339	200	05/03/2017 04:44	WG975980
TPH (GC/FID) Low Fraction	997		22.6	200	05/03/2017 04:44	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*94.1*		*77.0-120*		*05/03/2017 04:44*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*90.9*		*75.0-128*		*05/03/2017 04:44*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	217		4.53	1	05/01/2017 13:12	WG975038
C28-C40 Oil Range	ND		4.53	1	05/01/2017 13:12	WG975038
(S) o-Terphenyl	*99.7*		*18.0-148*		*05/01/2017 13:12*	WG975038

Cp
Tc
Ss
Cn
Sr
Qc
Gl
Al
Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.6		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.107		0.0141	25	05/04/2017 02:55	WG975980
Toluene	5.72		0.141	25	05/04/2017 02:55	WG975980
Ethylbenzene	2.14		0.0141	25	05/04/2017 02:55	WG975980
Total Xylene	17.2		0.0423	25	05/04/2017 02:55	WG975980
TPH (GC/FID) Low Fraction	600		56.4	500	05/04/2017 20:08	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*93.1*		*77.0-120*		*05/04/2017 02:55*	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*100*		*77.0-120*		*05/04/2017 20:08*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*90.5*		*75.0-128*		*05/04/2017 02:55*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*92.2*		*75.0-128*		*05/04/2017 20:08*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	51.0		4.51	1	05/01/2017 12:31	WG975038
C28-C40 Oil Range	ND		4.51	1	05/01/2017 12:31	WG975038
(S) o-Terphenyl	*98.5*		*18.0-148*		*05/01/2017 12:31*	WG975038

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.6		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0252		0.000535	.97	05/03/2017 05:28	WG975980
Toluene	0.242		0.00535	.97	05/03/2017 05:28	WG975980
Ethylbenzene	0.0393		0.000535	.97	05/03/2017 05:28	WG975980
Total Xylene	0.343		0.00161	.97	05/03/2017 05:28	WG975980
TPH (GC/FID) Low Fraction	5.34		0.107	.97	05/03/2017 05:28	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*88.3*		*77.0-120*		*05/03/2017 05:28*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*93.5*		*75.0-128*		*05/03/2017 05:28*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	32.9		4.41	1	05/01/2017 11:50	WG975038
C28-C40 Oil Range	ND		4.41	1	05/01/2017 11:50	WG975038
(S) o-Terphenyl	*97.0*		*18.0-148*		*05/01/2017 11:50*	WG975038

Cp
Tc
Ss
Cn
Sr
Qc
Gl
Al
Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.7		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.000588		0.000563	1	05/03/2017 05:50	WG975980
Toluene	0.00605		0.00563	1	05/03/2017 05:50	WG975980
Ethylbenzene	0.00778		0.000563	1	05/03/2017 05:50	WG975980
Total Xylene	0.150		0.00169	1	05/03/2017 05:50	WG975980
TPH (GC/FID) Low Fraction	5.52		0.113	1	05/03/2017 05:50	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*95.5*		*77.0-120*		*05/03/2017 05:50*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*90.8*		*75.0-128*		*05/03/2017 05:50*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	5.26		4.51	1	05/01/2017 12:45	WG975038
C28-C40 Oil Range	ND		4.51	1	05/01/2017 12:45	WG975038
(S) o-Terphenyl	*72.5*		*18.0-148*		*05/01/2017 12:45*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.9		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000522	.98	05/04/2017 03:17	WG975980
Toluene	ND		0.00522	.98	05/04/2017 03:17	WG975980
Ethylbenzene	ND		0.000522	.98	05/04/2017 03:17	WG975980
Total Xylene	0.00646		0.00157	.98	05/04/2017 03:17	WG975980
TPH (GC/FID) Low Fraction	ND		0.104	.98	05/04/2017 03:17	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/04/2017 03:17*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.7*		*75.0-128*		*05/04/2017 03:17*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.26	1	05/01/2017 12:18	WG975038
C28-C40 Oil Range	ND		4.26	1	05/01/2017 12:18	WG975038
(S) o-Terphenyl	*90.4*		*18.0-148*		*05/01/2017 12:18*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.1		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.000866		0.000521	.97	05/04/2017 03:40	WG975980
Toluene	ND		0.00521	.97	05/04/2017 03:40	WG975980
Ethylbenzene	ND		0.000521	.97	05/04/2017 03:40	WG975980
Total Xylene	0.00464		0.00156	.97	05/04/2017 03:40	WG975980
TPH (GC/FID) Low Fraction	ND		0.104	.97	05/04/2017 03:40	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/04/2017 03:40*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*92.0*		*75.0-128*		*05/04/2017 03:40*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.30	1	05/01/2017 12:04	WG975038
C28-C40 Oil Range	ND		4.30	1	05/01/2017 12:04	WG975038
(S) o-Terphenyl	*98.4*		*18.0-148*		*05/01/2017 12:04*	WG975038

Method Blank (MB)

(MB) R3214456-1 04/28/17 09:54

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Total Solids	0.000			

L905176-01 Original Sample (OS) • Duplicate (DUP)

(OS) L905176-01 04/28/17 09:54 • (DUP) R3214456-3 04/28/17 09:54

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	80.9	80.5	1	0.435		5

Laboratory Control Sample (LCS)

(LCS) R3214456-2 04/28/17 09:54

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	%	%	%	%	
Total Solids	50.0	50.0	99.9	85.0-115	

Method Blank (MB)

(MB) R3214213-1 04/27/17 15:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Total Solids	0.00140			

L905176-11 Original Sample (OS) • Duplicate (DUP)

(OS) L905176-11 04/27/17 15:28 • (DUP) R3214213-3 04/27/17 15:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	88.1	88.1	1	0.0446		5

Laboratory Control Sample (LCS)

(LCS) R3214213-2 04/27/17 15:28

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	%	%	%	%	
Total Solids	50.0	50.0	99.9	85.0-115	

Method Blank (MB)

(MB) R3214212-1 04/27/17 15:05

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Total Solids	0.000			

L905176-21 Original Sample (OS) • Duplicate (DUP)

(OS) L905176-21 04/27/17 15:05 • (DUP) R3214212-3 04/27/17 15:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	88.8	90.0	1	1.30		5

Laboratory Control Sample (LCS)

(LCS) R3214212-2 04/27/17 15:05

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3215427-5 05/03/17 12:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000402	J	0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*102*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*93.8*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215427-1 05/03/17 10:40 • (LCSD) R3215427-2 05/03/17 11:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0535	0.0504	107	101	71.0-121			6.04	20
Toluene	0.0500	0.0540	0.0500	108	99.9	72.0-120			7.69	20
Ethylbenzene	0.0500	0.0555	0.0522	111	104	76.0-121			6.08	20
Total Xylene	0.150	0.176	0.163	117	109	75.0-124			7.44	20
(S) a,a,a-Trifluorotoluene(FID)				*101*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*99.4*	*101*	*75.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215427-3 05/03/17 11:23 • (LCSD) R3215427-4 05/03/17 11:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6.23	6.22	113	113	70.0-136			0.150	20
(S) a,a,a-Trifluorotoluene(FID)				*104*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*111*	*110*	*75.0-128*				

L905176-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-03 05/03/17 13:29 • (MS) R3215427-6 05/03/17 13:51 • (MSD) R3215427-7 05/03/17 15:23

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0549	ND	10.7	11.4	97.0	104	200	10.0-146			7.19	29
Toluene	0.0549	ND	10.6	11.4	95.4	103	200	10.0-143			7.45	30
Ethylbenzene	0.0549	0.403	11.3	12.1	98.8	106	200	10.0-147			7.07	31
Total Xylene	0.165	2.11	37.1	40.4	106	116	200	10.0-149			8.50	30

L905176-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-03 05/03/17 13:29 • (MS) R3215427-6 05/03/17 13:51 • (MSD) R3215427-7 05/03/17 15:23

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) a,a,a-Trifluorotoluene(FID)					*103*	*102*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*99.8*	*98.6*		*75.0-128*				

L905176-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-03 05/03/17 13:29 • (MS) R3215427-8 05/03/17 15:44 • (MSD) R3215427-9 05/03/17 16:06

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.04	401	1620	1600	101	99.4	200	10.0-147			1.03	30
(S) a,a,a-Trifluorotoluene(FID)					*104*	*104*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*111*	*111*		*75.0-128*				

Method Blank (MB)

(MB) R3215147-5 05/02/17 22:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000254	J	0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*102*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*94.2*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215147-1 05/02/17 20:38 • (LCSD) R3215147-2 05/02/17 21:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0470	0.0517	94.0	103	71.0-121			9.51	20
Toluene	0.0500	0.0465	0.0514	93.1	103	72.0-120			9.90	20
Ethylbenzene	0.0500	0.0483	0.0533	96.6	107	76.0-121			9.78	20
Total Xylene	0.150	0.151	0.166	101	110	75.0-124			9.29	20
(S) a,a,a-Trifluorotoluene(FID)				*100*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*99.3*	*101*	*75.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215147-3 05/02/17 21:22 • (LCSD) R3215147-4 05/02/17 21:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6.35	6.28	115	114	70.0-136			1.17	20
(S) a,a,a-Trifluorotoluene(FID)				*102*	*103*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*110*	*111*	*75.0-128*				

L905176-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-24 05/03/17 01:03 • (MS) R3215147-6 05/02/17 23:12 • (MSD) R3215147-7 05/02/17 23:35

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0574	ND	11.0	11.9	95.1	103	200	10.0-146			8.28	29
Toluene	0.0574	2.37	13.0	13.9	92.8	101	200	10.0-143			6.60	30
Ethylbenzene	0.0574	1.36	12.7	13.6	98.6	107	200	10.0-147			7.18	31
Total Xylene	0.172	17.6	46.1	48.3	83.0	89.4	200	10.0-149			4.62	30

L905176-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-24 05/03/17 01:03 • (MS) R3215147-6 05/02/17 23:12 • (MSD) R3215147-7 05/02/17 23:35

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) a,a,a-Trifluorotoluene(FID)					*98.9*	*100*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*98.5*	*101*		*75.0-128*				

L905176-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-24 05/03/17 01:03 • (MS) R3215147-8 05/02/17 23:57 • (MSD) R3215147-9 05/03/17 00:19

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.31	399	1890	1870	118	117	200	10.0-147			0.870	30
(S) a,a,a-Trifluorotoluene(FID)					*104*	*104*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*111*	*111*		*75.0-128*				

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3214911-1 05/02/17 08:44

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*70.1*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3214911-2 05/02/17 08:58 • (LCSD) R3214911-3 05/02/17 09:11

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
C10-C28 Diesel Range	60.0	48.8	46.2	81.3	76.9	50.0-150			5.50	20
(S) o-Terphenyl				*77.1*	*64.3*	*18.0-148*				

L905176-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-01 05/02/17 09:26 • (MS) R3214911-4 05/02/17 09:39 • (MSD) R3214911-5 05/02/17 09:53

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	74.2	ND	62.8	61.8	84.6	83.3	1	50.0-150			1.54	20
(S) o-Terphenyl					*70.5*	*71.9*		*18.0-148*				

Method Blank (MB)

(MB) R3214627-1 05/01/17 09:42

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*102*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3214627-2 05/01/17 09:56 • (LCSD) R3214627-3 05/01/17 10:10

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
C10-C28 Diesel Range	60.0	48.2	48.2	80.3	80.4	50.0-150			0.110	20
(S) o-Terphenyl				*106*	*98.3*	*18.0-148*				

L905386-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905386-01 05/01/17 17:32 • (MS) R3214627-4 05/01/17 17:45 • (MSD) R3214627-5 05/01/17 18:00

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	67.3	480	512	499	47.6	27.0	1	50.0-150	E V	E V	2.74	20
(S) o-Terphenyl					*115*	*119*		*18.0-148*				

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL (dry)	Reported Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

[1] Cp
[2] Tc
[3] Ss
[4] Cn
[5] Sr
[6] Qc
[7] Gl
[8] Al
[9] Sc

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [14]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

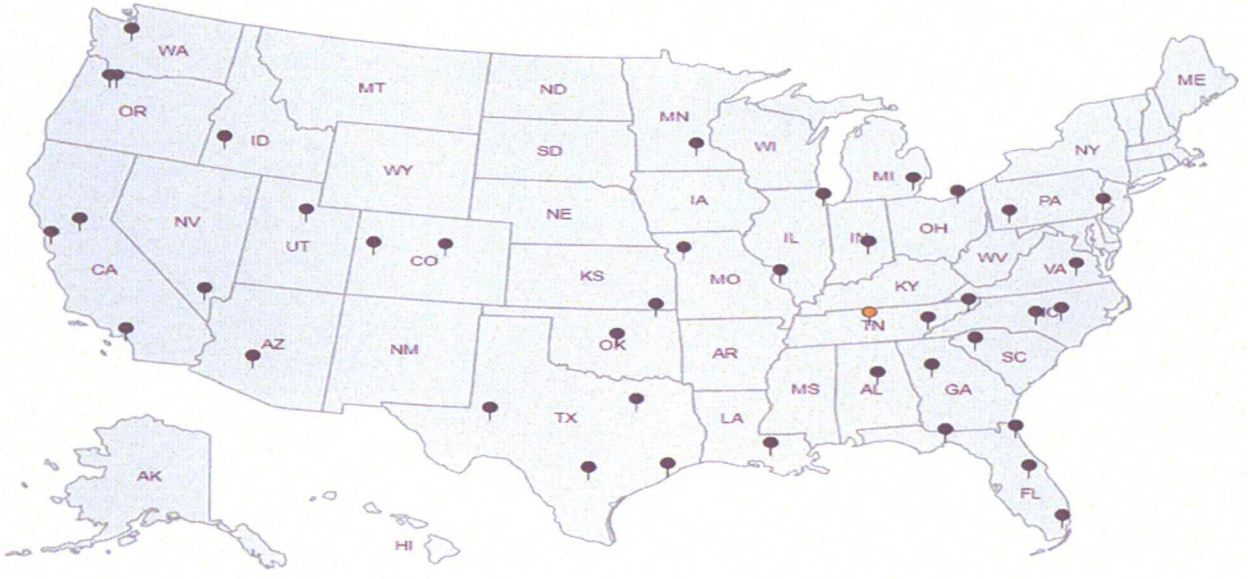
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



F025

XTO ENERGY
Western Division

Quote Number	Page 1 of 3	
XTO Contact: James McDaniel	XTO Contact Phone #: (505) 419-0915	
Email Results to: james_mcdaniel@xtoenergy.com; logan_hixon@xtoenergy.com; dhencmann@ltenv.com; dburns@ltenv.com		
CJ Well Site/Location: ~~OH Randle #5~~ OH Rendel #5	API Number	Test Reason: Confirmation Soil Sample
Collected By: D. Burns	Samples on Ice: (Y) N	Turnaround: X Standard; ___ Next Day; ___ Two Day; ___ Three Day; ___ Std. 5 Bus. Days (by contract); Date Needed ___
Company: LT Environmental	QA/QC Requested	
Signature: DLB	Gray Areas for Lab Use Only!	

Analysis

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX - 8021	TPH (GRO, DRO, MRO) - 8015	Sample Number
BH-11 @ 20'-25'		Soil	4/19/17	1215	Cool	2	X	X	L906176-01
BH-12 @ 0'-10'			4/19/17	1300		2			02
BH-12 @ 10'-15'			4/19/17	1315		2			03
BH-12 @ 15'-20'			4/19/17	1325		2			04
BH-12 @ 20'-25'			4/19/17	1340		2			05
BH-12 @ 25'-30'			4/19/17	1400		2			06
BH-12 @ 30'-35'			4/19/17	1435		2			07
BH-13 @ 0'-10'			4/19/17	1540		2			08
BH-13 @ 10'-15'			4/19/17	1550		2			09
BH-13 @ 15'-20'			4/19/17	1600		2			10
BH-13 @ 20'-25'			4/19/17	1610		2			11
BH-13 @ 25'-30'			4/19/17	1620		2			12
BH-13 @ 30'-35'		↓	4/19/17	1635	↓	2	↓	↓	13

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Relinquished By: (Signature) DLB	Date: 4-25-17	Time: 14:00	Received By: (Signature)	Number of Bottles	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 2.1 °C	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 4-26-17 Time: 845	

Comments

COC SF

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200

Count: 60 = 4 o2

XTO ENERGY
Western Division

Quote Number	Page 2 of 3	
XTO Contact: James McDaniel	XTO Contact Phone #: (505) 419-0915	
Email Results to: james_mcdaniel@xtoenergy.com, logan_hixon@xtoenergy.com, dhenemann@ltenv.com, dburns@ltenv.com		
CJ Well Site/Location: ~~OH Rudie #5~~ OH Randel #5	API Number	Test Reason: Confirmation Soil Sample
Collected By: D. Burns	Samples on Ice: (Y/N)	Turnaround: X Standard; ___ Next Day; ___ Two Day; ___ Three Day; ___ Std. 5 Bus. Days (by contract); Date Needed ___
Company: LT Environmental	QA/QC Requested	
Signature: DLB	Gray Areas for Lab Use Only!	

Analysis

BTEX - 8021	TPH (GRO, DRO, MRO) - 8015						
X	X						

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	Sample Number
BH-14 @ 15'-20'		Soil	4/20/17	0930	Cool	2	L90576-14
BH-14 @ 20'-25'			4/20/17	0945			15
BH-15 @ 0'-10'			4/20/17	1130			16
BH-15 @ 10'-15'			4/20/17	1140			17
BH-15 @ 15'-20'			4/20/17	1145			18
BH-15 @ 20'-25'			4/20/17	1200			19
BH-15 @ 30'-32'			4/20/17	1320			20
BH-16 @ 0'-10'			4/20/17	1420			21
BH-16 @ 10'-15'			4/20/17	1430			22
BH-16 @ 15'-20'			4/20/17	1440			23
BH-16 @ 23'-25'			4/20/17	1515			24
BH-16 @ 25'-27'			4/20/17	1530			25
BH-16 @ 27'-29'			4/20/17	1540			26

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature) DLB	Date: 4-25-17	Time: 14:00	Received By: (Signature)	Number of Bottles	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 21°C	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 4-26-17 / Time: 845	

Comments: COCSI TOH

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200

0190

count! 60 = 48?

XTO ENERGY
Western Division

Quote Number	Page 3 of 3	
XTO Contact: James McDaniel	XTO Contact Phone #: (505) 419-0915	
~~james_mcdaniel@~~ CJ Email Results to: james_mcdaniel@xtoenergy.com, logan_hixon@xtoenergy.com	dhencmann@ltenv.com, dburns@ltenv.com	
CJ ~~OH Randle #5~~ Well Site/Location: OH Randel #5	API Number	Test Reason: Confirmation Soil Sample
Collected By: D. Burns	Samples on Ice (Y/N)	Turnaround: X Standard; ___ Next Day; ___ Two Day; ___ Three Day; ___ Std. 5 Bus. Days (by contract); Date Needed ___
Company: LT Environmental	QA/QC Requested	
Signature: D B	Gray Areas for Lab Use Only!	

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	Analysis: BTEX - 8021	Analysis: TPH (GRO, DRO, MRO) - 8015	Sample Number
BH-16 @ 33'-35'		Soil	4/20/17	1405	Cool	2	X	X	L905176-27
BH-17 @ 20'-25'		↓	4/21/17	1030	↓	↓	↓	↓	28
BH-18 @ 30'-32'		↓	4/24/17	0900	↓	↓	↓	↓	29
BH-19 @ 30'-35'		↓	4/24/17	1025	↓	↓	↓	↓	30

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature) D B	Date: 4-25-17	Time: 14:00	Received By: (Signature)	Number of Bottles	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 21.2°	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 4-26-17 / Time: 8:15	

Comments: COC SE

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200

0191

Count: 60=482

ESC LAB SCIENCES
Cooler Receipt Form

Client: XTOENM	SDG#	L905176	
Cooler Received/Opened On: 4/26/17	Temperature:	2.1	
Received By: Rickey Mosley			
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?			