COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental Inc.

2243 Main Avenue, Suite 3
Durango, Colorado 81301
T 970.385.1096 / F 970.385.1873

September 1, 2015

Mr. James McDaniel
XTO Energy, Inc.
382 County Road 3100
Aztec, New Mexico 87410

RE: Subsurface Investigation Results
XTO Energy, Inc.
Sullivan Gas Com D #1E
API# 30-045-24083
Bloomfield, New Mexico

Dear Mr. McDaniel:

LT Environmental, Inc. (LTE) is pleased to present to XTO Energy, Inc. (XTO) this letter summarizing a subsurface investigation at the Sullivan GC D #1E natural gas production well (Site) located in Section 26 in Township 29 North, Range 11 West of San Juan County, New Mexico (Figure 1). The purpose of the investigation was to delineate soil impacted by a pipeline release and, as time permitted, investigate the extent of groundwater impact.

Site Background

XTO identified a release at the Site on June 1, 2015. The source was a failed union in a fiberglass pipeline connecting the separator and aboveground storage tank. XTO responded by collecting subsurface soil samples from potholes and with a hand auger in locations depicted on Figure 2. Soil sampling results are presented on Table 1. The laboratory analytical results indicated soil was impacted at the source from approximately 4 feet below ground surface (bgs) to saturated sediments observed at approximately 18.5 feet bgs. Concentrations of benzene from samples collected under the source ranged from 10 milligrams per kilogram (mg/kg) at 8 feet bgs to 53 mg/kg at 19 feet bgs. Total petroleum hydrocarbons (TPH) were detected in the soil samples as high as 16,300 mg/kg at 19 feet bgs.

Based on the presence of saturated sediments, XTO attempted to collect groundwater samples from BH-1, BH-2, and BH-3. The sidewalls of BH-1 collapsed and no groundwater was sampled at that location. A sample was collected from BH-2 and BH-3 for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX). The concentrations of benzene, toluene, and total xylenes in the sample collected from BH-2 exceeded New Mexico Water Quality Control Commission (NMWQCC) standards as presented in Table 2. The sample collected from BH-3 contained no detectable concentrations of benzene, toluene, and ethylbenzene. Although total xylenes were detected, the concentration did not exceed NMWQCC standards.

Subsurface Investigation

On August 19, 2015, LTE utilized a Geoprobe® 6620-DT direct-push drilling rig operated by Earth Worx Environmental Services, LLC to better delineate impacted soil near the source of the release. Soil borings SB01 through SB09 were advanced to the saturated zone in locations depicted on Figure 2. LTE provided a geologist trained in conducting soil sampling and logging to oversee site investigation activities. During the advancement of soil borings, the geologist described soil samples according to the Unified Soil Classification System and evaluated soil for potential signs of environmental impacts by means of visual observations (i.e., inspection for staining/mottling) and olfactory assessment (i.e., odors). LTE conducted field screening for volatile aromatic hydrocarbons using a photoionization detector (PID) with a 10.6 electron-volt lamp on the soil sample collected from the interval immediately beneath the ground surface and every five feet thereafter in addition to any soil that was visibly stained or had a hydrocarbon odor. Field screening was conducted in accordance with the New Mexico Oil Conservation Division's (NMOCD) *Guidelines for Remediation of Leaks, Spills, and Releases*, dated August 13, 1993. Soil boring logs are included as Attachment A.

Soil samples for laboratory analysis were collected from soil borings SB02, SB07, and SB08 from the unsaturated section of core containing the highest field screening results. Soil samples were not collected from soil borings where volatile organic compounds were not detected above 100 parts per million (ppm) during field screening. To minimize loss of volatile aromatic hydrocarbons, the soil samples were firmly packed into glass soil jars supplied by the laboratory and immediately placed on ice in a cooler. The sample jars were labeled with the date and time of collection, sample identifier, project name, collector's name, and parameters to be analyzed. Strict chain-of-custody (COC) protocol was followed from sampling through shipment. The date and time sampled, sample identifier, sampler's name, required analyses, and sampler's signatures were included on the COC. Soil samples were analyzed for BTEX and TPH-gasoline range organics (GRO) by United States Environmental Protection Agency (EPA) Method 8021 and TPH-diesel range organics (DRO) by EPA Method 8015.

LTE collected groundwater grab samples from SB03, SB05, and SB06 by advancing Hydropunch™ tooling with the Geoprobe® and using a peristaltic pump with clean disposable tubing to fill three non-preserved 40 milliliter glass vials with zero headspace to prevent degradation of the samples. The groundwater samples were shipped on ice at 4 degrees Celsius under strict chain-of-custody procedures to the laboratory to be analyzed for BTEX according to EPA Method 8021B within the required holding time.

The number of soil borings advanced by the Geoprobe® near the release origin was limited to maintain a safe distance from surface pipelines. On August 21, 2015, LTE personnel returned to the Site to utilize a hand auger due to a high concentration of subsurface utilities and equipment in the vicinity of the source area. Soil borings SB10 through SB16 were advanced to the saturated zone or until refusal (large cobbles). Soil samples were collected from SB10, SB11, SB12, SB14, and SB15 and submitted to ESC for analysis of BTEX and TPH.

Results

The observed subsurface lithology consisted of a silty to clayey sand that is 13 feet to 17 feet thick underlain by a saturated gravel occurring at 13 feet to 17.5 feet. Varying sized cobbles were observed dispersed vertically throughout the subsurface.

In accordance with the NMOCD *Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993), remediation action levels for soil at the Site were determined to be 10 mg/kg for benzene, 50 mg/kg for BTEX, and 100 mg/kg for TPH due to the fact that groundwater is less than 50 feet bgs. Soil samples 8' Below Union, 12' Below Union, 18.5' Below Union, 19' Below Union, SB07@16-18', SB08@16-17', and SB11@4' exceeded the NMOCD action levels for BTEX and TPH. Soil samples 8' Below Union, 19' Below Union, SB07@16-18', and SB08@16-17' also exceeded the action level for benzene. The soil analytical results are summarized in Table 1 and illustrated on Figure 3. Soil analytical reports are included as Attachment B.

Groundwater samples BH-2, SB03, and SB06 exceeded the NMWQCC standards for BTEX, with the exception of BH-2, which did not exceed the standard for ethylbenzene. The groundwater analytical results are summarized in Table 2 and illustrated on Figure 4. Groundwater analytical reports are included as Attachment B.

Discussion

Analytical laboratory results, field screening results, and field observations of staining and odor indicated petroleum hydrocarbon impact to soil is localized around the release origin. Petroleum hydrocarbon impact to soil was encountered at the shallowest depth of 1.5 feet bgs near the release origin and at SB11 and extended to saturated sediments at 17.5 feet to 18 feet bgs. Depth to impacted soil increases away from the release origin and source material appears to be approximately 35 feet by 40 feet in extent as illustrated on Figure 5. Based on this distribution, an estimated total volume of 615 cubic yards (c.y.) of impacted soil exists in the subsurface with approximately 315 c.y. of overburden. It should be noted that impact may extend north under the separator and compressor. One hand auger boring (SB14) was advanced within the separator berm and stained soil was identified. However, auger refusal was encountered at 3 feet bgs and no additional data from the vadose zone could be collected in that location.

Groundwater analytical results and soil staining observed in saturated sediments suggest a groundwater plume may exist at the Site that is approximately 180 feet in width and 40 feet in length. Utilizing data collected during the subsurface investigations, a plume extent map is estimated in Figure 6.

Conclusions

Results from the subsurface investigation indicate that vadose zone soil impacted by the pipeline release is approximately 615 c.y. Distribution of the soil impact was likely controlled by the subsurface lithology of loose silty sand and cobbles with limited clayey sand that promoted vertical migration. Once the release reached groundwater, horizontal migration resulted with a pancake-

like distribution around the source. Groundwater impact extends approximately 100 feet to the northwest, the likely downgradient direction based on surface topography.

LTE appreciates the opportunity to provide environmental services to XTO. If you have any questions regarding this report, please contact us at (970) 385-1096.

Sincerely,

LT ENVIRONMENTAL, INC.

Devin Hencmann
Project Geologist

Ashley L. Ager
Senior Geologist/Office Manager

Attachments:

Figure 1 – Site Location Map
Figure 2 – Site Map
Figure 3 – Soil Analytical Results
Figure 4 – Groundwater Analytical Results
Figure 5 – Estimated Depth to Soil Impact
Figure 6 – Estimated Extent of Groundwater Impact

Table 1 – Soil Analytical Results
Table 2 – Groundwater Analytical Results

Attachment A – Soil Boring Logs
Attachment B – Laboratory Analytical Reports

FIGURES

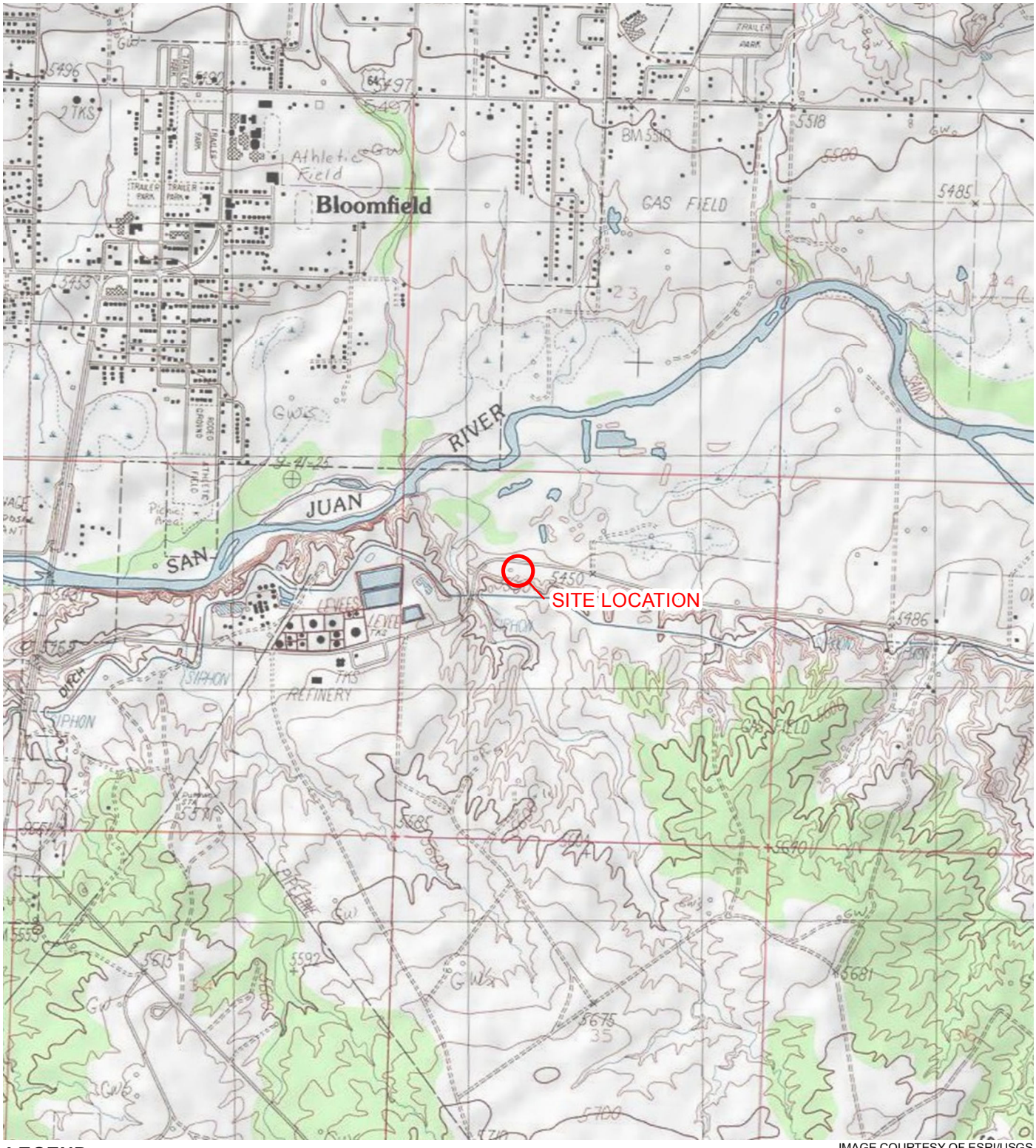


IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG01_SL.mxd

LEGEND

- RELEASE ORIGIN
- SOIL BORING (8/9/2015)
- POTHOLE (6/8/2015)
- HAND AUGER BORING (6/8/2015)
- HAND AUGER BORING (8/21/2015)
- SUBSURFACE UTILITIES

AST: ABOVEGROUND STORAGE TANK

IMAGE COURTESY OF ESRI

0 40 80
Feet

N

FIGURE 2
SITE MAP
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG02_SITE.mxd

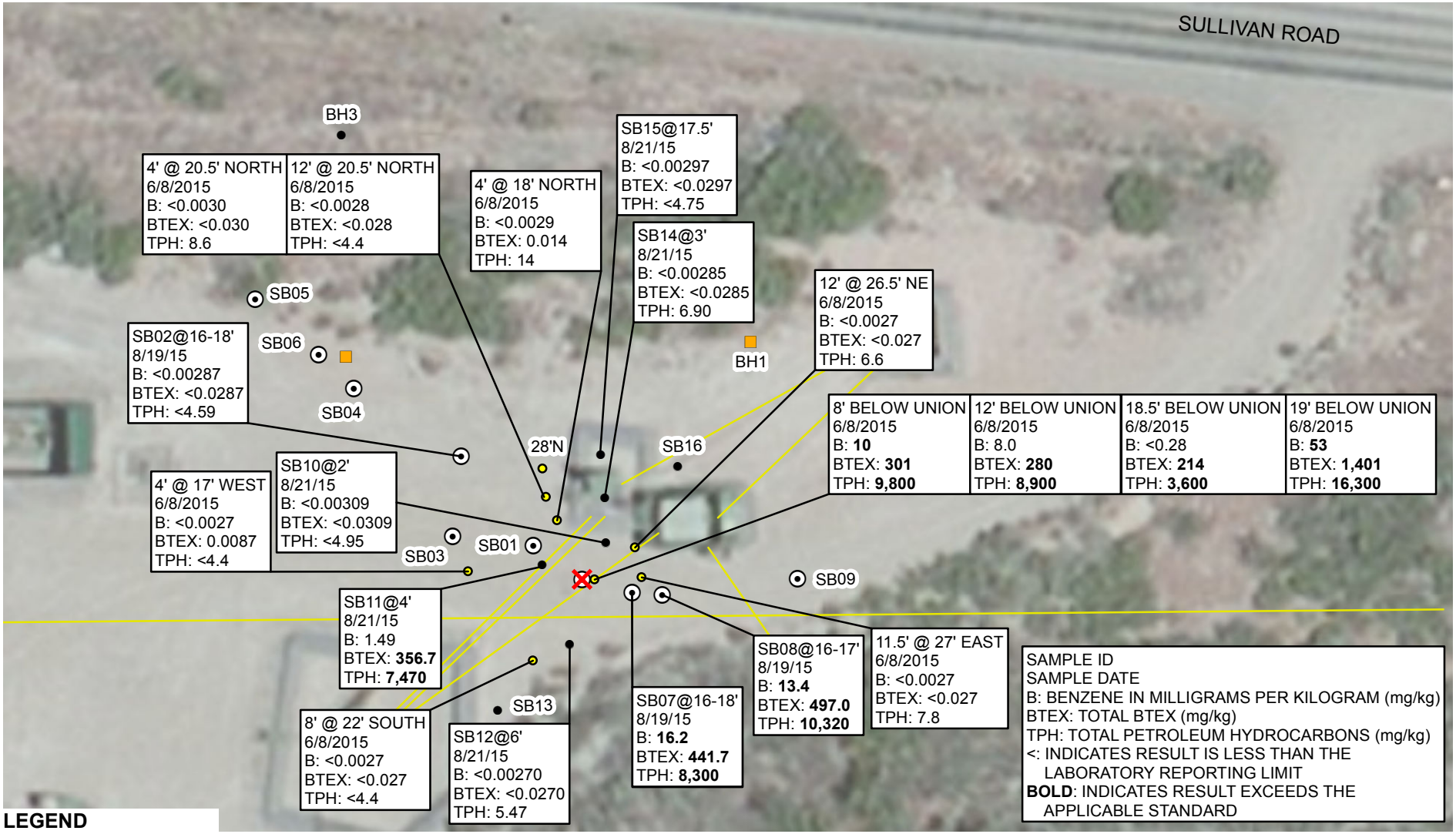


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE ORIGIN
- SOIL BORING (PERFORMED BY LTE)
- POTHOLE (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY LTE)
- SUBSURFACE UTILITIES

0 40 80
Feet

N

FIGURE 3
SOIL ANALYTICAL RESULTS
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG03_SOIL_ANALY_USE.mxd

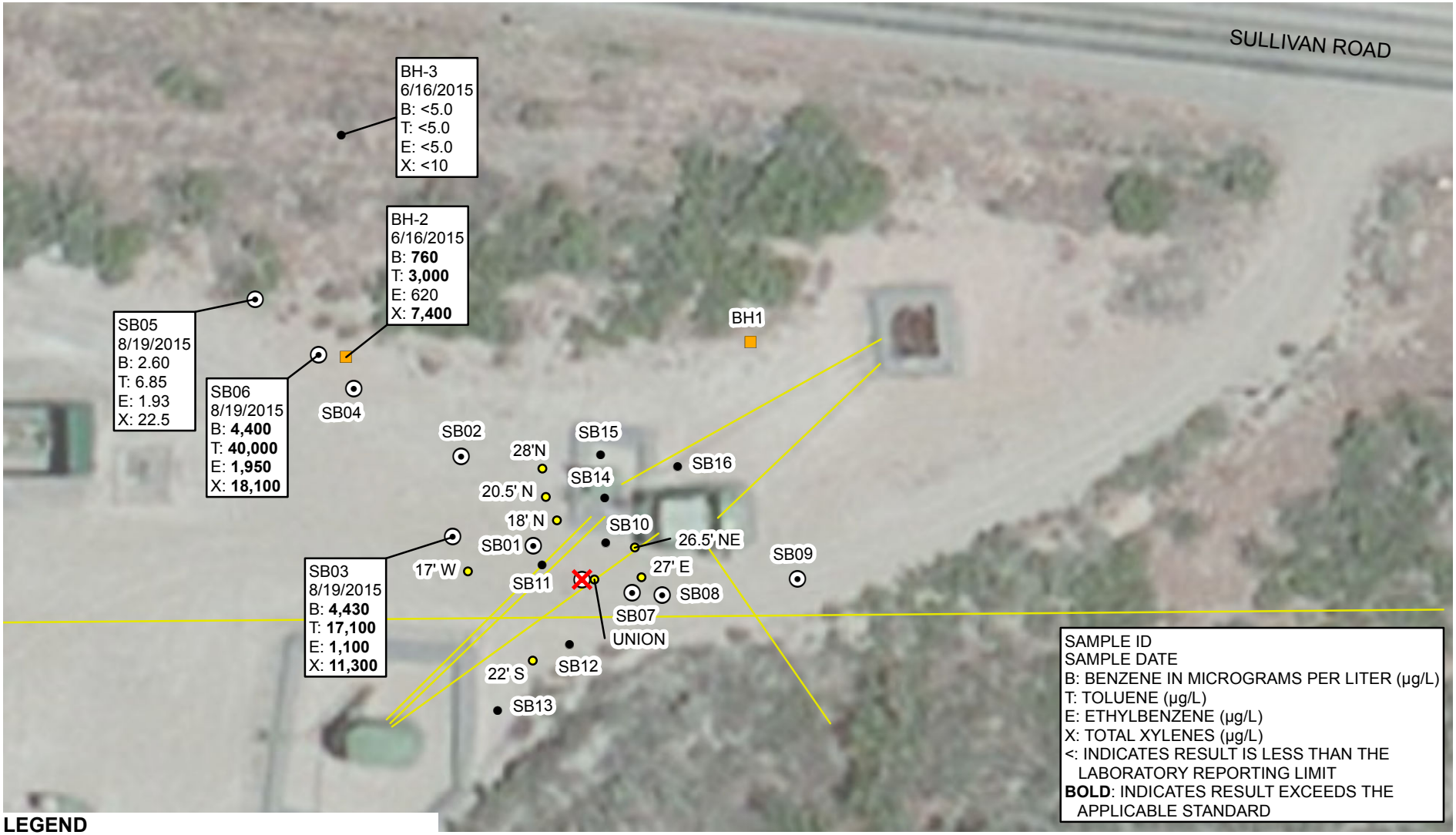


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE ORIGIN
- SOIL BORING (PERFORMED BY LTE)
- POTHOLE (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY LTE)
- SUBSURFACE UTILITIES

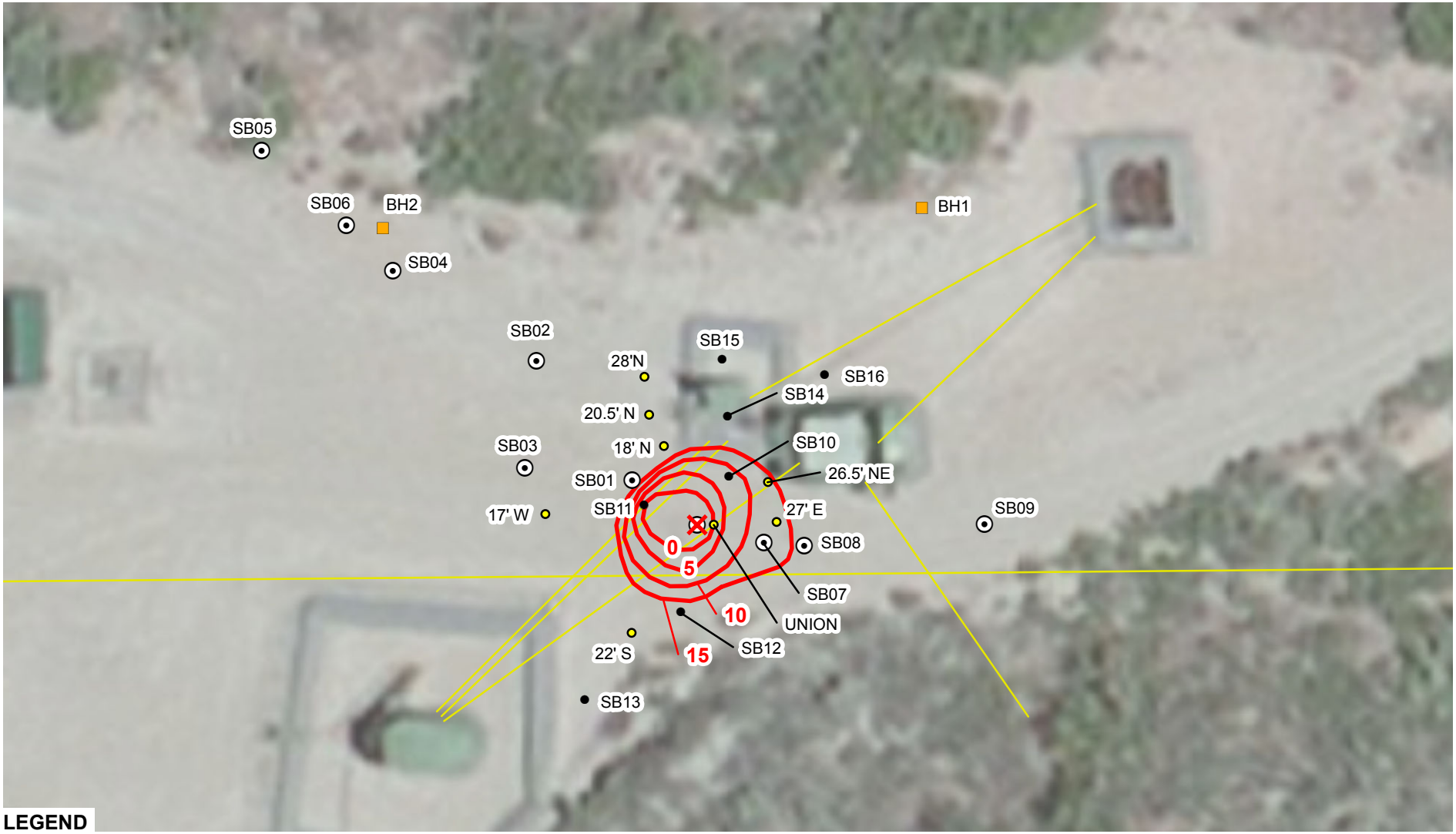
0 40 80
Feet

N

FIGURE 4
GROUNDWATER ANALYTICAL RESULTS
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG04_GW_ANALY.mxd



LEGEND

- RELEASE ORIGIN
- SOIL BORING (PERFORMED BY LTE)
- POTHOLE (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY LTE)
- SUBSURFACE UTILITIES
- ESTIMATED DEPTH OF IMPACT ELEVATION CONTOUR
- CONTOUR INTERVAL = 5 FEET

IMAGE COURTESY OF ESRI

0 30 60
Feet

N

FIGURE 5
ESTIMATED DEPTH TO SOIL IMPACT
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG05_SOIL_IMPACT.mxd

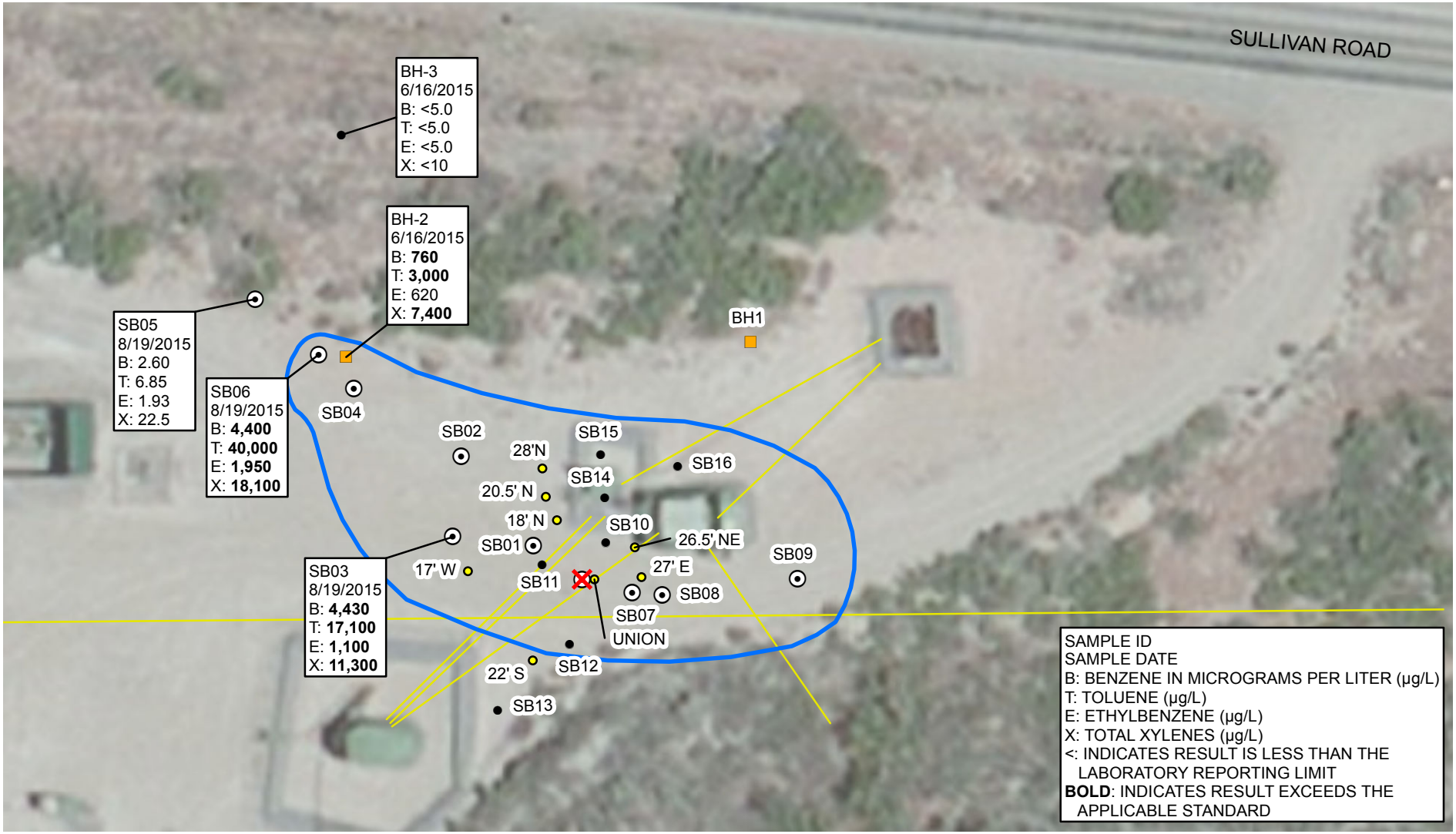


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE ORIGIN
- SOIL BORING (PERFORMED BY LTE)
- POTHOLE (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY XTO)
- HAND AUGER BORING (PERFORMED BY LTE)
- SUBSURFACE UTILITIES
- ESTIMATED GROUNDWATER PLUME EXTENT

0 40 80
Feet

N

FIGURE 6
ESTIMATED EXTENT OF GROUNDWATER IMPACT
SULLIVAN GC D #1E
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012915025_SULLIVAN_GC_D_#1E\012915025_FIG6_GW_PLUME.mxd

TABLES

TABLE 1

SOIL ANALYTICAL RESULTS
SULLIVAN GAS COM D#1E
XTO ENERGY, INC.

Sample ID	Sample Name	Sample Date	Field Headspace Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	DRO (mg/kg)	GRO (mg/kg)	TPH (mg/kg)
FARRF-060815-1020	8' Below Union	6/8/2015	984	**10**	67	14	210	**301**	6,300	3,500	**9,800**
FARRF-060815-1038	12' Below Union	6/8/2015	1,581	8.0	58	14	200	**280**	5,400	3,500	**8,900**
FARRF-060815-1105	4' @ 17' West	6/8/2015	248	<0.0027	<0.027	<0.0027	0.0087	0.0087	<4.4	<0.55	<4.4
FARRF-060815-1210	4' @ 18' North	6/8/2015	364	<0.0029	<0.029	<0.0029	0.014	0.014	14	<0.58	14
FARRF-060815-0130	4' @ 20.5' North	6/8/2015	66.5	<0.0030	<0.030	<0.0030	<0.0089	<0.030	8.6	<0.59	8.6
FARRF-060815-0215	12' @ 20.5' North	6/8/2015	161	<0.0028	<0.028	<0.0028	<0.0083	<0.028	<4.4	<0.56	<4.4
FARRF-060815-0300	8' @ 22' South	6/8/2015	41	<0.0027	<0.027	<0.0027	<0.0082	<0.027	<4.4	<0.54	<4.4
FARRF-060815-0435	11.5' @ 27' East	6/8/2015	172	<0.0027	<0.027	<0.0027	<0.0080	<0.027	7.8	<0.53	7.8
FARRF-060815-0535	12' @ 26.5' NE	6/8/2015	130	<0.0027	<0.027	<0.0027	<0.0082	<0.027	6.6	<0.54	6.6
FARRF-060815-0930	18.5' Below Union	6/8/2015	1,278	<0.28	3.0	11	200	**214**	<4.5	3,600	**3,600**
FARRF-060815-0947	19' Below Union	6/8/2015	NR	**53**	420	68	860	**1,401**	3,300	13,000	**16,300**
FARMW-081915-0930	SB02@16-18'	8/19/15	82.1	<0.00287	<0.0287	<0.00287	<0.00861	<0.0287	<4.59	<0.574	<4.59
FARMW-081915-1500	SB07@16-18'	8/19/15	1,913	**16.2**	102	22.5	301	**441.7**	2,780	5,520	**8,300**
FARMW-081915-1540	SB08@16-17'	8/19/15	2,175	**13.4**	105	27.6	351	**497.0**	3,550	6,770	**10,320**
FARMW-082115-1035	SB10@2'	8/21/15	74.3	<0.00309	<0.0309	<0.00309	<0.00928	<0.0309	<4.95	<0.619	<4.95
FARMW-082115-1100	SB11@4'	8/21/15	2,754	1.49	53.0	24.2	278	**356.69**	2,720	4,750	**7,470**
FARMW-082115-1145	SB12@6'	8/21/15	91.2	<0.00270	<0.0270	<0.00270	0.0119	0.0119	5.47	<0.541	5.47
FARMW-082115-1425	SB14@3'	8/21/15	41.5	<0.00285	<0.0285	<0.00285	<0.00855	<0.0285	6.90	<0.570	6.90
FARMW-082115-1624	SB15@17.5'	8/21/15	209	<0.00297	<0.0297	<0.00297	0.0186	0.0186	<4.75	<0.593	<4.75
NMOCD Standard			**NE**	**10**	**NE**	**NE**	**NE**	**50**	**NE**	**NE**	**100**

Notes:
' - feet below ground surface
< indicates result is less than the stated laboratory method detection limit
Bold - indicates values exceeding NMOCD standards
BTEX - benzene, toluene, ethylbenzene, and total xylenes
DRO - diesel range organics
GRO - gasoline range organics
mg/kg - milligrams per kilogram
NE- not established
NM- not measured
NMOCD - New Mexico Oil Conservation Division
ppm - parts per million
TPH - total petroleum hydrocarbons (sum of DRO and GRO)

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
SULLIVAN GAS COM D#1E
XTO ENERGY, INC.

Laboratory Sample Name	Sample ID	Date Sampled	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)
--	BH-2	6/16/2015	**760**	**3,000**	620	**7,400**
--	BH-3	6/16/2015	<5.0	<5.0	<5.0	<10
FARMW-081915-1100	SB03	8/19/2015	**4,430**	**17,100**	**1,100**	**11,300**
FARMW-081915-1230	SB05	8/19/2015	2.60	6.85	1.93	22.5
FARMW-081915-1330	SB06	8/19/2015	**4,400**	**40,000**	**1,950**	**18,100**
NMWQCC Standard			**10**	**750**	**750**	**620**

Notes:
NMWQCC - New Mexico Water Quality Control Commission
µg/l - micrograms per liter

ATTACHMENT A

SOIL BORING LOGS

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB01		Project: Sullivan GC D#1E	
Date: 8/19/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Earth Works - Louis Trujillo	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA / Slot: NA		Diameter: NA / Length: NA	Total Depth: 20' / Depth to Water: ~18.0'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silty Sand** Dark brown 7.5YR 3/4, 85% silt, 15% fine grained sand, loose, very dry, non-plastic, non-cohesive, gray 7.5YR 6/1 to black 2.5/1 staining/ slight odor	
	Very Dry	82.7			2					
					3					
					4					
					5				Brown 7.5YR 5/4, no staining/odor	
	Very Dry	16.7			6					
					7					
					8			SM		
					9				Gray 7.5YR 5/1 staining, slight odor	
	Very Dry	100			10					
					11					
					12					
					13					
	Very Dry	57.3			14					
					15					

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.

Boring/Well #	SB01
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16				*Soil sample unattainable due to insufficient soil recovery	
	Very Dry ▼	77.7			17					
					18			**SM**		
				SB01 @ 18-20' 0900	19				**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	3,974			20					
					21				**TD @ 20'**	
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

Compliance M Engineering M Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB02	Project: Sullivan GC D#1E
Date: 8/19/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Earth Works - Louis Trujillo
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA	Seal: Bentonite
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3"	Depth to Liquid: NA
Screen Type: NA	Slot: NA
Diameter: NA Length: NA	Total Depth: 24'
Depth to Water: ~18.0'	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Very Dry	1.3			1–4			SM	**Silty Sand** Dark brown 7.5YR 3/4, 85% silt, 15% fine grained sand, loose, very dry, non-plastic, non-cohesive, gray 7.5YR 6/1 to black 2.5/1 staining/ slight odor	
	Very Dry	1.5			5–8			CH	**Fat Clay w/ Sand** Strong brown 7.5 4/6, soft, high plasticity, cohesive	
	Very Dry	0.9			9–11			SM	**Silty Sand** Brown 7.5YR 5/3, 80% silt, 20% fine grained sand, loose, very dry, non-plastic, non-cohesive, no staining/slight odor	
	Very Dry	1.2			12–15					

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.

Boring/Well #	SB02
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
				SB02 @ 16-18' 0930	17					
	Very Dry ▼	82.1			18			**SM**		
					19				**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	2,122			20					
					21					
					22				**TD @ 20'**	
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB03		Project: Sullivan GC D#1E	
Date: 8/19/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Earth Works - Louis Trujillo	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 20' / Depth to Water: ~18.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silty Sand** White 7.5YR 8/1, 85% silt, 15% fine grained sand, medium dense, very dry, non-plastic, non-cohesive, no staining/ slight odor	
	Very Dry	31.2			2					
					3					
					4					
					5				Very dark gray 7.5YR 3/1, staining, no odor	
	Very Dry	12.7			6					
					7					
					8			SM		
					9				Brown 7.5YR 5/4, no staining/odor	
	Very Dry	13.7			10					
					11					
					12					
					13					
	Very Dry	11.7			14					
					15					

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Boring/Well #	SB03
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16				*Soil sample unattainable due to insufficient soil recovery	
	Very Dry	14.1			17					
					18			**SM**		
				SB03 @ 18.5-20'	19				**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	3,587		1030	20					
					21				**TD @ 20'**	
					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: SB04			Project: Sullivan GC D#1E
Date: 8/19/2015			Project Number: 012915025
Logged By: Michael A. Wicker			Drilled By: Earth Works - Louis Trujillo
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 24' / Depth to Water: ~18.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				Cuttings observed until impact identified by visual screening	
					2					
					3					
					4					
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

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Boring/Well #	SB04
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	Very Dry	12.7			16					
					17				**Silty Sand** Brown 7.5YR 5/4, 85% silt, 15% fine grained sand, loose, non-plastic, non-cohesive, very dry, no staining/odor	
					18					
					19				**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	2,247			20			**SM**		
					21					
	Wet	2,948			22					
					23					
					24					
					25				**TD @ 24'**	
					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: SB05			Project: Sullivan GC D#1E
Date: 8/19/2015			Project Number: 012915025
Logged By: Michael A. Wicker			Drilled By: Earth Works - Louis Trujillo
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 24' / Depth to Water: ~17.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				Cuttings observed until impact identified by visual screening	
					2					
					3					
					4					
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

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Boring/Well #	SB05
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
	Very Dry	1.7			17				**Clayey Sand** Brown 7.5YR 4/4, 70% silt, 30% clay, soft, very dry, high plasticity, cohesive, no	
					18				50% fine grained sand, 50% clay, low plasticty	
	Wet	17.6			19					
					20			**SC**		
					21					
	Wet	32			22					
					23					
					24					
					25				**TD @ 24'**	
					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: SB06		Project: Sullivan GC D#1E	
Date: 8/19/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Earth Works - Louis Trujillo	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA / Slot: NA		Diameter: NA / Length: NA	Total Depth: 24' / Depth to Water: ~17.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				Cuttings observed until impact identified by visual screening	
					2					
					3					
					4					
					5					
					6					
					7					
					8					
					9					
					10					
					12					
					13					
					14					
					15					

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Boring/Well #	SB06
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
	Very Dry	32.7			17				**Silty Sand** Brown 7.5YR 4/3, 100% silt, loose, very dry, non-plastic, non-cohesive, no staining/odor	
					18				Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	1,955			19					
					20			**SM**		
					21					
	Wet	2,934			22					
					23					
					24					
					25				**TD @ 24'**	
					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: SB07		Project: Sullivan GC D#1E	
Date: 8/19/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Earth Works - Louis Trujillo	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA / Slot: NA		Diameter: NA / Length: NA	Total Depth: 24' / Depth to Water: ~18.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silty Sand** Brown 7.5YR 4/3, 85% silt, 15% fine grained sand, loose, very dry, non-plastic, non-cohesive, no staining/odor	
	Very Dry	77.7			2					
					3					
					4					
					5					
	Very Dry	54.2			6					
					7					
					8			SM		
					9				Brown 7.5YR 4/3, loose, very dry, non-plastic, non-cohesive, no staining/odor	
	Very Dry	104			10					
					11					
					12					
					13				Dark gray 7.5YR 4/1 staining, no odor	
	Very Dry	56.0			14					
					15					

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Boring/Well #	SB07
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
				SB07 @ 16-18' 1500	17				Gray 10YR 5/1 and black 10YR 2/1 staining	
	Very Dry	1,913			18					
					19				Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	2,231			20			**SM**		
					21					
					22					
	Wet	2,589			23					
					24					
					25				**TD @ 24'**	
					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: SB08		Project: Sullivan GC D#1E	
Date: 8/19/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Earth Works - Louis Trujillo	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 24' / Depth to Water: ~18.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silt** Brown 7.5YR 4/3, 85% silt, 15% fine grained snad, loose, very dry, non-plastic, non-cohesive, no staining/odor	
	Very Dry	27.2			2					
					3					
					4					
					5				Very dark brown 7.5YR 2.5/3, no staining/odor	
	Very Dry	8.8			6					
					7					
					8			**ML**		
					9					
	Very Dry	19.7			10					
					11					
					12					
					13					
					14					
	Very Dry	22.8			15				Black 10 YR 2/1 staining, no odor	

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Boring/Well #	SB08
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
				SB08 @ 16-17' 1540	17			**ML**	Gray 10YR 5/1 and black 10YR 2/1 staining, strong odor	
	Very Dry	2,175			18					
					19				**Silty Sand** Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
	Wet	1,937			20					
					21			**SM**		
					22					
	Wet	2,068			23					
					24					
					25				**TD @ 24'**	
					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: SB09		Project: Sullivan GC D#1E	
Date: 8/19/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Earth Works - Louis Trujillo	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Direct-Push	Sampling Method: Continuous
Gravel Pack: NA		Seal: Bentonite	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3" / Depth to Liquid: NA
Screen Type: NA / Slot: NA		Diameter: NA / Length: NA	Total Depth: 24' / Depth to Water: ~18'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
					1				**Silty Sand w/ Gravel** White 7.5YR 8/1, 10% silt, 70% fine-coarse grained sand, 20% gravel, very dry, non-plastic, non-cohesive, no staining/odor	
	Very Dry	6.4			2					
					3					
					4					
					5				**Silty Sand** Light gray 7.5YR 7/1, 70% silt, 20% fine-coarse grained sand, 10% gravel, very dry, non-plastic, non-cohesive	
	Very Dry	11.7			6					
					7					
					8			**SM**		
					9					
	Very Dry	3.2			10					
					11					
					12				Light brown 7.5YR 6/3, 85% silt, 15% fine grained sand, loose, very dry, non-plastic, non-cohesive, no staining/odor	
					13					
	Very Dry	7.6			14					
					15					

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Boring/Well #	SB09
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/19/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
		7.8			16				*Soil sample unattainable due to insufficient soil recovery	
	Very Dry ▼				17					
					18					
	Wet	1,808		SB09 @ 18-20' 1615	19			SM	Gray 10YR 5/1 and black 10YR 2/1 staining, 70% medium grained sand, 20% fine grained sand, 10% fines, wet, non-plastic, cohesive, staining/odor	
					20					
					21					
	Wet	2,102			22					
					23					
					24					
					25				**TD @ 24'**	
					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: SB10	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Michael A. Wicker
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Type: NA Slot: NA	Diameter: NA Length: NA
Total Depth: 2.5'	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					NA
	Dry	24.7			1				**Silty Sand**	
				SB10 @ 2' 1035				**SM**	Black 7.5YR 2.5/1 to light gray 7/1, dry, non-plastic, non-cohesive,staining/odor @ 5" to deph	
	Dry	74.3			2					
					3				**Refusal @ 2.5' due to cobble**	
					4					
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB11	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Devin Hencmann	Drilled By: Devin Hencmann
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Type: NA Slot: NA	Diameter: NA Length: NA
Total Depth: 19.5'	Depth to Water: 17.5'

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					NA
	Dry	60.0	None		1			SM	**Silt** Dark brown 7.5YR 3/4, loose, dry, non-plastic, non-cohesive, no staining/odor	
	Dry	1,121	Black		2					
	Dry	2,553	Gray		3				**Silt** Black 7.5YR 2.5/1 to light gray 7/1, loose, dry, non-plastic, non-cohesive, staining/strong odor	
	Dry	2,754	Gray	SB11 @ 4' 1100	4					
	Dry	2,567	Gray		5					
	Dry	1,934	Black		6					
	Dry	1,922	Black		7					
	Dry	2,497	Gray		8					
	Dry	1,522	Gray		9				**9-10'** Brown 7.5 YR 5/4 to Gray 5/1 staining, strong odor	
	Dry	1,608	Gray		10					
	Dry	1,308			11					
	Dry	1,606	Mixed Gray		12					
	Dry	1,904			13					
	Dry	1,685	Gray Brown		14					
	Dry	1,284			15					

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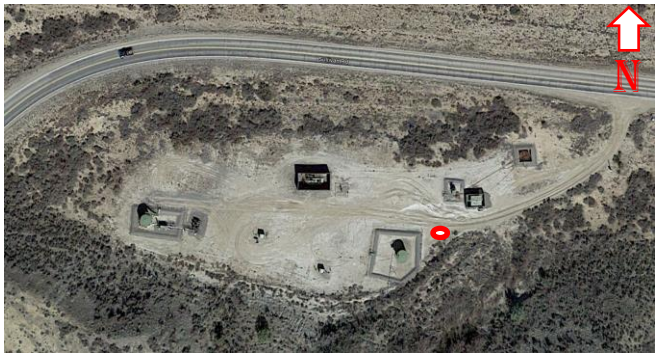
Boring/Well #	SB11
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/21/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	Dry	1,634	Black		16					
	Dry	1,258	Black		17					
		1,295	Black		18			SM	50% Sand. 50% Silt	
	Wet		Gray							
			Gray Black		19					
					20					
					21				**TD @ 19.5**	
					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: SB12	Project: Sullivan GC D#1E
Date: 8/21/2015	Project Number: 012915025
Logged By: Michael A. Wicker	Drilled By: Michael A. Wicker
Elevation: 5,470'	Detector: MiniRae 2000
Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 3.25"	Depth to Liquid: NA
Screen Type: NA Slot: NA	Diameter: NA Length: NA
Total Depth: 2.5'	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					NA
	Dry	0.0			1				**Silty Sand** Light brown 7.5YR 6/4, dry, non-plastic, non-cohesive,staining/odor @ 1.5' to deph	
	Dry	12.3			2					
	Dry	5.4			3				Dark Gray 7.5YR 4/1 staining	
	Dry	67.8			4			**SM**		
	Dry	72.3			5					
	Dry	91.2		SB12 @ 6' 1145	6					
	Dry	35.4			7					
					8				**Refusal @ 7.5' due to cobble**	
					9					
					10					
					11					
					12					
					13					
					14					
					15					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB13		Project: Sullivan GC D#1E	
Date: 8/21/2015		Project Number: 012915025	
Logged By: Devin Hencmann		Drilled By: Devin Hencmann	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 12.5' / 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					NA
	Dry	0.0			1				**Silty Sand** Light brown 7.5YR 6/4, 30% silt, 40% fine grained sand, 30% medium grained sand, minor cobbles, dry, non-plastic, non-cohesive	
	Dry	0.0			2					
	Dry	0.0			3					
	Dry	0.0			4					
	Dry	0.0			5					
	Dry	0.0			6					
	Dry	0.0			7			**SM**		
	Dry	0.0			8					
	Dry	0.0			9					
	Dry	0.0			10					
	Dry	0.0			11					
	Dry	0.0			12					
					13				**Refusal @ 12.5' due to cobble**	
					14					
					15					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB14		Project: Sullivan GC D#1E	
Date: 8/21/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Michael A. Wicker	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 3' / 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					NA
	Dry	11.1			1				**Silty Sand** White 7.5YR 8/1, dry, non-plastic, non-cohesive, Gray 7.5YR 5/1 staining/odor @ 10" to deph	
	Dry	37.4			2			**SM**		
	Dry	41.50		SB14 @ 3' 1425	3					
					4				**Refusal @ 3' due to cobble**	
					5					
					6					
					7					
					8					
					9					
					10					
					11					
					12					
					13					
					14					
					15					

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB15		Project: Sullivan GC D#1E	
Date: 8/21/2015		Project Number: 012915025	
Logged By: Michael A. Wicker		Drilled By: Michael A. Wicker	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 2.5' / 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					NA
	Dry	0.0			1				**Silty Sand** Gray 6/1, dry, loose, non-plastic, cohesive, no staining/odor	
	Dry	3.1			2					
	Dry	2.3			3					
	Dry	1.1			4					
	Dry	3.6			5					
	Dry	4.3			6					
	Dry	5.1			7					
	Dry	5.0			8			**SM**	Reddish brown 7.5YR 5/3	
	Dry	3.1			9					
	Dry	2.6			10					
	Dry	1.2			11					
	Dry	1.9			12					
	Dry	0.7			13					
	Dry	0.3			14					
	Dry	0.8			15					

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LT Environmental, Inc.

Boring/Well #	SB15
Project:	Sullivan GC D#1E
Project #	012915025
Date	8/21/2015

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	Dry	1.6			16					
				SB15 @ 17.5' 1624	17					
	▽	209			18					
					19				**TD @ 17.5'**	
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: SB16		Project: Sullivan GC D#1E	
Date: 8/21/2015		Project Number: 012915025	
Logged By: Devin Hecmann		Drilled By: Devin Hencmann	
Elevation: 5,470'	Detector: MiniRae 2000	Drilling Method: Hand-Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3.25" / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 9' / 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					NA
	Dry	0.0			1				**Silty Sand** Light brown 6/4, dry, loose, non-plastic, non-cohesive, no staining/odor	
	Dry	0.0			2					
	Dry	0.0			3				**Silty Sand** Light brown 6/4, dry, soft,medium plasticity, cohesive, no staining/odor	
	Dry	0.0			4					
	Dry	0.0			5			**SM**	**Silty Sand** Light brown 6/4, dry, loose, non-plastic, non-cohesive, no staining/odor	
	Dry	0.0			6					
	Dry	0.0			7					
	Dry	0.0			8					
	Dry	0.0			9					
					10				**TD @ 9'**	
					11					
					12					
					13					
					14					
					15					

ATTACHMENT B

SOIL ANALYTICAL REPORTS

12065 Lebanon Rd.
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Est. 1970

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

Report Summary

Sunday June 21, 2015

Report Number: L770289
Samples Received: 06/10/15
Client Project:

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Daphne R Richards

Daphne Richards , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-01

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-1020

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 10:20

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	91.9		%	2540 G-2011	06/12/15	1
Benzene	10.	1.1	mg/kg	8021	06/15/15	2000
Toluene	67.	11.	mg/kg	8021	06/15/15	2000
Ethylbenzene	14.	1.1	mg/kg	8021	06/15/15	2000
Total Xylene	210	3.3	mg/kg	8021	06/15/15	2000
TPH (GC/FID) Low Fraction	3500	220	mg/kg	8015	06/15/15	2000
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.5		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PID)	104.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fraction	6300	440	mg/kg	3546/DRO	06/13/15	100
Surrogate recovery(%)						
o-Terphenyl	88.2		% Rec.	3546/DRO	06/13/15	100

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-02

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-1038

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 10:38

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	90.8		%	2540 G-2011	06/12/15	1
Benzene	8.0	2.8	mg/kg	8021	06/15/15	5000
Toluene	58.	28.	mg/kg	8021	06/15/15	5000
Ethylbenzene	14.	2.8	mg/kg	8021	06/15/15	5000
Total Xylene	200	8.2	mg/kg	8021	06/15/15	5000
TPH (GC/FID) Low Fraction	3500	550	mg/kg	8015	06/15/15	5000
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.4		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PID)	105.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fraction	5400	440	mg/kg	3546/DRO	06/13/15	100
Surrogate recovery(%)						
o-Terphenyl	79.5		% Rec.	3546/DRO	06/13/15	100

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-03

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-1105

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 11:05

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	91.2		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0027	mg/kg	8021	06/15/15	5
Toluene	BDL	0.027	mg/kg	8021	06/15/15	5
Ethylbenzene	BDL	0.0027	mg/kg	8021	06/15/15	5
Total Xylene	0.0087	0.0082	mg/kg	8021	06/15/15	5
TPH (GC/FID) Low Fraction	BDL	0.55	mg/kg	8015	06/15/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	96.9		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fraction	BDL	4.4	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	60.2		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-04

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-1210

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 12:10

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	86.7		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0029	mg/kg	8021	06/15/15	5
Toluene	BDL	0.029	mg/kg	8021	06/15/15	5
Ethylbenzene	BDL	0.0029	mg/kg	8021	06/15/15	5
Total Xylene	0.014	0.0086	mg/kg	8021	06/15/15	5
TPH (GC/FID) Low Fraction	BDL	0.58	mg/kg	8015	06/15/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	95.7		% Rec.	8015	06/15/15	1
a,a,a-Trifluorotoluene(PID)	103.		% Rec.	8021	06/15/15	1
TPH (GC/FID) High Fraction	14.	4.6	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	71.3		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
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June 21,2015

ESC Sample # : L770289-05

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-130

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 13:30

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	84.1		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0030	mg/kg	8021	06/16/15	5
Toluene	BDL	0.030	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0030	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0089	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.59	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.9		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	8.6	4.8	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	63.2		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-06

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-215

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 14:15

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	89.9		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0028	mg/kg	8021	06/16/15	5
Toluene	BDL	0.028	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0028	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0083	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.56	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.6		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	BDL	4.4	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	78.5		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-07

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-300

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 15:00

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	91.7		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Toluene	BDL	0.027	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0082	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.54	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.7		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	BDL	4.4	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	79.7		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-08

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-435

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 16:35

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	93.7		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Toluene	BDL	0.027	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0080	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.53	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.7		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	7.8	4.3	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	94.8		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-09

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-535

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 17:35

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	91.6		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Toluene	BDL	0.027	mg/kg	8021	06/16/15	5
Ethylbenzene	BDL	0.0027	mg/kg	8021	06/16/15	5
Total Xylene	BDL	0.0082	mg/kg	8021	06/16/15	5
TPH (GC/FID) Low Fraction	BDL	0.54	mg/kg	8015	06/16/15	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.7		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	6.6	4.4	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	97.3		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-10

Date Received : June 10, 2015
Description :

Site ID : SULLIVAN G.C.D #1E

Sample ID : FARRF-060815-930

Project # :

Collected By : Rex Farnsworth
Collection Date : 06/08/15 09:30

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	88.4		%	2540 G-2011	06/12/15	1
Benzene	BDL	0.28	mg/kg	8021	06/16/15	500
Toluene	3.0	2.8	mg/kg	8021	06/16/15	500
Ethylbenzene	11.	0.28	mg/kg	8021	06/16/15	500
Total Xylene	200	0.85	mg/kg	8021	06/16/15	500
TPH (GC/FID) Low Fraction	3600	56.	mg/kg	8015	06/16/15	500
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	90.7		% Rec.	8015	06/16/15	1
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021	06/16/15	1
TPH (GC/FID) High Fraction	BDL	4.5	mg/kg	3546/DRO	06/13/15	1
Surrogate recovery(%)						
o-Terphenyl	75.1		% Rec.	3546/DRO	06/13/15	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

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REPORT OF ANALYSIS

James McDaniel
XTO Energy - San Juan Division
382 County Road 3100
Aztec, NM 87410

June 21,2015

ESC Sample # : L770289-11

Site ID : SULLIVAN G.C.D #1E

Project # :

Date Received : June 10, 2015
Description :

Sample ID : FARRF-060815-947

Collected By : Rex Farnsworth
Collection Date : 06/09/15 09:47

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	86.7		%	2540 G-2011	06/12/15	1
Benzene	53.	2.9	mg/kg	8021	06/19/15	5000
Toluene	420	29.	mg/kg	8021	06/19/15	5000
Ethylbenzene	68.	2.9	mg/kg	8021	06/19/15	5000
Total Xylene	860	8.6	mg/kg	8021	06/19/15	5000
TPH (GC/FID) Low Fraction	13000	580	mg/kg	8015	06/19/15	5000
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	92.2		% Rec.	8015	06/19/15	1
a,a,a-Trifluorotoluene(PID)	92.4		% Rec.	8021	06/19/15	1
TPH (GC/FID) High Fraction	3300	92.	mg/kg	3546/DRO	06/11/15	20
Surrogate recovery(%)						
o-Terphenyl	78.4		% Rec.	3546/DRO	06/11/15	20

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/15 19:40 Printed: 06/21/15 19:40

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L770289-01	WG794936	SAMP	o-Terphenyl	R3043222	J7
L770289-02	WG794936	SAMP	o-Terphenyl	R3043222	J7
L770289-11	WG794934	SAMP	o-Terphenyl	R3042967	J7

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

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Quality Assurance Report
Level II

L770289

June 21, 2015

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Total Solids	< .1	%			WG794915	06/12/15 07:02
Total Solids	< .1	%			WG794917	06/12/15 07:15
TPH (GC/FID) High Fraction	< 4	mg/kg			WG794934	06/11/15 18:18
o-Terphenyl		% Rec.	100.0	50-150	WG794934	06/11/15 18:18
TPH (GC/FID) High Fraction	< 4	mg/kg			WG794936	06/12/15 14:57
o-Terphenyl		% Rec.	100.0	50-150	WG794936	06/12/15 14:57
Benzene	< .0005	mg/kg			WG795391	06/14/15 12:56
Ethylbenzene	< .0005	mg/kg			WG795391	06/14/15 12:56
Toluene	< .005	mg/kg			WG795391	06/14/15 12:56
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG795391	06/14/15 12:56
Total Xylene	< .0015	mg/kg			WG795391	06/14/15 12:56
a,a,a-Trifluorotoluene(FID)		% Rec.	96.30	59-128	WG795391	06/14/15 12:56
a,a,a-Trifluorotoluene(PID)		% Rec.	104.0	54-144	WG795391	06/14/15 12:56
Benzene	< .0005	mg/kg			WG795956	06/16/15 11:49
Ethylbenzene	< .0005	mg/kg			WG795956	06/16/15 11:49
Toluene	< .005	mg/kg			WG795956	06/16/15 11:49
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG795956	06/16/15 11:49
Total Xylene	< .0015	mg/kg			WG795956	06/16/15 11:49
a,a,a-Trifluorotoluene(FID)		% Rec.	91.40	59-128	WG795956	06/16/15 11:49
a,a,a-Trifluorotoluene(PID)		% Rec.	102.0	54-144	WG795956	06/16/15 11:49
Benzene	< .0005	mg/kg			WG796950	06/19/15 17:31
Ethylbenzene	< .0005	mg/kg			WG796950	06/19/15 17:31
Toluene	< .005	mg/kg			WG796950	06/19/15 17:31
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG796950	06/19/15 17:31
Total Xylene	< .0015	mg/kg			WG796950	06/19/15 17:31
a,a,a-Trifluorotoluene(FID)		% Rec.	98.80	59-128	WG796950	06/19/15 17:31
a,a,a-Trifluorotoluene(PID)		% Rec.	92.30	54-144	WG796950	06/19/15 17:31

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Total Solids	%	82.0	82.1	0.0334	5	L770280-02	WG794915
Total Solids	%	78.5	78.3	0.254	5	L770294-01	WG794917

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Total Solids	%	50	50.0	100.	85-115	WG794915
Total Solids	%	50	50.0	100.	85-115	WG794917
TPH (GC/FID) High Fraction	mg/kg	60	52.1	86.8	50-150	WG794934
o-Terphenyl				99.20	50-150	WG794934

* Performance of this Analyte is outside of established criteria.
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Level II

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June 21, 2015

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
TPH (GC/FID) High Fraction	mg/kg	60	50.9	84.8	50-150	WG794936
o-Terphenyl				99.30	50-150	WG794936
Benzene	mg/kg	.05	0.0452	90.5	70-130	WG795391
Ethylbenzene	mg/kg	.05	0.0460	92.0	70-130	WG795391
Toluene	mg/kg	.05	0.0448	89.6	70-130	WG795391
Total Xylene	mg/kg	.15	0.139	92.4	70-130	WG795391
a,a,a-Trifluorotoluene(FID)				95.70	59-128	WG795391
a,a,a-Trifluorotoluene(PID)				102.0	54-144	WG795391
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.97	109.	63.5-137	WG795391
a,a,a-Trifluorotoluene(FID)				105.0	59-128	WG795391
a,a,a-Trifluorotoluene(PID)				110.0	54-144	WG795391
Benzene	mg/kg	.05	0.0407	81.4	70-130	WG795956
Ethylbenzene	mg/kg	.05	0.0456	91.3	70-130	WG795956
Toluene	mg/kg	.05	0.0435	87.1	70-130	WG795956
Total Xylene	mg/kg	.15	0.135	90.3	70-130	WG795956
a,a,a-Trifluorotoluene(FID)				90.90	59-128	WG795956
a,a,a-Trifluorotoluene(PID)				101.0	54-144	WG795956
TPH (GC/FID) Low Fraction	mg/kg	5.5	4.89	88.9	63.5-137	WG795956
a,a,a-Trifluorotoluene(FID)				98.30	59-128	WG795956
a,a,a-Trifluorotoluene(PID)				112.0	54-144	WG795956
Benzene	mg/kg	.05	0.0425	84.9	70-130	WG796950
Ethylbenzene	mg/kg	.05	0.0432	86.3	70-130	WG796950
Toluene	mg/kg	.05	0.0431	86.2	70-130	WG796950
Total Xylene	mg/kg	.15	0.129	86.2	70-130	WG796950
a,a,a-Trifluorotoluene(PID)				102.0	54-144	WG796950
TPH (GC/FID) Low Fraction	mg/kg	5.5	3.99	72.6	63.5-137	WG796950
a,a,a-Trifluorotoluene(FID)				99.80	59-128	WG796950

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
TPH (GC/FID) High Fraction	mg/kg	52.3	52.1	87.0	50-150	0.370	20	WG794934
o-Terphenyl				98.00	50-150			WG794934
TPH (GC/FID) High Fraction	mg/kg	50.0	50.9	83.0	50-150	1.71	20	WG794936
o-Terphenyl				93.80	50-150			WG794936
Benzene	mg/kg	0.0445	0.0452	89.0	70-130	1.74	20	WG795391
Ethylbenzene	mg/kg	0.0452	0.0460	90.0	70-130	1.64	20	WG795391
Toluene	mg/kg	0.0438	0.0448	88.0	70-130	2.28	20	WG795391
Total Xylene	mg/kg	0.136	0.139	91.0	70-130	1.93	20	WG795391
a,a,a-Trifluorotoluene(FID)				96.80	59-128			WG795391
a,a,a-Trifluorotoluene(PID)				103.0	54-144			WG795391
TPH (GC/FID) Low Fraction	mg/kg	6.39	5.97	116.	63.5-137	6.84	20	WG795391
a,a,a-Trifluorotoluene(FID)				104.0	59-128			WG795391
a,a,a-Trifluorotoluene(PID)				110.0	54-144			WG795391
Benzene	mg/kg	0.0403	0.0407	80.0	70-130	1.05	20	WG795956
Ethylbenzene	mg/kg	0.0454	0.0456	91.0	70-130	0.490	20	WG795956
Toluene	mg/kg	0.0427	0.0435	85.0	70-130	1.82	20	WG795956

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Quality Assurance Report
Level II

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June 21, 2015

Analyte	Units	Laboratory Control Sample Result	Ref	%Rec	Limit	RPD	Limit	Batch
Total Xylene	mg/kg	0.135	0.135	90.0	70-130	0.260	20	WG795956
a,a,a-Trifluorotoluene(FID)				91.00	59-128			WG795956
a,a,a-Trifluorotoluene(PID)				102.0	54-144			WG795956
TPH (GC/FID) Low Fraction	mg/kg	4.86	4.89	88.0	63.5-137	0.670	20	WG795956
a,a,a-Trifluorotoluene(FID)				98.10	59-128			WG795956
a,a,a-Trifluorotoluene(PID)				112.0	54-144			WG795956
Benzene	mg/kg	0.0456	0.0425	91.0	70-130	7.03	20	WG796950
Ethylbenzene	mg/kg	0.0465	0.0432	93.0	70-130	7.52	20	WG796950
Toluene	mg/kg	0.0461	0.0431	92.0	70-130	6.63	20	WG796950
Total Xylene	mg/kg	0.138	0.129	92.0	70-130	6.60	20	WG796950
a,a,a-Trifluorotoluene(PID)				101.0	54-144			WG796950
TPH (GC/FID) Low Fraction	mg/kg	4.15	3.99	76.0	63.5-137	3.95	20	WG796950
a,a,a-Trifluorotoluene(FID)				101.0	59-128			WG796950

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Benzene	mg/kg	0.171	0.0	.05	68.0	49.7-127	L769595-01	WG795391
Ethylbenzene	mg/kg	0.182	0.0	.05	73.0	40.8-141	L769595-01	WG795391
Toluene	mg/kg	0.172	0.0	.05	69.0	49.8-132	L769595-01	WG795391
Total Xylene	mg/kg	0.545	0.00138	.15	72.0	41.2-140	L769595-01	WG795391
a,a,a-Trifluorotoluene(FID)					95.30	59-128		WG795391
a,a,a-Trifluorotoluene(PID)					102.0	54-144		WG795391
TPH (GC/FID) Low Fraction	mg/kg	19.9	0.0557	5.5	72.0	28.5-138	L769595-01	WG795391
a,a,a-Trifluorotoluene(FID)					101.0	59-128		WG795391
a,a,a-Trifluorotoluene(PID)					106.0	54-144		WG795391
Benzene	mg/kg	0.175	0.000413	.05	70.0	49.7-127	L770289-05	WG795956
Ethylbenzene	mg/kg	0.179	0.000390	.05	71.0	40.8-141	L770289-05	WG795956
Toluene	mg/kg	0.181	0.00429	.05	71.0	49.8-132	L770289-05	WG795956
Total Xylene	mg/kg	0.531	0.00348	.15	70.0	41.2-140	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)					90.60	59-128		WG795956
a,a,a-Trifluorotoluene(PID)					101.0	54-144		WG795956
TPH (GC/FID) Low Fraction	mg/kg	15.0	0.0	5.5	54.0	28.5-138	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)					95.10	59-128		WG795956
a,a,a-Trifluorotoluene(PID)					107.0	54-144		WG795956
Benzene	mg/kg	0.195	0.0	.05	78.0	49.7-127	L771109-01	WG796950
Ethylbenzene	mg/kg	0.188	0.0	.05	75.0	40.8-141	L771109-01	WG796950
Toluene	mg/kg	0.190	0.0	.05	76.0	49.8-132	L771109-01	WG796950
Total Xylene	mg/kg	0.578	0.000561	.15	77.0	41.2-140	L771109-01	WG796950
a,a,a-Trifluorotoluene(PID)					96.20	54-144		WG796950
TPH (GC/FID) Low Fraction	mg/kg	14.0	0.0	5.5	51.0	28.5-138	L771109-01	WG796950
a,a,a-Trifluorotoluene(FID)					97.50	59-128		WG796950

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Benzene	mg/kg	0.170	0.171	68.0	49.7-127	0.510	23.5	L769595-01	WG795391
Ethylbenzene	mg/kg	0.182	0.182	72.9	40.8-141	0.260	23.8	L769595-01	WG795391
Toluene	mg/kg	0.171	0.172	68.4	49.8-132	0.840	23.5	L769595-01	WG795391
Total Xylene	mg/kg	0.541	0.545	72.0	41.2-140	0.760	23.7	L769595-01	WG795391
a,a,a-Trifluorotoluene(FID)				95.50	59-128				WG795391
a,a,a-Trifluorotoluene(PID)				102.0	54-144				WG795391
TPH (GC/FID) Low Fraction	mg/kg	20.5	19.9	74.2	28.5-138	2.56	23.6	L769595-01	WG795391

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L770289

June 21, 2015

Analyte	Units	Matrix Spike MSD	Ref	Duplicate %Rec	Limit	RPD	Limit	Ref Samp	Batch
a,a,a-Trifluorotoluene(FID)				101.0	59-128				
a,a,a-Trifluorotoluene(PID)				107.0	54-144				
Benzene	mg/kg	0.181	0.175	72.3	49.7-127	3.32	23.5	L770289-05	WG795956
Ethylbenzene	mg/kg	0.182	0.179	72.5	40.8-141	1.69	23.8	L770289-05	WG795956
Toluene	mg/kg	0.185	0.181	72.2	49.8-132	2.21	23.5	L770289-05	WG795956
Total Xylene	mg/kg	0.536	0.531	71.0	41.2-140	0.820	23.7	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)				90.80	59-128				WG795956
a,a,a-Trifluorotoluene(PID)				101.0	54-144				WG795956
TPH (GC/FID) Low Fraction	mg/kg	17.0	15.0	61.8	28.5-138	12.6	23.6	L770289-05	WG795956
a,a,a-Trifluorotoluene(FID)				95.80	59-128				WG795956
a,a,a-Trifluorotoluene(PID)				108.0	54-144				WG795956
Benzene	mg/kg	0.187	0.195	74.9	49.7-127	3.84	23.5	L771109-01	WG796950
Ethylbenzene	mg/kg	0.177	0.188	71.0	40.8-141	5.71	23.8	L771109-01	WG796950
Toluene	mg/kg	0.180	0.190	72.1	49.8-132	5.22	23.5	L771109-01	WG796950
Total Xylene	mg/kg	0.541	0.578	72.1	41.2-140	6.56	23.7	L771109-01	WG796950
a,a,a-Trifluorotoluene(PID)				98.90	54-144				WG796950
TPH (GC/FID) Low Fraction	mg/kg	14.7	14.0	53.4	28.5-138	4.53	23.6	L771109-01	WG796950
a,a,a-Trifluorotoluene(FID)				97.20	59-128				WG796950

Batch number /Run number / Sample number cross reference

WG794915: R3042943: L770289-01 02 03 04 05 06 07 08
WG794917: R3042949: L770289-09 10 11
WG794934: R3042967: L770289-11
WG794936: R3043222: L770289-01 02 03 04 05 06 07 08 09 10
WG795391: R3043799: L770289-01 02 03 04
WG795956: R3044022: L770289-05 06 07 08 09 10
WG796950: R3044762: L770289-11

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
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Quality Assurance Report
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L770289

June 21, 2015

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

ANALYTICAL REPORT

August 26, 2015

XTO Energy - San Juan Division

Sample Delivery Group:	L784324
Samples Received:	08/21/2015
Project Number:	
Description:	LT Environmental

Report To: James McDaniel
382 County Road 3100
Aztec, NM 87410

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

FARMW-081915-1100 L784324-04 GW

Collected by: MIchael A Wicker
Collected date/time: 08/19/15 11:00
Received date/time: 08/21/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC) by Method 8021B	WG810927	20	08/23/15 09:01	08/23/15 09:01	MCB
Volatile Organic Compounds (GC) by Method 8021B	WG810932	250	08/24/15 14:36	08/24/15 14:36	MCB

FARMW-081915-1230 L784324-05 GW

Collected by: MIchael A Wicker
Collected date/time: 08/19/15 12:30
Received date/time: 08/21/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC) by Method 8021B	WG810927	1	08/23/15 09:24	08/23/15 09:24	MCB

FARMW-081915-1330 L784324-06 GW

Collected by: MIchael A Wicker
Collected date/time: 08/19/15 13:30
Received date/time: 08/21/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Volatile Organic Compounds (GC) by Method 8021B	WG810927	20	08/23/15 09:45	08/23/15 09:45	MCB
Volatile Organic Compounds (GC) by Method 8021B	WG810932	250	08/24/15 14:58	08/24/15 14:58	MCB
Volatile Organic Compounds (GC) by Method 8021B	WG811603	2000	08/26/15 13:47	08/26/15 13:47	MCB

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

Daphne R Richards

Daphne Richards
Technical Service Representative

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	4.43		0.0100	20	08/23/2015 09:01	WG810927
Toluene	17.1		1.25	250	08/24/2015 14:36	WG810932
Ethylbenzene	1.10		0.0100	20	08/23/2015 09:01	WG810927
Total Xylene	11.3		0.0300	20	08/23/2015 09:01	WG810927
(S) a,a,a-Trifluorotoluene(PID)	*103*		*55.0-122*		*08/23/2015 09:01*	WG810927

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.00260		0.000500	1	08/23/2015 09:24	WG810927
Toluene	0.00685		0.00500	1	08/23/2015 09:24	WG810927
Ethylbenzene	0.00193		0.000500	1	08/23/2015 09:24	WG810927
Total Xylene	0.0225		0.00150	1	08/23/2015 09:24	WG810927
(S) a,a,a-Trifluorotoluene(PID)	*104*		*55.0-122*		*08/23/2015 09:24*	WG810927

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	4.40		0.0100	20	08/23/2015 09:45	WG810927
Toluene	40.0		1.25	250	08/24/2015 14:58	WG810932
Ethylbenzene	1.95		0.0100	20	08/23/2015 09:45	WG810927
Total Xylene	18.1		3.00	2000	08/26/2015 13:47	WG811603
(S) a,a,a-Trifluorotoluene(PID)	*100*		*55.0-122*		*08/23/2015 09:45*	WG810927

Method Blank (MB)

(MB) 08/23/15 06:27

Analyte	MB Result	MB Qualifier	MB RDL
	mg/l		mg/l
Benzene	ND		0.000500
Toluene	ND		0.00500
Ethylbenzene	ND		0.000500
Total Xylene	ND		0.00150
(S) a,a,a-Trifluorotoluene(PID)	*105*		*55.0-122*

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

(LCS) 08/23/15 05:21 • (LCSD) 08/23/15 05:43

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Benzene	0.0500	0.0384	0.0434	76.9	86.8	70.0-130			12.1	20
Toluene	0.0500	0.0405	0.0442	81.0	88.3	70.0-130			8.62	20
Ethylbenzene	0.0500	0.0409	0.0453	81.9	90.5	70.0-130			9.98	20
Total Xylene	0.150	0.126	0.138	84.0	92.1	70.0-130			9.19	20
(S) a,a,a-Trifluorotoluene(PID)				*104*	*104*	*55.0-122*				

L783444-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 08/23/15 07:55 • (MS) 08/23/15 06:49 • (MSD) 08/23/15 07:11

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Benzene	0.0500	0.00727	0.0507	0.0497	86.8	84.9	1	57.2-131			1.89	20
Toluene	0.0500	ND	0.0533	0.0527	107	105	1	63.7-134			1.28	20
Ethylbenzene	0.0500	0.00407	0.0489	0.0482	89.7	88.3	1	67.5-135			1.42	20
Total Xylene	0.150	0.00388	0.143	0.141	92.6	91.5	1	65.9-138			1.23	20
(S) a,a,a-Trifluorotoluene(PID)					*104*	*104*		*55.0-122*				

Method Blank (MB)

(MB) 08/24/15 11:39

Analyte	MB Result	MB Qualifier	MB RDL
	mg/l		mg/l
Toluene	ND		0.00500

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

(LCS) 08/24/15 09:02 • (LCSD) 08/24/15 09:24

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Toluene	0.0500	0.0448	0.0461	89.6	92.1	70.0-130			2.83	20

L784743-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 08/24/15 14:14 • (MS) 08/24/15 12:23 • (MSD) 08/24/15 12:45

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Toluene	0.0500	0.000365	0.0471	0.0486	93.4	96.5	1	63.7-134			3.17	20

Method Blank (MB)

(MB) 08/26/15 12:56

Analyte	MB Result	MB Qualifier	MB RDL
	mg/l		mg/l
Total Xylene	ND		0.00150

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

(LCS) 08/26/15 10:50 • (LCSD) 08/26/15 11:15

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Total Xylene	0.150	0.140	0.132	93.1	87.9	70.0-130			5.80	20

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,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.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

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.**

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 [1 4]	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		

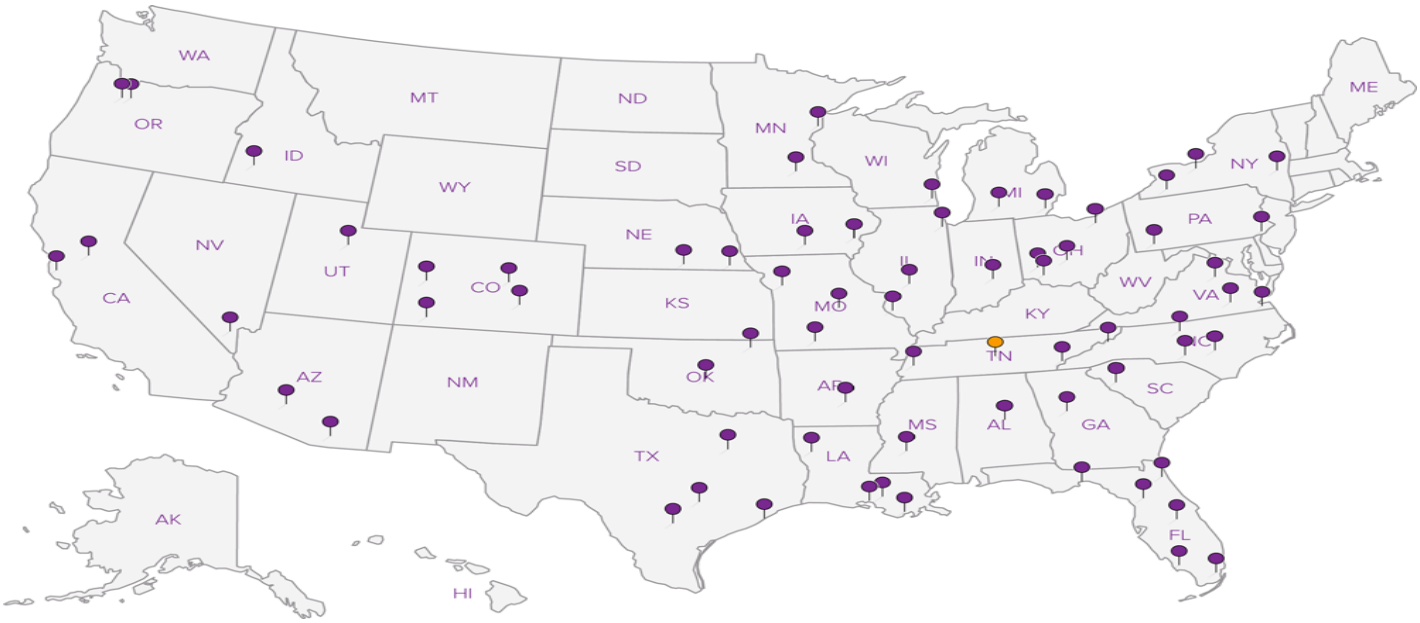
[1.] Drinking Water [2.] Underground Storage Tanks [3.] Aquatic Toxicity [4.] Chemical/Microbiological [5.] Mold [n/a] Accreditation not applicable

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
Canada	1461.01	DOD	1461.01
EPA–Crypto	TN00003	USDA	S-67674

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.**



XTO ENERGY
Western Division

Quote Number	**Page** 1 of 1	
XTO Contact James McDaniels	**XTO Contact Phone #** (505) 333-3701	
Email Results to: AAger@LTEnv.com / DHencmann@LTEnv.com		
Well Site/Location Sullivan GC D#1E	**API Number**	**Test Reason** Release
Collected By Michael A Wicker	**Samples on Ice** (Y) / N	**Turnaround**
Company LT Environmental	**QA/QC Requested** Standard	___ Standard ___ Next Day ___ Two Day ✓ Three Day ___ Std. 5 Bus. Days (by contract)
Signature	**Gray Areas for Lab Use Only!**	**Date Needed** _____

Analysis

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX (8021)	TPH-GRO/DRO						**Lab Information** Sample Number
FARMW-081915-0930	SB02@16-18'	S	8-19-15	0930	Cool	1	X	X						L784324-01
FARMW-081915-1500	SB07@16-18'	S	8-19-15	1500	Cool	2	X	X						02
FARMW-081915-1540	SB08@16-17'	S	8-19-15	1540	Cool	2	X	X						03
FARMW-081915-1100	SB03	GW	8-19-15	1100	Cool	3	X							04
FARMW-081915-1230	SB05	GW	8-19-15	1230	Cool	3	X							05
FARMW-081915-1330	SB06	GW	8-19-15	1330	Cool	3	X							06

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV
C157

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)	**Date:** 8-20-15	**Time:** 1330	**Received By: (Signature)**	**Number of Bottles**	**Sample Condition**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received By: (Signature)**	**Temperature:** 21°	**Other Information**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received for Lab by: (Signature)**	**Date:** 8/21/15 **Time:** 0900	

Comments TDL

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

0174

ESC Lab Sciences

Login Confirmation Report

August 25, 2015 - 10:04

YOUR LAB OF CHOICE

Account: XTORNM - XTO Energy - San Juan Division

Login #	**L784877**	Receive Date: 08/25/2015	TSR: Daphne Richards
Template #		Entered: 08/25/2015	By: Matt Shacklock
Report to:	James McDaniel	Lab Project Number: XTORNM-LTENV	**Report MDL: N**
	382 County Road 3100	Client Project #	**HDC: N**
	Aztec, NM 87410	Project Description:	PO #
		Collected By: MIchael A Wicker	PO Req: N
Phone:	(505) 333-3100 FAX:	Reg. State: NM	Terms: 60
Email:	otto_naegele@xtoenergy.com;james_mcdaniel@xtoenergy.com;kurt_hoekstra@xtoenergy.com;logan_hixon@xtoenergy.com;melissa_daniels@xtoenergy.com;bherb@ltenv.com;aager@ltenv.com;dhencemann@ltenv.com		Quote #

Proj/Acct Comments: **Domestic Water Well Sampling-see L609759 Lobato for tests**

EDD's on ALL projects

email James, Kurt and Logan all reports

Matrix	Test	Sample ID	Collection Date	Design ID	Method	Unit Price
L784877-01		**FARMW-082115-1035**	**08/21/2015 10:35** Sample Description: Sullivan GC D#1E	**Site:**	**Est. Due Date*: 08/28/2015 - R4**	
SS	BTEXGRO/DRO	BTEXGRO/DRO				$ 68.75
SS	BTEXGRO	BTEX/GRO		DRYWT	8021/8015	$ 0.00
SS	DRO	TPH High Fraction -DRO		DRYWT	3550C / DRO	$ 0.00
SS	EDD	Electronic Data Deliverable				$ 0.00
SS	TS	Total Solids		DEFAULT	2540 G-2011	$ 3.75
Misc	DISPOSAL	Sample Disposal Charge				$ 0.00
Misc	ENERGY	Energy Surcharge				$ 0.00
Misc	HARDCOPY	Hardcopy Report Charge				$ 0.00
Misc	SHIPPING	Inbound Transport Charge				$ 0.00
L784877-02		**FARMW-082115-1100**	**08/21/2015 11:00** Sample Description: Sullivan GC D#1E	**Site:**	**Est. Due Date*: 08/28/2015 - R4**	
SS	BTEXGRO/DRO	BTEXGRO/DRO				$ 68.75
SS	EDD	Electronic Data Deliverable				$ 0.00
SS	TS	Total Solids		DEFAULT	2540 G-2011	$ 3.75
L784877-03		**FARMW-082115-1145**	**08/21/2015 11:45** Sample Description: Sullivan GC D#1E	**Site:**	**Est. Due Date*: 08/28/2015 - R4**	
SS	BTEXGRO/DRO	BTEXGRO/DRO				$ 68.75
SS	EDD	Electronic Data Deliverable				$ 0.00
SS	TS	Total Solids		DEFAULT	2540 G-2011	$ 3.75
L784877-04		**FARMW-082115-1425**	**08/21/2015 14:25** Sample Description: Sullivan GC D#1E	**Site:**	**Est. Due Date*: 08/28/2015 - R4**	
SS	BTEXGRO/DRO	BTEXGRO/DRO				$ 68.75
SS	EDD	Electronic Data Deliverable				$ 0.00
SS	TS	Total Solids		DEFAULT	2540 G-2011	$ 3.75

L784877-05		FARMW-082115-1624	08/21/2015 16:24	Site:		Est. Due Date*: 08/28/2015 - R4
			Sample Description: Sullivan GC D#1E			
SS	BTEXGRO/DRO	BTEXGRO/DRO				$ 68.75
SS	EDD	Electronic Data Deliverable				$ 0.00
SS	TS	Total Solids		DEFAULT	2540 G-2011	$ 3.75

Information Only - Not An Invoice - Do Not Pay! Total: $ 362.50

*** Due Date listed is an estimate based on average workloads. Please communicate required dates to your TSR.**

XTO ENERGY
Western Division

Quote Number	**Page _1_ of _1_**
XTO Contact: Jame McDaniels	**XTO Contact Phone #:** (505) 333-3701
Email Results to: AAger@ltenv.com; DHencmann@ltenv.com	
Well Site/Location Sullivan GC D#1E	**API Number** / **Test Reason** Release
Collected By Michael A Wicker	**Samples on Ice (Yes)** / **Turnaround** ___ 24-Hour ___ Next Day ___ Two Day _X_ Three Day ___ Std.5 Bus. Days(by contract)
Company LT Environmental, Inc.	**QA/QC Requested** Standard / **Date Needed** _____
Signature	**Gray Areas for Lab Use Only!**

Analysis

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	TPH-GRO/DRO	BTEX (8021)	SAR	EC	CHLORIDE		Sample Number
FARMW-082115-1035	SB10@2'	S	8/21/2015	1035	Cool	1	X	X					78487-01
FARMW-082115-1100	SB11@4'	S	8/21/2015	1100	Cool	1	X	X					02
FARMW-082115-1145	SB12@6'	S	8/21/2015	1145	Cool	1	X	X					03
FARMW-082115-1425	SB14@3'	S	8/21/2015	1425	Cool	1	X	X					04
FARMW-082115-1624	SB15@17.5'	S	8/21/2015	1624	Cool	1	X	X					05

Lab Information A137

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

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)	**Date:** 8-24-15	**Time:** 1345	**Received By: (Signature)**	**Number of Bottles** 5	**Sample Condition**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received By: (Signature)**	**Temperature:** 2.4°	**Other Information**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received for Lab by: (Signature)**	**Date:** 8/25/15 / 0900	

Comments 2. TDI

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