LT Environmental, Inc.
3300 North "A" Street
Building 1, Unit 222
Midland, Texas 79705
432.704.5178

November 25, 2019

Mr. Mike Bratcher
New Mexico Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210

A23NR-191125-C-1410

RE: Closure Request
Big Eddy Unit DI4B #274H
Remediation Permit Number 2RP-5595
Eddy County, New Mexico

Dear Mr. Bratcher:

LT Environmental, Inc. (LTE), on behalf of XTO Energy, Inc. (XTO), presents the following report detailing site assessment and soil sampling activities at the Big Eddy Unit DI4B #274H (Site) in Unit O, Section 5, Township 20 South, Range 31 East, in Eddy County, New Mexico (Figure 1). The purpose of the site assessment and soil sampling activities was to confirm the presence or absence of impacts to soil following a release of treated fresh water at the Site. Based on field observations, field screening, and laboratory analytical results from soil sampling activities, XTO is submitting this Closure Report and requesting no further action for Remediation Permit (RP) Number 2RP-5595.

RELEASE BACKGROUND

On July 27, 2019, the blender pulled water at an inconsistent rate during frac operations. The blender tub overflowed, resulting in a release of approximately 5 barrels (bbls) of treated freshwater. A vacuum truck was dispatched to the Site to recover free-standing fluid; approximately 1 bbl of treated freshwater was recovered. XTO reported the release to the New Mexico Oil Conservation Division (NMOCD) on a Release Notification and Corrective Action Form C-141 (Form C-141) on August 9, 2019, and was assigned RP Number 2RP-5595 (Attachment 1).

SITE CHARACTERIZATION

LTE characterized the Site according to Table 1, *Closure Criteria for Soils Impacted by a Release*, of Title 19, Chapter 15, Part 29, Section 12 (19.15.29.12) of the New Mexico Administrative Code (NMAC). Depth to groundwater at the Site is estimated to be greater than 100 feet below ground surface (bgs) based on the nearest water well data. The closest permitted water well with depth to water data is New Mexico Office of the Sate Engineer (NM OSE) Well C 00722, located approximately 1.74 miles northeast of the Site. The water well has a depth to groundwater of approximately 140 feet bgs and a total depth of 220 feet bgs.

The closest continuously flowing water or significant watercourse to the Site is an unnamed dry wash located approximately 3.8 miles northwest of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is greater than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is located in a low potential karst area.

CLOSURE CRITERIA

Based on the results of the Site Characterization, the following NMOCD Table 1 Closure Criteria (Closure Criteria) apply:

- Benzene: 10 milligrams per kilogram (mg/kg);
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg;
- Total petroleum hydrocarbons (TPH)-gasoline range organics (GRO) and TPH-diesel range organics (DRO): 1,000 mg/kg;
- TPH: 2,500 mg/kg; and
- Chloride: 20,000 mg/kg.

SITE ASSESSMENT AND SOIL SAMPLING ACTIVITIES

After frac and flowback operations were completed on October 22, 2019, LTE personnel was at the Site to evaluate the release extent based on information provided on the Form C-141 and visual observations. LTE personnel mapped the release extent and advanced three boreholes with a hand auger to confirm the presence or absence of impacted soil. Boreholes BH01 through BH03 were advanced to a depth of approximately 1.5 feet bgs. Two delineation soil samples were collected from each borehole from depths of approximately 0.5 foot and 1.5 feet bgs. Soil from the boreholes was field screened for volatile aromatic hydrocarbons utilizing a photo-ionization detector (PID) and Hach® chloride QuanTab® test strips, respectively. Field screening results and observations for each pothole were logged on lithologic/soil sampling logs, which are included in Attachment 2. The borehole and delineation soil sample locations are depicted on Figure 2.

The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were shipped at or below 4 degrees Celsius (°C) under strict chain-of-custody (COC) procedures to Xenco Laboratories (Xenco) in Carlsbad, New Mexico, for analysis of BTEX following United States Environmental Protection Agency (USEPA) Method 8021B; TPH-GRO, TPH-DRO, and TPH-oil range organics (ORO) following USEPA Method 8015M/D; and chloride following USEPA Method 300.0.

Based on laboratory analytical results for the delineation soil samples, excavation activities did not appear to be warranted. Photographic documentation was conducted during the Site visit. A photographic log is included in Attachment 3.

ANALYTICAL RESULTS

Laboratory analytical results indicated benzene, BTEX, GRO and DRO, TPH, and chloride concentrations were compliant with the Closure Criteria in delineation soil samples BH01/BH01A through BH03/BH03A collected at depths of approximately 0.5 foot and 1.5 feet bgs. Laboratory analytical results are presented on Figure 2, and summarized in Table 1. The complete laboratory analytical reports are included as Attachment 4.

CONCLUSIONS

Delineation soil samples BH01/BH01A through BH03/BH03A were collected from within the release extent from depths of 0.5 foot and 1.5 feet bgs to assess for the presence or absence of soil impacts as a result of the July 27, 2019, release. Laboratory analytical results for all soil samples indicated benzene, BTEX, GRO and DRO, TPH, and chloride concentrations were compliant with the Closure Criteria. Additionally, field screening of soil indicated volatile aromatic hydrocarbons and chloride concentrations were not elevated and soil staining and petroleum hydrocarbon odors were not identified within the release extent.

Based on initial response efforts, absence of elevated field screening results, and soil sample laboratory analytical results compliant with the Closure Criteria, no impacted soil was identified and no soil excavation was required as a result of the treated freshwater release. XTO requests no further action for RP Number 2RP-5595. An updated Form C-141 is included as Attachment 1.

If you have any questions or comments, please do not hesitate to contact Ashley Ager at (970) 385-1096.

Sincerely,

LT ENVIRONMENTAL, INC.

Tacoma Morrissey
Staff Geologist

Ashley L. Ager, P.G.
Senior Geologist

cc: Kyle Littrell, XTO
United States Bureau of Land Management – New Mexico
Robert Hamlet, NMOCD
Victoria Venegas, NMOCD

Attachments:

Figure 1	Site Location Map
Figure 2	Delineation Soil Sample Locations
Table 1	Soil Analytical Results
Attachment 1	Initial/Final NMOCD Form C-141 (2RP-5595)
Attachment 2	Lithologic / Soil Sampling Logs
Attachment 3	Photographic Log
Attachment 4	Laboratory Analytical Reports

FIGURES

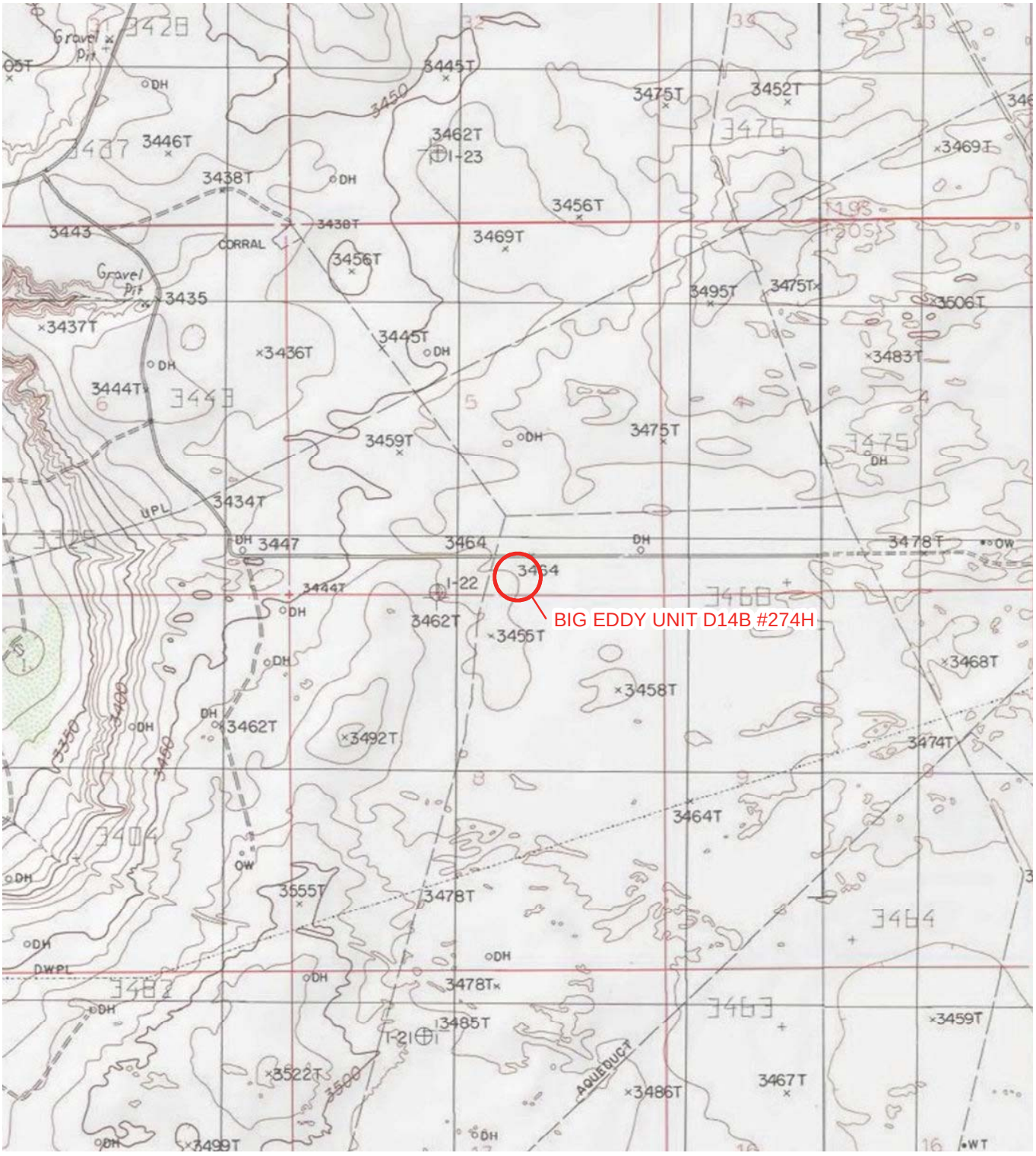


IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

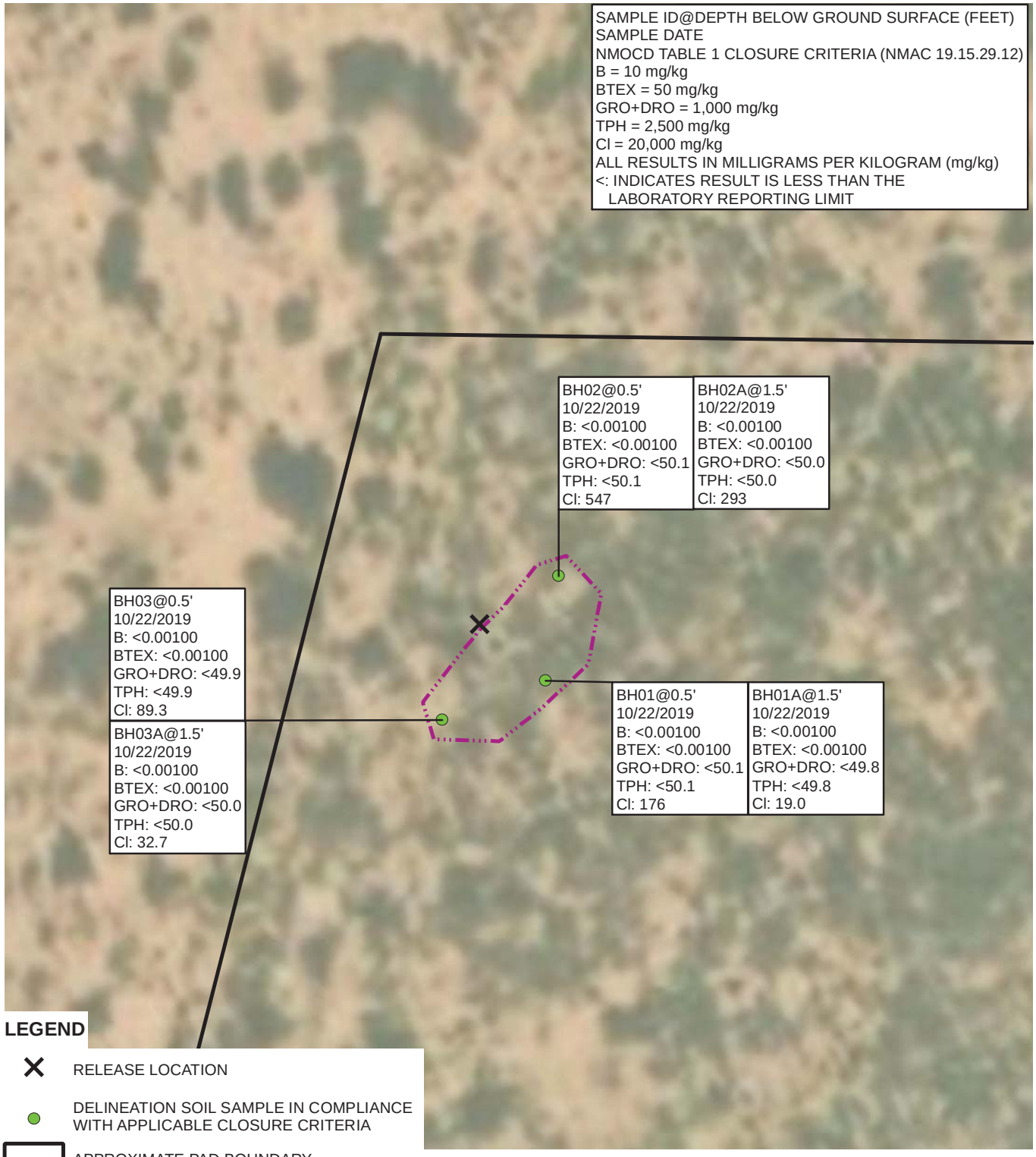
N

NEW MEXICO

NOTE: REMEDIATION PERMIT NUMBER 2RP-5595

FIGURE 1
SITE LOCATION MAP
BIG EDDY UNIT D14B #274H
UNIT O SEC 5 T20S R31E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012919188_BIG EDDY UNIT DI4B #274H\012919188_FIG01_SL_5595.mxd



B: BENZENE
BTEX: TOTAL BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES
GRO: GASOLINE RANGE ORGANICS
DRO: DIESEL RANGE ORGANICS
TPH: TOTAL PETROLEUM HYDROCARBONS
Cl: CHLORIDE
NMAC: NEW MEXICO ADMINISTRATIVE CODE
NMOCD: NEW MEXICO OIL CONSERVATION DIVISION
NOTE: REMEDIATION PERMIT NUMBER 2RP-5595

FIGURE 2
DELINEATION SOIL SAMPLE LOCATIONS
BIG EDDY UNIT D14B #274H
UNIT O SEC 5 T20S R31E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012919188_BIG EDDY UNIT DI4B #274H\012919188_FIG02_DELINEATION_5595.mxd

TABLE

TABLE 1
SOIL ANALYTICAL RESULTS

BIG EDDY UNIT DI4B #274H
REMEDIATION PERMIT NUMBER 2RP-5595
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

Sample Name	Sample Depth (feet bgs)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	ORO (mg/kg)	Total GRO+DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
BH01	0.5	10/22/2019	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<50.1	<50.1	<50.1	<50.1	<50.1	176
BH01A	1.5	10/22/2019	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<49.8	<49.8	<49.8	<49.8	<49.8	19.0
BH02	0.5	10/22/2019	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<50.1	<50.1	<50.1	<50.1	<50.1	547
BH02A	1.5	10/22/2019	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<50.0	<50.0	<50.0	<50.0	<50.0	293
BH03	0.5	10/22/2019	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<49.9	<49.9	<49.9	<49.9	<49.9	89.3
BH03A	1.5	10/22/2019	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<50.0	<50.0	<50.0	<50.0	<50.0	32.7
NMOCD Table 1 Closure Criteria			**10**	NE	NE	NE	**50**	NE	NE	NE	**1,000**	**2,500**	**20,000**

Notes:

bgs - below ground surface
BTEX - benzene, toluene, ethylbenzene, and total xylenes
DRO - diesel range organics
GRO - gasoline range organics
MRO - motor oil range organics
mg/kg - milligrams per kilogram
NMOCD - New Mexico Oil Conservation Division
TPH - total petroleum hydrocarbons
NE - not established
< - indicates result is below laboratory reporting limits
Table 1 - closure criteria for soils impacted by a release per NMAC 19.15.29 August 2018
NMAC - New Mexico Administrative Code

ATTACHMENT 1: INITIAL/FINAL NMOCD FORM C-141 (2RP-5595)

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 Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NAB1923435984
District RP	2RP-5595
Facility ID	
Application ID	pAB1923435631

Release Notification

7L8FK-190809-C-1410

Responsible Party

Responsible Party XTO Energy	OGRID 5380
Contact Name Kyle Littrell	Contact Telephone 432-221-7331
Contact email Kyle_Littrell@xtoenergy.com	Incident # *(assigned by OCD)* NAB1923435984
Contact mailing address 522 W. Mermod, Carlsbad, NM 88220	

Location of Release Source

Latitude 32.595818 Longitude -103.88948
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Big Eddy Unit DI4B #274H	Site Type Production Well Facility
Date Release Discovered 7/27/2019	API# *(if applicable)* 30-015-43647

Unit Letter	Section	Township	Range	County
O	5	20S	31E	Eddy

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (*Name:* BLM)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☒ Other (describe) Treated Fresh Water	Volume/Weight Released (provide units) 5 bbls (with 0.0025 bbls FR, 0.025 bbls Bio, 0.03 Bio, 0.05 bbls SI)	Volume/Weight Recovered (provide units) 1 bbl (with 0.0005 bbls FR, 0.005 bbls Bio, 0.006 Bio, 0.01 bbls SI)

Cause of Release

During frac operations, water transfer problems caused the blender to pull water at an inconsistent rate. The blender tub overflowed onto the well pad. A vacuum truck recovered free fluids. Additional third party resources have been retained to assist with remediation. Remediation activities can begin when completion operations on the well pad are concluded.

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	NAB1923435984
District RP	2RP-5595
Facility ID	
Application ID	pAB1923435631

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release? N/A
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? N/A	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:
N/A

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: Amy C. Ruth
Title: SH&E Coordinator
Signature:
Date: 8/9/2019
email: Amy_Ruth@xtoenergy.com
Telephone: 575-689-3380

OCD Only

Received by: Amalia Bustamante
Date: 8/22/2019

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5595
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	>100 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
☒ Field data
☒ Data table of soil contaminant concentration data
☒ Depth to water determination
☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
☒ Boring or excavation logs
☒ Photographs including date and GIS information
☒ Topographic/Aerial maps
☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5595
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: _____Kyle Littrell_____ Title: ____SH&E Supervisor_____

Signature:_____ Date: __11/25/2019_____

email: _____Kyle_Littrell@xtoenergy.com_____ Telephone: ___432-221-7331_____

OCD Only

Received by: _____ Date: _____

Form C-141
Page 6

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5595
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Kyle Littrell Title: SH&E Supervisor

Signature: Date: 11/25/2019

email: Kyle_Littrell@xtoenergy.com Telephone: 432-221-7331

OCD Only

Received by: Date:

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Date:

Printed Name: Title:

ATTACHMENT 2: LITHOLOGIC / SOIL SMAPLING LOGS

LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220
Compliance · Engineering · Remediation

Identifier: BH01	Date: 10/22/2019	
Project Name: BEU DI4B #274H	RP Number: 2RP-5595	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: K. Jennings	Method: Hand Auger
Lat/Long: 32.59722, -103.88946	Field Screening:	Hole Diameter: 3" / Total Depth: 1.5'
Comments:		

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	183.6	0.4		BH01	0	0.5'	S	caliche
dry	<120.0	0.5		BH01 A	1	1.5	S	caliche
					2			
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					10			
					11			
					12			

LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220
Compliance · Engineering · Remediation

Identifier: BH02	Date: 10/22/2019	
Project Name: BEU DI4B #274H	RP Number: 2RP-5595	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: K. Jennings	Method: Hand Auger
Lat/Long: 32.59722, -103.88946	Field Screening:	Hole Diameter: 3" / Total Depth: 1.5'

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	378	0.7		BH02	0	0.5'	S	caliche
dry	324	0.1		BH02 A	1	1.5	S	caliche

2 3 4 5 6 7 8 9 10 11 12

LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220
Compliance · Engineering · Remediation

Identifier: BH03	Date: 10/22/2019	
Project Name: BEU DI4B #274H	RP Number: 2RP-5595	
LITHOLOGIC / SOIL SAMPLING LOG	Logged By: K. Jennings	Method: Hand Auger
Lat/Long: 32.59722, -103.88946	Field Screening:	Hole Diameter: 3" / Total Depth: 1.5'
Comments:		

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	<120.0	0.3		BH03	0	0.5'	S	caliche
dry	<120.0	0.1		BH03 A	1	1.5	S	caliche

ATTACHMENT 3: PHOTOGRAPHIC LOG

Northern view of release area during delineation activities.

Project: 012919188	XTO Energy, Inc. Big Eddy Unit DI4B #274H	LTE Advancing Opportunity
October 22, 2019	Photographic Log	

Western view of release area during delineation activities.

Project: 012919188	XTO Energy, Inc. Big Eddy Unit DI4B #274H	LTE Advancing Opportunity
October 22, 2019	Photographic Log	

ATTACHMENT 4: LABORATORY ANALYTICAL REPORTS

Analytical Report 640822

for

LT Environmental, Inc.

Project Manager: Dan Moir

BEU DI4B #274H

012919188

24-OCT-19

Collected By: Client

1089 N Canal Street
Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

24-OCT-19

Project Manager: **Dan Moir**
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, CO 80003

Reference: XENCO Report No(s): **640822**
BEU DI4B #274H
Project Address:

Dan Moir:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 640822. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 640822 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY

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Sample Cross Reference 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH01	S	10-22-19 10:06	0.5 ft	640822-001
BH01A	S	10-22-19 10:11	1.5 ft	640822-002
BH02	S	10-22-19 10:18	0.5 ft	640822-003
BH02A	S	10-22-19 10:25	1.5 ft	640822-004
BH03	S	10-22-19 10:30	0.5 ft	640822-005
BH03A	S	10-22-19 10:35	1.5 ft	640822-006

CASE NARRATIVE

Client Name: LT Environmental, Inc.
Project Name: BEU DI4B #274H

Project ID: *012919188*
Work Order Number(s): *640822*

Report Date: *24-OCT-19*
Date Received: *10/23/2019*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3105184 Chloride by EPA 300
Lab Sample ID 640822-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 640822-001, -002, -003, -004, -005, -006.
The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3105192 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 640822

LT Environmental, Inc., Arvada, CO

Project Name: BEU DI4B #274H

Project Id: 012919188
Contact: Dan Moir
Project Location:

Date Received in Lab: Wed Oct-23-19 12:25 pm
Report Date: 24-OCT-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	640822-001		640822-002		640822-003		640822-004		640822-005		640822-006	
	Field Id:	BH01		BH01A		BH02		BH02A		BH03		BH03A	
	Depth:	0.5- ft		1.5- ft		0.5- ft		1.5- ft		0.5- ft		1.5- ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Oct-22-19 10:06		Oct-22-19 10:11		Oct-22-19 10:18		Oct-22-19 10:25		Oct-22-19 10:30		Oct-22-19 10:35	
BTEX by EPA 8021B	*Extracted:*	** ** ** **		** ** ** **		** ** ** **		** ** ** **		** ** ** **		** ** ** **	
	Analyzed:	Oct-23-19 16:14		Oct-23-19 16:34		Oct-23-19 16:55		Oct-23-19 17:15		Oct-23-19 17:36		Oct-23-19 17:56	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Toluene		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Ethylbenzene		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
m,p-Xylenes		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
o-Xylene		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Total Xylenes		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Total BTEX		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100
Chloride by EPA 300	*Extracted:*	Oct-23-19 14:10		Oct-23-19 14:10		Oct-23-19 14:10		Oct-23-19 14:10		Oct-23-19 14:10		Oct-23-19 14:10	
	Analyzed:	Oct-23-19 15:54		Oct-23-19 15:23		Oct-23-19 15:29		Oct-23-19 15:35		Oct-23-19 15:41		Oct-23-19 15:48	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		176	9.94	19.0	9.88	547	50.1	293	10.1	89.3	10.1	32.7	9.98
TPH by SW8015 Mod	*Extracted:*	Oct-23-19 14:30		Oct-23-19 14:30		Oct-23-19 14:30		Oct-23-19 14:30		Oct-23-19 14:30		Oct-23-19 14:30	
	Analyzed:	Oct-23-19 22:53		Oct-23-19 23:53		Oct-24-19 00:13		Oct-24-19 00:33		Oct-24-19 00:53		Oct-24-19 01:12	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<50.1	50.1	<49.8	49.8	<50.1	50.1	<50.0	50.0	<49.9	49.9	<50.0	50.0
Diesel Range Organics (DRO)		<50.1	50.1	<49.8	49.8	<50.1	50.1	<50.0	50.0	<49.9	49.9	<50.0	50.0
Motor Oil Range Hydrocarbons (MRO)		<50.1	50.1	<49.8	49.8	<50.1	50.1	<50.0	50.0	<49.9	49.9	<50.0	50.0
Total GRO-DRO		<50.1	50.1	<49.8	49.8	<50.1	50.1	<50.0	50.0	<49.9	49.9	<50.0	50.0
Total TPH		<50.1	50.1	<49.8	49.8	<50.1	50.1	<50.0	50.0	<49.9	49.9	<50.0	50.0

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Version: 1.%

Jessica Kramer
Project Assistant

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH01**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-001	Date Collected:	10.22.19 10.06	Sample Depth:	0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 14.10	Basis:	Wet Weight
Seq Number:	3105184				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**176**	9.94	mg/kg	10.23.19 15.54		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	10.23.19 14.30	Basis:	Wet Weight
Seq Number:	3105269				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	10.23.19 22.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	10.23.19 22.53	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	10.23.19 22.53	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	10.23.19 22.53	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	10.23.19 22.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	10.23.19 22.53	
o-Terphenyl	84-15-1	101	%	70-135	10.23.19 22.53	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH01**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-001	Date Collected:	10.22.19 10.06	Sample Depth:	0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 12.10	Basis:	Wet Weight
Seq Number:	3105192				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	10.23.19 16.14	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	10.23.19 16.14	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	10.23.19 16.14	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.23.19 16.14	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	10.23.19 16.14	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	10.23.19 16.14	U	1
Total BTEX		<0.00100	0.00100	mg/kg	10.23.19 16.14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	109	%	70-130	10.23.19 16.14	
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.23.19 16.14	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH01A**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-002	Date Collected:	10.22.19 10.11	Sample Depth:	1.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 14.10	Basis:	Wet Weight
Seq Number:	3105184				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**19.0**	9.88	mg/kg	10.23.19 15.23		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	10.23.19 14.30	Basis:	Wet Weight
Seq Number:	3105269				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.23.19 23.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.23.19 23.53	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.23.19 23.53	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	10.23.19 23.53	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.23.19 23.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	10.23.19 23.53	
o-Terphenyl	84-15-1	94	%	70-135	10.23.19 23.53	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH01A**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-002	Date Collected:	10.22.19 10.11	Sample Depth:	1.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 12.10	Basis:	Wet Weight
Seq Number:	3105192				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	10.23.19 16.34	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	10.23.19 16.34	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	10.23.19 16.34	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.23.19 16.34	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	10.23.19 16.34	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	10.23.19 16.34	U	1
Total BTEX		<0.00100	0.00100	mg/kg	10.23.19 16.34	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.23.19 16.34	
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.23.19 16.34	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH02**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-003	Date Collected:	10.22.19 10.18	Sample Depth:	0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 14.10	Basis:	Wet Weight
Seq Number:	3105184				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**547**	50.1	mg/kg	10.23.19 15.29		5

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	10.23.19 14.30	Basis:	Wet Weight
Seq Number:	3105269				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	10.24.19 00.13	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	10.24.19 00.13	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	10.24.19 00.13	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	10.24.19 00.13	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	10.24.19 00.13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	10.24.19 00.13	
o-Terphenyl	84-15-1	95	%	70-135	10.24.19 00.13	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH02**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-003	Date Collected:	10.22.19 10.18	Sample Depth:	0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 12.10	Basis:	Wet Weight
Seq Number:	3105192				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	10.23.19 16.55	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	10.23.19 16.55	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	10.23.19 16.55	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.23.19 16.55	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	10.23.19 16.55	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	10.23.19 16.55	U	1
Total BTEX		<0.00100	0.00100	mg/kg	10.23.19 16.55	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	115	%	70-130	10.23.19 16.55	
1,4-Difluorobenzene	540-36-3	103	%	70-130	10.23.19 16.55	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH02A**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-004	Date Collected:	10.22.19 10.25	Sample Depth:	1.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 14.10	Basis:	Wet Weight
Seq Number:	3105184				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**293**	10.1	mg/kg	10.23.19 15.35		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	10.23.19 14.30	Basis:	Wet Weight
Seq Number:	3105269				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.24.19 00.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.24.19 00.33	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.24.19 00.33	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	10.24.19 00.33	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.24.19 00.33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	87	%	70-135	10.24.19 00.33	
o-Terphenyl	84-15-1	89	%	70-135	10.24.19 00.33	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH02A**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-004	Date Collected:	10.22.19 10.25	Sample Depth:	1.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 12.10	Basis:	Wet Weight
Seq Number:	3105192				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	10.23.19 17.15	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	10.23.19 17.15	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	10.23.19 17.15	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.23.19 17.15	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	10.23.19 17.15	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	10.23.19 17.15	U	1
Total BTEX		<0.00100	0.00100	mg/kg	10.23.19 17.15	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.23.19 17.15	
1,4-Difluorobenzene	540-36-3	104	%	70-130	10.23.19 17.15	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH03**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-005	Date Collected:	10.22.19 10.30	Sample Depth:	0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 14.10	Basis:	Wet Weight
Seq Number:	3105184				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**89.3**	10.1	mg/kg	10.23.19 15.41		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	10.23.19 14.30	Basis:	Wet Weight
Seq Number:	3105269				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.24.19 00.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.24.19 00.53	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.24.19 00.53	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	10.24.19 00.53	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.24.19 00.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	10.24.19 00.53	
o-Terphenyl	84-15-1	92	%	70-135	10.24.19 00.53	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH03**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-005	Date Collected:	10.22.19 10.30	Sample Depth:	0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 12.10	Basis:	Wet Weight
Seq Number:	3105192				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	10.23.19 17.36	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	10.23.19 17.36	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	10.23.19 17.36	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.23.19 17.36	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	10.23.19 17.36	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	10.23.19 17.36	U	1
Total BTEX		<0.00100	0.00100	mg/kg	10.23.19 17.36	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	101	%	70-130	10.23.19 17.36	
4-Bromofluorobenzene	460-00-4	109	%	70-130	10.23.19 17.36	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH03A**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-006	Date Collected:	10.22.19 10.35	Sample Depth:	1.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 14.10	Basis:	Wet Weight
Seq Number:	3105184				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**32.7**	9.98	mg/kg	10.23.19 15.48		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	10.23.19 14.30	Basis:	Wet Weight
Seq Number:	3105269				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.24.19 01.12	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.24.19 01.12	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.24.19 01.12	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	10.24.19 01.12	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.24.19 01.12	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-135	10.24.19 01.12	
o-Terphenyl	84-15-1	87	%	70-135	10.24.19 01.12	

Certificate of Analytical Results 640822

LT Environmental, Inc., Arvada, CO

BEU DI4B #274H

Sample Id:	**BH03A**	Matrix:	Soil	Date Received:	10.23.19 12.25
Lab Sample Id:	640822-006	Date Collected:	10.22.19 10.35	Sample Depth:	1.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	10.23.19 12.10	Basis:	Wet Weight
Seq Number:	3105192				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	10.23.19 17.56	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	10.23.19 17.56	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	10.23.19 17.56	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.23.19 17.56	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	10.23.19 17.56	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	10.23.19 17.56	U	1
Total BTEX		<0.00100	0.00100	mg/kg	10.23.19 17.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.23.19 17.56	
1,4-Difluorobenzene	540-36-3	105	%	70-130	10.23.19 17.56	

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

QC Summary 640822

LT Environmental, Inc.

BEU DI4B #274H

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3105184 — Matrix: Solid — Date Prep: 10.23.19
MB Sample Id: 7688752-1-BLK — LCS Sample Id: 7688752-1-BKS — LCSD Sample Id: 7688752-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	266	106	264	106	90-110	1	20	mg/kg	10.23.19 14:50	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3105184 — Matrix: Soil — Date Prep: 10.23.19
Parent Sample Id: 640822-001 — MS Sample Id: 640822-001 S — MSD Sample Id: 640822-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	176	199	426	126	424	124	90-110	0	20	mg/kg	10.23.19 15:10	X

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3105269 — Matrix: Solid — Date Prep: 10.23.19
MB Sample Id: 7688787-1-BLK — LCS Sample Id: 7688787-1-BKS — LCSD Sample Id: 7688787-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	845	85	755	76	70-135	11	35	mg/kg	10.23.19 22:14	
Diesel Range Organics (DRO)	<50.0	1000	783	78	770	77	70-135	2	35	mg/kg	10.23.19 22:14	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	87		110		97		70-135	%	10.23.19 22:14
o-Terphenyl	89		114		95		70-135	%	10.23.19 22:14

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3105269 — Matrix: Solid — Date Prep: 10.23.19
MB Sample Id: 7688787-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	10.23.19 21:54	

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 640822

LT Environmental, Inc.

BEU DI4B #274H

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3105269 — Matrix: Soil — Date Prep: 10.23.19
Parent Sample Id: 640822-001 — MS Sample Id: 640822-001 S — MSD Sample Id: 640822-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	20.3	1000	875	85	814	80	70-135	7	35	mg/kg	10.23.19 23:13	
Diesel Range Organics (DRO)	24.7	1000	780	76	740	72	70-135	5	35	mg/kg	10.23.19 23:13	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	110		98		70-135	%	10.23.19 23:13
o-Terphenyl	108		98		70-135	%	10.23.19 23:13

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3105192 — Matrix: Solid — Date Prep: 10.23.19
MB Sample Id: 7688755-1-BLK — LCS Sample Id: 7688755-1-BKS — LCSD Sample Id: 7688755-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0943	94	0.104	104	70-130	10	35	mg/kg	10.23.19 14:18	
Toluene	<0.00100	0.100	0.0918	92	0.101	101	70-130	10	35	mg/kg	10.23.19 14:18	
Ethylbenzene	<0.00100	0.100	0.0947	95	0.104	104	71-129	9	35	mg/kg	10.23.19 14:18	
m,p-Xylenes	<0.00200	0.200	0.190	95	0.209	105	70-135	10	35	mg/kg	10.23.19 14:18	
o-Xylene	<0.00100	0.100	0.0944	94	0.105	105	71-133	11	35	mg/kg	10.23.19 14:18	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		101		104		70-130	%	10.23.19 14:18
4-Bromofluorobenzene	107		105		109		70-130	%	10.23.19 14:18

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3105192 — Matrix: Soil — Date Prep: 10.23.19
Parent Sample Id: 640822-001 — MS Sample Id: 640822-001 S — MSD Sample Id: 640822-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0864	86	0.0916	92	70-130	6	35	mg/kg	10.23.19 14:59	
Toluene	<0.00100	0.100	0.0850	85	0.0897	90	70-130	5	35	mg/kg	10.23.19 14:59	
Ethylbenzene	<0.00100	0.100	0.0864	86	0.0923	92	71-129	7	35	mg/kg	10.23.19 14:59	
m,p-Xylenes	<0.00200	0.200	0.173	87	0.186	93	70-135	7	35	mg/kg	10.23.19 14:59	
o-Xylene	<0.00100	0.100	0.0867	87	0.0937	94	71-133	8	35	mg/kg	10.23.19 14:59	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		105		70-130	%	10.23.19 14:59
4-Bromofluorobenzene	108		112		70-130	%	10.23.19 14:59

MS/MSD Percent Recovery — [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference — RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery — [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference — Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

Chain of Custody

Work Order No: 640822

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432-704-5440) EL Paso,TX (915)585-3443 Lubbock,TX (806)794-1296
Hobbs,NM (575-392-7550) Phoenix,AZ (480-355-0900) Atlanta,GA (770-449-8800) Tampa,FL (813-620-2000)
www.xenco.com Page 1 of 1

Project Manager:	Dan Moir	Bill to: (if different)	Kyle Littrell
Company Name:	LT Environmental, Inc.	Company Name:	XTO Energy
Address:	508 W. Stevens St.	Address:	
City, State ZIP:	Carlsbad, NM 88220	City, State ZIP:	
Phone:		Email:	Dan, Tacoma, Kalei, Carol, Rebecca

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting: Level II ☒ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☒ ADaPT ☐ Other:

Project Name:	BEU D14B #274H (2RP-5595)	Turn Around	
Project Number:	012919188	Routine	☐
P.O. Number:		Rush:	48 hr
Sampler's Name:	Tacoma Morrissey	Due Date:	10/25

SAMPLE RECEIPT				
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No	
Temperature (°C):	1.0	Thermometer ID		
Received Intact:	(Yes) No	T NM 007		
Cooler Custody Seals:	Yes (No) N/A	Correction Factor:	-0.2	
Sample Custody Seals:	Yes (No) N/A	Total Containers:	6	

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	BTEX (EPA 8021B)	TPH (SW8015 Mod)	Chloride (E300)
BH01	S	10-22-19	10:06	0.5'		X	X	X
BH01A	S	10-22-19	10:11	1.5'		X	X	X
BH02	S	10-22-19	10:18	0.5'		X	X	X
BH02A	S	10-22-19	10:25	1.5'		X	X	X
BH03	S	10-22-19	10:30	0.5'		X	X	X
BH03A	S	10-22-19	10:35	1.5'		X	X	X

NFE

Work Order Notes

TAT starts the day recevied by the lab, if received by 4:30pm

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

	Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1			10/23/19 12:25	2		10/23/19 12:25
3				4		
5				6		

Revised Date 051418 Rev. 2018.1

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 10/23/2019 12:25:00 PM

Work Order #: 640822

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	1
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**
#5 Custody Seals intact on sample bottles?	**Yes**
#6*Custody Seals Signed and dated?	**Yes**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Elizabeth McClellan Date: 10/23/2019

Checklist reviewed by: Jessica Kramer Date: 10/24/2019

Jessica Kramer