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	NAB1923157056
District RP	2RP-5586
Facility ID	
Application ID	pAB1923156800

Release Notification HOG1P-190802-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)* NAB1923157056
Contact mailing address 522 W. Mermod, Carlsbad, NM 88220	

Location of Release Source

Latitude 32.642715 Longitude -103.958887
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Buttercup 27 34 Federal 3H	Site Type Production Well Facility
Date Release Discovered 7/18/2019	API# *(if applicable)* 30-015-45135

Unit Letter	Section	Township	Range	County
J	22	19S	30E	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 (containing 0.02 bbls PAA, 0.0025 bbls FR, 0.005 bbls Bio)	Volume/Weight Recovered (provide units) 4 bbls (containing 0.016 bbls PAA, 0.002 bbls FR, 0.004 bbls Bio)

Cause of Release

During frac pumping operations, a truck hose became disconnected at a fitting. Fluid was released to the pad surface. A vacuum truck recovered free fluids. Additional third party resources have been retained to assist with remediation and remediation will begin when well completions activities on location are concluded.

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	NAB1923157056
District RP	2RP-5586
Facility ID	
Application ID	pAB1923156800

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: Kyle Littrell Title: SH&E Supervisor

Signature: Date: 8/2/2019

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

OCD Only

Received by: Amalia Bustamante Date: 8/19/2019

Incident ID	NAB1923157056
District RP	2RP-5586
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?	50'-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	NAB1923157056
District RP	2RP-5586
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: 03/16/2020

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

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	NAB1923157056
District RP	2RP-5586
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: 03/16/2020

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:

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

March 17, 2020

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

RE: Closure Request
Buttercup 27 34 Federal 3H
Remediation Permit Number 2RP-5586
Incident Number NAB1923157056
Eddy County, New Mexico

Dear Mr. Bratcher:

LT Environmental, Inc. (LTE), on behalf of XTO Energy, Inc. (XTO), presents the following Closure Request detailing site assessment and soil sampling activities at the Buttercup 27 34 Federal 3H (Site) in Unit J, Section 22, Township 19 South, Range 30 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 impact to soil following a release of treated freshwater at the Site. Based on field observations, field screening, and laboratory analytical results from soil sampling activities, XTO is submitting this Closure Request and requesting no further action (NFA) for Remediation Permit (RP) Number 2RP-5586.

RELEASE BACKGROUND

On July 18, 2019, during frac pumping operations, a truck hose became disconnected at a fitting, which resulted in the release of five barrels (bbls) of treated freshwater onto the caliche well pad. A vacuum truck was dispatched to the Site to recover freestanding fluid. Approximately four bbls of the treated freshwater were 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 2, 2019 and was assigned RP Number 2RP-5586.

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 between 50 and 100 feet below ground surface (bgs) based on the nearest groundwater well data. The closest permitted groundwater well with depth to groundwater data is the New Mexico Office of the State Engineer (NMOSE) well 00722, located approximately 1.65 miles southeast of the Site. The groundwater

well has a depth to groundwater of approximately 65 feet bgs and a total depth of 350 feet bgs. The closest continuously flowing water or significant watercourse to the Site is a freshwater pond located approximately 1.20 miles south 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 high-potential karst area. The Site receptors are identified on Figure 1.

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): 100 mg/kg
- Chloride: 600 mg/kg

SITE ASSESSMENT AND SOIL SAMPLING ACTIVITIES

On September 16, 2019, LTE personnel evaluated the release extent based on information provided on the Form C-141 and visual observations. LTE personnel collected three preliminary soil samples (SS01 through SS03) within close proximity to, and surrounding, the point of release at a depth of approximately 0.5 feet bgs to assess the presence or absence of soil impacts at the ground surface. Soil was field screened for volatile aromatic hydrocarbons and chloride utilizing a calibrated photoionization detector (PID) and Hach® chloride QuanTab® test strips, respectively. The preliminary soil sample locations were mapped utilizing a handheld Global Positing System (GPS) and 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 (EPA) Method 8021B; TPH-gasoline range organics (GRO), TPH-diesel range organics (DRO), TPH-oil range organics (ORO) following EPA Method 8015M/D, and chloride following EPA Method 300.0

Based on laboratory analytical results for preliminary soil samples SS01 through SS03, excavation activities did not appear warranted; however, additional assessment activities were scheduled to further confirm the absence of impacted soil exceeding the Closure Criteria.

Further delineation and remediation efforts were postponed due to ongoing frac operations near the release which resulted in activity restrictions at the Site due to safety concerns. Per 19.15.29.12.B.(1) NMAC, an extension for submission of a remediation plan or closure report was requested and approved on October 15, 2019 by NMOCD District II office, extending the deadline to March 27, 2020.

On February 27, 2020, LTE personnel returned to the Site after frac operations were completed to oversee additional soil assessment activities. Three boreholes (BH01 through BH03) were advanced via hand auger, to a depth of approximately 2 feet bgs within close proximity to, and surrounding, the point of release. Boreholes BH01 through BH03 were advanced at the SS01 through SS03 preliminary soil sample locations, respectively.

Soil from the boreholes were field screened for volatile aromatic hydrocarbons and chloride. Field screening results and observations for each borehole were documented on a Lithologic/Soil Sampling Log and are included as Attachment 1. The delineation soil samples were collected, handled, and analyzed as described above at Xenco in Carlsbad, New Mexico. All boreholes were backfilled with the same soil removed. The preliminary soil sample and borehole delineation sample locations are depicted on Figure 2. Photographic documentation was conducted during the Site visit. Photographic Log are included in Attachment 2.

ANALYTICAL RESULTS

Laboratory analytical results indicated benzene, BTEX, TPH-GRO, TPH-DRO, TPH, and chloride concentrations were compliant with the Closure Criteria in soil samples SS01 through SS03 collected at approximately 0.5 feet bgs and in delineation borehole samples BH01 through BH03 collected at approximately 2 feet bgs. Laboratory analytical results are presented on Figure 2 and summarized in Table 1. The complete Laboratory Analytical Reports are included as Attachment 3.

CONCLUSIONS

Initial response efforts as a result of the treated freshwater release included removal of freestanding fluid via a hydrovac truck and collection of soil samples. Preliminary soil samples SS01 through SS03 and delineation borehole samples BH01 through BH03 were collected within close proximity to, and surrounding, the point of release at depths ranging from approximately 0.5 feet bgs to 2 feet bgs to assess for the presence or absence of soil impacts as a result of the July 18, 2019 treated freshwater release. Laboratory analytical results for all soil samples indicated benzene, BTEX, TPH-GRO, TPH-DRO, TPH, and chloride concentrations were compliant with the Closure Criteria.

Based on surficial and subsurface soil analytical results (SS01 through SS03 and BH01 through BH03, respectively), soil within the release extent did not appear to be impacted above Closure

Criteria concentrations. As a result, soil excavation did not appear warranted and soil assessment activities are complete. XTO requests NFA for RP Number 2RP-5586.

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

Sincerely,

LT ENVIRONMENTAL, INC.

Kalei Jennings
Project Environmental Scientist

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

Appendices:

Figure 1	Site Location Map
Figure 2	Soil Sample Locations
Table 1	Soil Analytical Results
Attachment 1	Lithologic/Soil Sampling Logs
Attachment 2	Photographic Log
Attachment 3	Laboratory Analytical Reports

FIGURES

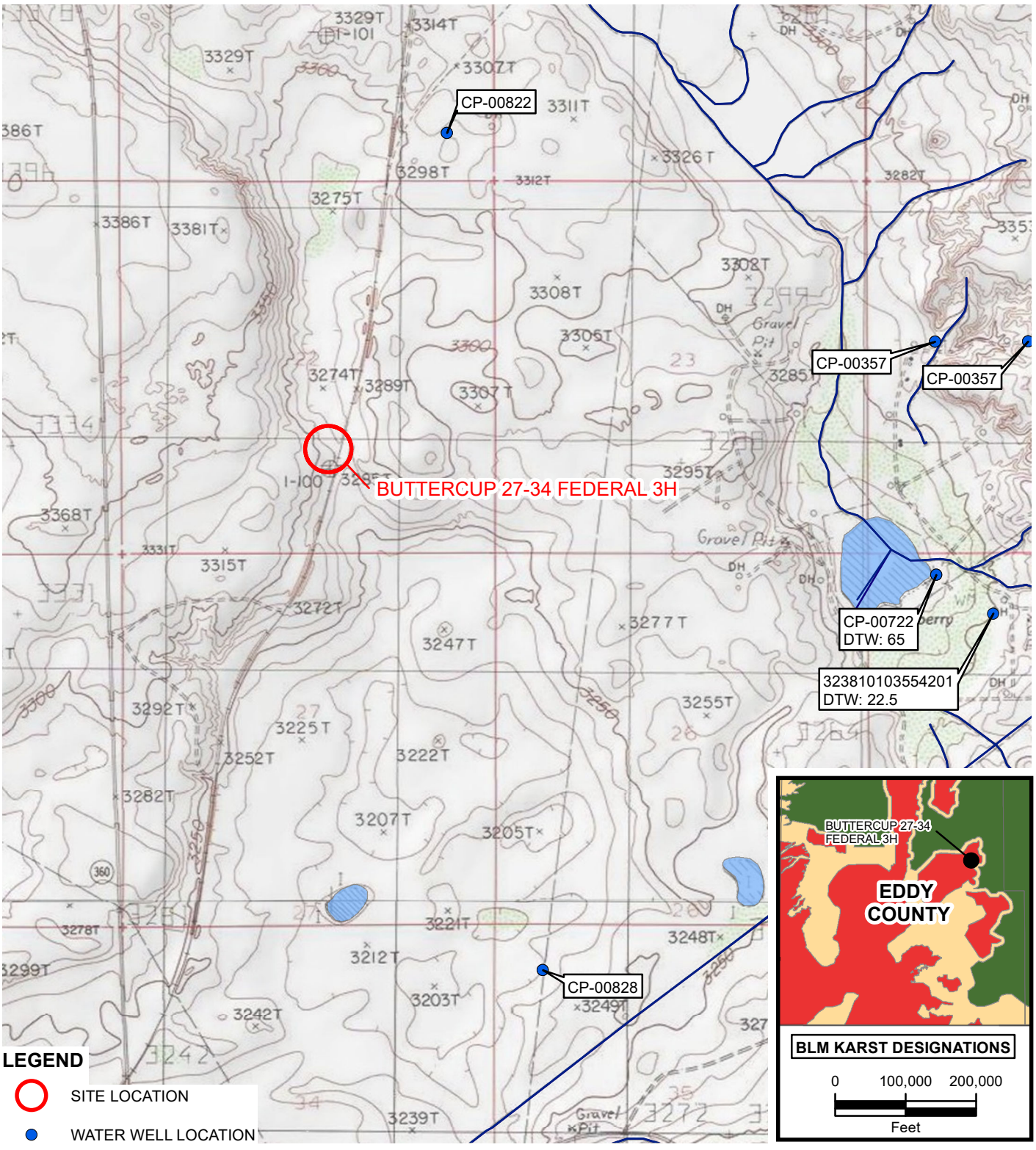
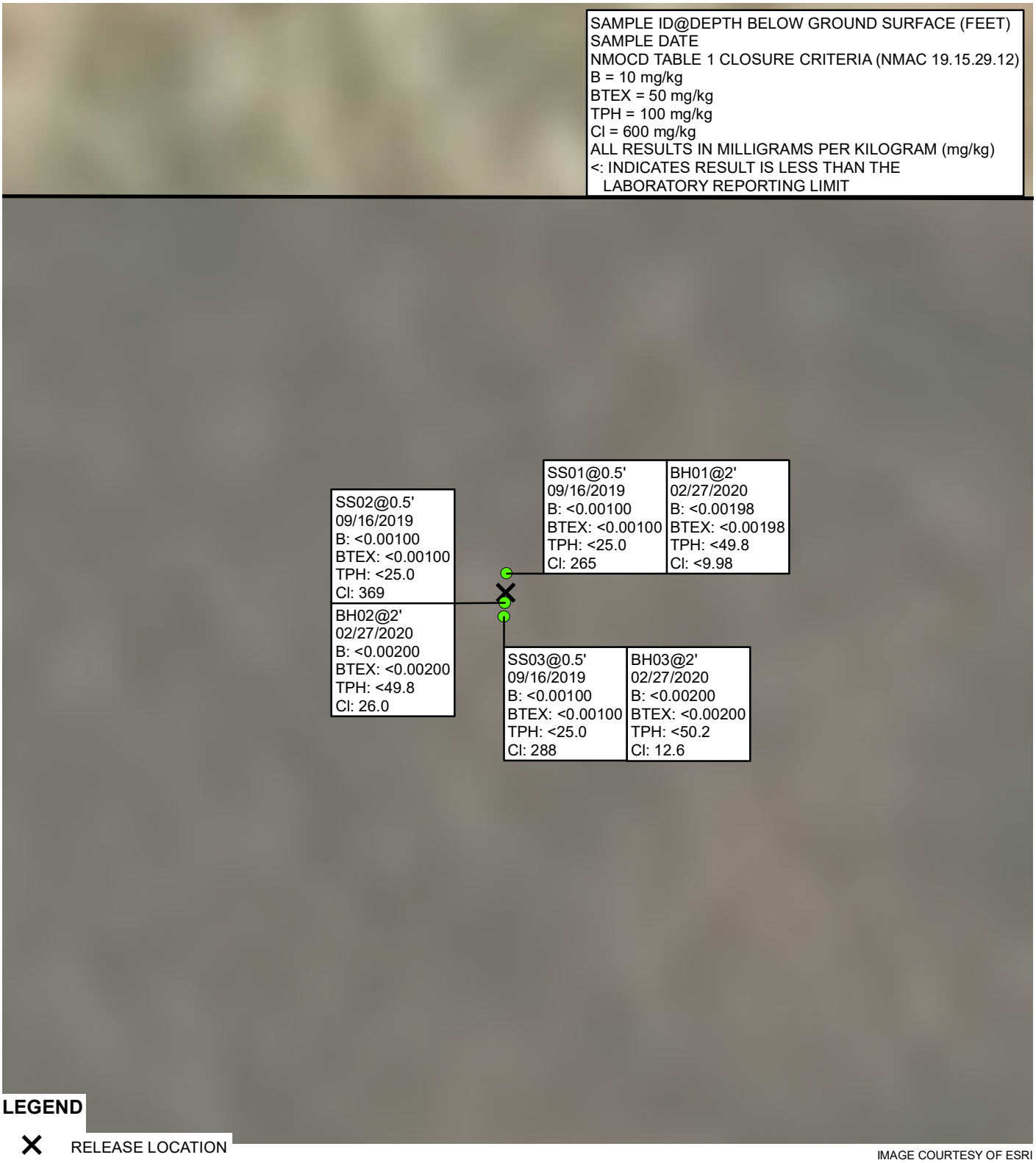


FIGURE 1
SITE LOCATION MAP
BUTTERCUP 27-34 FEDERAL 3H
UNIT J SEC 22 T19S R30E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012919175_BUTTERCUP 27 34 FED 3H\012919175_FIG01_RECEPTOR_SL_2020.mxd

SAMPLE ID@DEPTH BELOW GROUND SURFACE (FEET)
SAMPLE DATE
NMOCD TABLE 1 CLOSURE CRITERIA (NMAC 19.15.29.12)
B = 10 mg/kg
BTEX = 50 mg/kg
TPH = 100 mg/kg
Cl = 600 mg/kg
ALL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)
<: INDICATES RESULT IS LESS THAN THE LABORATORY REPORTING LIMIT



LEGEND

RELEASE LOCATION

PRELIMINARY SOIL SAMPLE IN COMPLIANCE WITH APPLICABLE CLOSURE CRITERIA

APPROXIMATE PAD BOURNDARY

IMAGE COURTESY OF ESRI

0 10 20
Feet

N

B: BENZENE
BTEX: TOTAL BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES
TPH: TOTAL PETROLEUM HYDROCARBONS
Cl: CHLORIDE
NMAC: NEW MEXICO ADMINISTRATIVE CODE
NMOCD: NEW MEXICO OIL CONSERVATION DIVISION
NOTE: REMEDIATION PERMIT NUMBER NOT ASSIGNED

FIGURE 2
SOIL SAMPLING LOCATIONS
BUTTERCUP 27-34 FEDERAL 3H
UNIT J SEC 22 T19S R30E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\012919175_BUTTERCUP 27 34 FED 3H\012919175_FIG02_PRELIMINARY_2019.mxd

TABLES

TABLE 1
SOIL ANALYTICAL RESULTS

BUTTERCUP 27 34 FEDERAL 3H
REMEDIATION PERMIT NUMBER 2RP-5586
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)
NMOCD Table 1 Closure Criteria			**10**	NE	NE	NE	**50**	NE	NE	NE	NE	**100**	**600**
SS01	0.5	09/16/2019	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<25.0	<25.0	<25.0	<25.0	<25.0	265
SS02	0.5	09/16/2019	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<25.0	<25.0	<25.0	<25.0	<25.0	369
SS03	0.5	09/16/2019	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<25.0	<25.0	<25.0	<25.0	<25.0	288
BH01	2	02/27/2020	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<49.8	<49.8	<49.8	<49.8	<49.8	<9.98
BH02	2	02/27/2020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	<49.8	26.0
BH03	2	02/27/2020	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.2	<50.2	<50.2	<50.2	<50.2	12.6

Notes:

bgs - below ground surface

BTEX - benzene, toluene, ethylbenzene, and total xylenes

DRO - diesel range organics

GRO - gasoline range organics

mg/kg - milligrams per kilogram

MRO - motor oil range organics

NMAC - New Mexico Administrative Code

NMOCD - New Mexico Oil Conservation Division

TPH - total petroleum hydrocarbons

Bold - indicates result exceeds the applicable regulatory standard

< - indicates result is below laboratory reporting limits

Table 1 - closure criteria for soils impacted by a release per NMAC 19.15.29 August 2018

NE - not established

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ATTACHMENT 1: LITHOLOGIC SOIL SAMPLE LOGS

LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220
A proud member of WSP
Compliance · Engineering · Remediation

BH or PH Name: BH01	Date: 2/27/20
Site Name: Buttercup 27-34 Fed 3H	
RP or Incident Number: 2RP-5586	
LTE Job Number: 01291975	
Logged By: Armando	Method: Hand Auger
Lat/Long:	Field Screening: Chloride, PID
Hole Diameter:	Total Depth: 2'

LITHOLOGIC / SOIL SAMPLING LOG

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
D	<174	0.1	N		2'	0 1 2		No odor, caliche, tan-white
						3 4 5 6 7 8 9 10 11 12		

1329

LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220
A proud member of WSP
Compliance · Engineering · Remediation

BH or PH Name: BH02	Date: 2/27/20
Site Name: Buttercup 27-34 Fed 3H	
RP or Incident Number: 2RP-5586	
LTE Job Number: 012419175	
Logged By: Armando	Method: Hand Auger
Lat/Long:	Field Screening: Chloride, PID
Hole Diameter:	Total Depth: 2'

Comments:

LITHOLOGIC / SOIL SAMPLING LOG

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
1407 D	<174	0.1	N		2'	0 1 2 3 4 5 6 7 8 9 10 11 12		No oder, caliche, tan-white

LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220
A proud member of WSP
Compliance · Engineering · Remediation

BH or PH Name: BH03	Date: 2/27/20
Site Name: Buttercup 27-34 Fed 3H	
RP or Incident Number: 2RP-5586	
LTE Job Number: 01291975	
Logged By: Armando	Method: Hand Auger
Lat/Long:	Field Screening: Chloride, PID
Hole Diameter:	Total Depth: 2'

LITHOLOGIC / SOIL SAMPLING LOG

Comments:

1423

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
D	<174	0.2	N		2'	0 1 2		No odor, caliche, tan-white
						3 4 5 6 7 8 9 10 11 12		

ATTACHMENT 2: PHOTOGRAPHIC LOG

PHOTOGRAPHIC LOG

Photograph 1: Northern view of the release location.

Photograph 2: Eastern view of release location.

ATTACHMENT 3: LABORATORY ANALYTICAL REPORTS

Analytical Report 637049

for

LT Environmental, Inc.

Project Manager: Dan Moir

Buttercup 27-34 Fed 3H

012919175

19-SEP-19

Collected By: Client

1089 N Canal Street
Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-29), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-19-19), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-20)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-18-18)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-18-4)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

19-SEP-19

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

Reference: XENCO Report No(s): **637049**
Buttercup 27-34 Fed 3H
Project Address: Eddy County

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) 637049. 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. 637049 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.
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Sample Cross Reference 637049

LT Environmental, Inc., Arvada, CO

Buttercup 27-34 Fed 3H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS01	S	09-16-19 15:36	0.5 ft	637049-001
SS02	S	09-16-19 15:37	0.5 ft	637049-002
SS03	S	09-16-19 15:38	0.5 ft	637049-003

CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: Buttercup 27-34 Fed 3H

Project ID: *012919175*
Work Order Number(s): *637049*

Report Date: *19-SEP-19*
Date Received: *09/17/2019*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3101768 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 637049

LT Environmental, Inc., Arvada, CO

Project Name: Buttercup 27-34 Fed 3H

Project Id: 012919175
Contact: Dan Moir
Project Location: Eddy County

Date Received in Lab: Tue Sep-17-19 08:45 am
Report Date: 19-SEP-19
Project Manager: Jessica Kramer

Analysis Requested											
	Lab Id:	637049-001		637049-002		637049-003					
	Field Id:	SS01		SS02		SS03					
	Depth:	0.5- ft		0.5- ft		0.5- ft					
	Matrix:	SOIL		SOIL		SOIL					
	Sampled:	Sep-16-19 15:36		Sep-16-19 15:37		Sep-16-19 15:38					
BTEX by EPA 8021B	***Extracted:***	Sep-17-19 11:00		Sep-17-19 11:00		Sep-17-19 11:00					
	Analyzed:	Sep-17-19 16:39		Sep-17-19 16:58		Sep-17-19 17:18					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		<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				
Ethylbenzene		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100				
m,p-Xylenes		<0.00201	0.00201	<0.00201	0.00201	<0.00200	0.00200				
o-Xylene		<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				
Total BTEX		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100				
Chloride by EPA 300	***Extracted:***	Sep-17-19 19:09		Sep-17-19 19:09		Sep-17-19 19:09					
	Analyzed:	Sep-17-19 19:15		Sep-17-19 19:22		Sep-17-19 19:28					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		265	49.8	369	50.1	288	49.5				
TPH by SW8015 Mod	***Extracted:***	Sep-17-19 12:00		Sep-17-19 12:00		Sep-17-19 12:00					
	Analyzed:	Sep-17-19 20:56		Sep-17-19 21:17		Sep-17-19 21:37					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		<25.0	25.0	<25.0	25.0	<25.0	25.0				
Diesel Range Organics (DRO)		<25.0	25.0	<25.0	25.0	<25.0	25.0				
Motor Oil Range Hydrocarbons (MRO)		<25.0	25.0	<25.0	25.0	<25.0	25.0				
Total GRO-DRO		<25.0	25.0	<25.0	25.0	<25.0	25.0				
Total TPH		<25.0	25.0	<25.0	25.0	<25.0	25.0				

Jessica Kramer
Project Assistant

Certificate of Analytical Results 637049

LT Environmental, Inc., Arvada, CO

Buttercup 27-34 Fed 3H

Sample Id:	**SS01**	Matrix:	Soil	Date Received:	09.17.19 08.45
Lab Sample Id:	637049-001	Date Collected:	09.16.19 15.36	Sample Depth:	0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	09.17.19 19.09	Basis:	Wet Weight
Seq Number:	3101789				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**265**	49.8	mg/kg	09.17.19 19.15		5

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	09.17.19 12.00	Basis:	Wet Weight
Seq Number:	3101755				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<25.0	25.0	mg/kg	09.17.19 20.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<25.0	25.0	mg/kg	09.17.19 20.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.17.19 20.56	U	1
Total GRO-DRO	PHC628	<25.0	25.0	mg/kg	09.17.19 20.56	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.17.19 20.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	09.17.19 20.56	
o-Terphenyl	84-15-1	93	%	70-135	09.17.19 20.56	

Certificate of Analytical Results 637049

LT Environmental, Inc., Arvada, CO

Buttercup 27-34 Fed 3H

Sample Id:	**SS01**	Matrix:	Soil	Date Received:	09.17.19 08.45
Lab Sample Id:	637049-001	Date Collected:	09.16.19 15.36	Sample Depth:	0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	09.17.19 11.00	Basis:	Wet Weight
Seq Number:	3101768				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	09.17.19 16.39	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	09.17.19 16.39	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	09.17.19 16.39	U	1
m,p-Xylenes	179601-23-1	<0.00201	0.00201	mg/kg	09.17.19 16.39	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	09.17.19 16.39	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	09.17.19 16.39	U	1
Total BTEX		<0.00100	0.00100	mg/kg	09.17.19 16.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	105	%	70-130	09.17.19 16.39	
1,4-Difluorobenzene	540-36-3	105	%	70-130	09.17.19 16.39	

Certificate of Analytical Results 637049

LT Environmental, Inc., Arvada, CO

Buttercup 27-34 Fed 3H

Sample Id:	**SS02**	Matrix:	Soil	Date Received:	09.17.19 08.45
Lab Sample Id:	637049-002	Date Collected:	09.16.19 15.37	Sample Depth:	0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	09.17.19 19.09	Basis:	Wet Weight
Seq Number:	3101789				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**369**	50.1	mg/kg	09.17.19 19.22		5

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	09.17.19 12.00	Basis:	Wet Weight
Seq Number:	3101755				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<25.0	25.0	mg/kg	09.17.19 21.17	U	1
Diesel Range Organics (DRO)	C10C28DRO	<25.0	25.0	mg/kg	09.17.19 21.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.17.19 21.17	U	1
Total GRO-DRO	PHC628	<25.0	25.0	mg/kg	09.17.19 21.17	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.17.19 21.17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	117	%	70-135	09.17.19 21.17	
o-Terphenyl	84-15-1	91	%	70-135	09.17.19 21.17	

Certificate of Analytical Results 637049

LT Environmental, Inc., Arvada, CO

Buttercup 27-34 Fed 3H

Sample Id:	**SS02**	Matrix:	Soil	Date Received:	09.17.19 08.45
Lab Sample Id:	637049-002	Date Collected:	09.16.19 15.37	Sample Depth:	0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	09.17.19 11.00	Basis:	Wet Weight
Seq Number:	3101768				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	09.17.19 16.58	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	09.17.19 16.58	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	09.17.19 16.58	U	1
m,p-Xylenes	179601-23-1	<0.00201	0.00201	mg/kg	09.17.19 16.58	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	09.17.19 16.58	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	09.17.19 16.58	U	1
Total BTEX		<0.00100	0.00100	mg/kg	09.17.19 16.58	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	104	%	70-130	09.17.19 16.58	
4-Bromofluorobenzene	460-00-4	105	%	70-130	09.17.19 16.58	

Certificate of Analytical Results 637049

LT Environmental, Inc., Arvada, CO

Buttercup 27-34 Fed 3H

Sample Id:	**SS03**	Matrix:	Soil	Date Received:	09.17.19 08.45
Lab Sample Id:	637049-003	Date Collected:	09.16.19 15.38	Sample Depth:	0.5 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	09.17.19 19.09	Basis:	Wet Weight
Seq Number:	3101789				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**288**	49.5	mg/kg	09.17.19 19.28		5

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	09.17.19 12.00	Basis:	Wet Weight
Seq Number:	3101755				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<25.0	25.0	mg/kg	09.17.19 21.37	U	1
Diesel Range Organics (DRO)	C10C28DRO	<25.0	25.0	mg/kg	09.17.19 21.37	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.17.19 21.37	U	1
Total GRO-DRO	PHC628	<25.0	25.0	mg/kg	09.17.19 21.37	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.17.19 21.37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	117	%	70-135	09.17.19 21.37	
o-Terphenyl	84-15-1	89	%	70-135	09.17.19 21.37	

Certificate of Analytical Results 637049

LT Environmental, Inc., Arvada, CO

Buttercup 27-34 Fed 3H

Sample Id:	**SS03**	Matrix:	Soil	Date Received:	09.17.19 08.45
Lab Sample Id:	637049-003	Date Collected:	09.16.19 15.38	Sample Depth:	0.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	09.17.19 11.00	Basis:	Wet Weight
Seq Number:	3101768				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	09.17.19 17.18	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	09.17.19 17.18	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	09.17.19 17.18	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	09.17.19 17.18	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	09.17.19 17.18	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	09.17.19 17.18	U	1
Total BTEX		<0.00100	0.00100	mg/kg	09.17.19 17.18	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	106	%	70-130	09.17.19 17.18	
4-Bromofluorobenzene	460-00-4	106	%	70-130	09.17.19 17.18	

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 637049

LT Environmental, Inc.

Buttercup 27-34 Fed 3H

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3101789 Matrix: Solid Date Prep: 09.17.19
MB Sample Id: 7686388-1-BLK LCS Sample Id: 7686388-1-BKS LCSD Sample Id: 7686388-1-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	232	93	243	97	90-110	5	20	mg/kg	09.18.19 09:53	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3101789 Matrix: Solid Date Prep: 09.17.19
Parent Sample Id: 637040-003 MS Sample Id: 637040-003 S MSD Sample Id: 637040-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	264	2000	2500	112	2490	112	90-110	0	20	mg/kg	09.17.19 18:44	X

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3101789 Matrix: Soil Date Prep: 09.17.19
Parent Sample Id: 637045-001 MS Sample Id: 637045-001 S MSD Sample Id: 637045-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	97.8	201	334	118	352	127	90-110	5	20	mg/kg	09.17.19 15:57	X

Analytical Method: **TPH by SW8015 Mod** Prep Method: SW8015P
Seq Number: 3101755 Matrix: Solid Date Prep: 09.17.19
MB Sample Id: 7686378-1-BLK LCS Sample Id: 7686378-1-BKS LCSD Sample Id: 7686378-1-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	848	85	887	89	70-135	4	35	mg/kg	09.17.19 14:31	
Diesel Range Organics (DRO)	<50.0	1000	709	71	812	81	70-135	14	35	mg/kg	09.17.19 14:31	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	115		122		126		70-135	%	09.17.19 14:31
o-Terphenyl	89		104		99		70-135	%	09.17.19 14:31

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* | (C-E) / (C+E) |
[D] = 100 * (C) / [B]
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 637049

LT Environmental, Inc.

Buttercup 27-34 Fed 3H

Analytical Method: **TPH by SW8015 Mod** Prep Method: SW8015P
Seq Number: 3101755 Matrix: Soil Date Prep: 09.17.19
Parent Sample Id: 637040-001 MS Sample Id: 637040-001 S MSD Sample Id: 637040-001 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)	<50.3	1010	889	88	905	91	70-135	2	35	mg/kg	09.17.19 15:44	
Diesel Range Organics (DRO)	<50.3	1010	844	84	708	71	70-135	18	35	mg/kg	09.17.19 15:44	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	125		128		70-135	%	09.17.19 15:44
o-Terphenyl	109		111		70-135	%	09.17.19 15:44

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3101768 Matrix: Solid Date Prep: 09.17.19
MB Sample Id: 7686400-1-BLK LCS Sample Id: 7686400-1-BKS LCSD Sample Id: 7686400-1-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	0.0975	98	0.0952	95	70-130	2	35	mg/kg	09.17.19 13:40	
Toluene	<0.00100	0.100	0.107	107	0.104	104	70-130	3	35	mg/kg	09.17.19 13:40	
Ethylbenzene	<0.00100	0.100	0.118	118	0.114	114	71-129	3	35	mg/kg	09.17.19 13:40	
m,p-Xylenes	<0.00200	0.200	0.240	120	0.232	116	70-135	3	35	mg/kg	09.17.19 13:40	
o-Xylene	<0.00100	0.100	0.117	117	0.112	112	71-133	4	35	mg/kg	09.17.19 13:40	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	106		102		100		70-130	%	09.17.19 13:40
4-Bromofluorobenzene	106		118		108		70-130	%	09.17.19 13:40

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3101768 Matrix: Soil Date Prep: 09.17.19
Parent Sample Id: 637040-001 MS Sample Id: 637040-001 S MSD Sample Id: 637040-001 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	0.0920	92	0.0955	95	70-130	4	35	mg/kg	09.17.19 14:59	
Toluene	<0.00100	0.100	0.0926	93	0.0950	94	70-130	3	35	mg/kg	09.17.19 14:59	
Ethylbenzene	<0.00100	0.100	0.112	112	0.117	116	71-129	4	35	mg/kg	09.17.19 14:59	
m,p-Xylenes	<0.00201	0.201	0.228	113	0.237	117	70-135	4	35	mg/kg	09.17.19 14:59	
o-Xylene	<0.00100	0.100	0.116	116	0.121	120	71-133	4	35	mg/kg	09.17.19 14:59	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		105		70-130	%	09.17.19 14:59
4-Bromofluorobenzene	117		113		70-130	%	09.17.19 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: e37049

XENCO LABORATORIES
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 _____ of _____

Project Manager:	Dan Moir	Bill to: (if different)	Kyle Littrell
Company Name:	LT Environmental, Inc., Permian office	Company Name:	XTO Energy
Address:	3300 North A Street	Address:	
City, State ZIP:	Midland, Tx 79705	City, State ZIP:	
Phone:	(432) 236-3849 Email:		wmather@ltenv.com, dmoir@ltenv.com

Work Order Comments

Program: UST/PST ☐ RP ☐ Brownfields ☐ RC ☐ Superfund ☐
State of Project:
Reporting:Level II ☐ Level III ☐ ST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	Buttercup 27-34 Fed 3H	Turn Around	
Project Number:	012919175	Routine	✓
P.O. Number:	Eddy County	Rush:	
Sampler's Name:	William Mather	Due Date:	

SAMPLE RECEIPT			
Temp Blank:	Yes No	Wet Ice:	Yes No
Temperature (°C):	6.0	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:	3

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 0=8021)	Chloride (EPA 300.0)	Sample Comments
SS01	s	9/16/2019	15:36	0.5	1	x	x	x	Discrete
SS02	s	9/16/2019	15:37	0.5	1	x	x	x	Discrete
SS03	s	9/16/2019	15:38	0.5	1	x	x	x	Discrete

Work Order Notes

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

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		9/17/19 08:45	2		
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: 09.17.2019 08.45.00 AM

Work Order #: 637049

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)?	6
#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)?	**Yes**
#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: 09.17.2019

Checklist reviewed by: Martha Castro Date: 09.17.2019

Analytical Report 654218

for

LT Environmental, Inc.

Project Manager: Dan Moir

Buttercup 27

012919175

04-MAR-20

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 (2019-058), North Carolina (681), Arkansas (19-037-0)

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-Carlsbad (LELAP): Louisiana (05092)
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)

04-MAR-20

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

Reference: XENCO Report No(s): **654218**
Buttercup 27
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) 654218. 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. 654218 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

Sample Cross Reference 654218

LT Environmental, Inc., Arvada, CO

Buttercup 27

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
BH01	S	02-27-20 13:28	2 ft	654218-001
BH02	S	02-27-20 14:07	2 ft	654218-002
BH03	S	02-27-20 14:23	2 ft	654218-003

CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: Buttercup 27

Project ID: *012919175*
Work Order Number(s): *654218*

Report Date: *04-MAR-20*
Date Received: *02/28/2020*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3118296 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 654218

LT Environmental, Inc., Arvada, CO

Project Name: Buttercup 27

Project Id: 012919175
Contact: Dan Moir
Project Location:

Date Received in Lab: Fri Feb-28-20 08:01 am
Report Date: 04-MAR-20
Project Manager: Jessica Kramer

Analysis Requested											
	Lab Id:	654218-001		654218-002		654218-003					
	Field Id:	BH01		BH02		BH03					
	Depth:	2- ft		2- ft		2- ft					
	Matrix:	SOIL		SOIL		SOIL					
	Sampled:	Feb-27-20 13:28		Feb-27-20 14:07		Feb-27-20 14:23					
BTEX by EPA 8021B	***Extracted:***	Mar-02-20 11:02		Mar-02-20 11:02		Mar-02-20 11:02					
	Analyzed:	Mar-02-20 18:48		Mar-02-20 19:08		Mar-02-20 20:10					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200				
Toluene		<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200				
Ethylbenzene		<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200				
m,p-Xylenes		<0.00397	0.00397	<0.00399	0.00399	<0.00400	0.00400				
o-Xylene		<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200				
Total Xylenes		<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200				
Total BTEX		<0.00198	0.00198	<0.00200	0.00200	<0.00200	0.00200				

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 654218

LT Environmental, Inc., Arvada, CO

Project Name: Buttercup 27

Project Id: 012919175
Contact: Dan Moir
Project Location:

Date Received in Lab: Fri Feb-28-20 08:01 am
Report Date: 04-MAR-20
Project Manager: Jessica Kramer

Analysis Requested											
	Lab Id:	654218-001		654218-002		654218-003					
	Field Id:	BH01		BH02		BH03					
	Depth:	2- ft		2- ft		2- ft					
	Matrix:	SOIL		SOIL		SOIL					
	Sampled:	Feb-27-20 13:28		Feb-27-20 14:07		Feb-27-20 14:23					
Chloride by EPA 300	***Extracted:***	Mar-02-20 15:38		Mar-02-20 15:38		Mar-02-20 15:38					
	Analyzed:	Mar-02-20 16:44		Mar-02-20 17:02		Mar-02-20 17:08					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		<9.98	9.98	26.0	9.92	12.6	10.0				
TPH by SW8015 Mod	***Extracted:***	Mar-02-20 15:45		Mar-02-20 15:45		Mar-02-20 15:45					
	Analyzed:	Mar-02-20 17:54		Mar-02-20 18:55		Mar-02-20 19:15					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		<49.8	49.8	<49.8	49.8	<50.2	50.2				
Diesel Range Organics (DRO)		<49.8	49.8	<49.8	49.8	<50.2	50.2				
Motor Oil Range Hydrocarbons (MRO)		<49.8	49.8	<49.8	49.8	<50.2	50.2				
Total GRO-DRO		<49.8	49.8	<49.8	49.8	<50.2	50.2				
Total TPH		<49.8	49.8	<49.8	49.8	<50.2	50.2				

Jessica Kramer
Project Assistant

Certificate of Analytical Results 654218

LT Environmental, Inc., Arvada, CO

Buttercup 27

Sample Id:	**BH01**	Matrix:	Soil	Date Received:	02.28.20 08.01
Lab Sample Id:	654218-001	Date Collected:	02.27.20 13.28	Sample Depth:	2 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	03.02.20 15.38	Basis:	Wet Weight
Seq Number:	3118298				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<9.98	9.98	mg/kg	03.02.20 16.44	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	03.02.20 15.45	Basis:	Wet Weight
Seq Number:	3118317				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	03.02.20 17.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	03.02.20 17.54	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	03.02.20 17.54	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	03.02.20 17.54	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	03.02.20 17.54	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	118	%	70-135	03.02.20 17.54	
o-Terphenyl	84-15-1	133	%	70-135	03.02.20 17.54	

Certificate of Analytical Results 654218

LT Environmental, Inc., Arvada, CO

Buttercup 27

Sample Id:	**BH01**	Matrix:	Soil	Date Received:	02.28.20 08.01
Lab Sample Id:	654218-001	Date Collected:	02.27.20 13.28	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	03.02.20 11.02	Basis:	Wet Weight
Seq Number:	3118296				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	03.02.20 18.48	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	03.02.20 18.48	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	03.02.20 18.48	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	03.02.20 18.48	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	03.02.20 18.48	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	03.02.20 18.48	U	1
Total BTEX		<0.00198	0.00198	mg/kg	03.02.20 18.48	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	89	%	70-130	03.02.20 18.48	
1,4-Difluorobenzene	540-36-3	92	%	70-130	03.02.20 18.48	

Certificate of Analytical Results 654218

LT Environmental, Inc., Arvada, CO

Buttercup 27

Sample Id:	**BH02**	Matrix:	Soil	Date Received:	02.28.20 08.01
Lab Sample Id:	654218-002	Date Collected:	02.27.20 14.07	Sample Depth:	2 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	03.02.20 15.38	Basis:	Wet Weight
Seq Number:	3118298				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**26.0**	9.92	mg/kg	03.02.20 17.02		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	03.02.20 15.45	Basis:	Wet Weight
Seq Number:	3118317				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	03.02.20 18.55	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	03.02.20 18.55	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	03.02.20 18.55	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	03.02.20 18.55	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	03.02.20 18.55	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	103	%	70-135	03.02.20 18.55	
o-Terphenyl	84-15-1	115	%	70-135	03.02.20 18.55	

Certificate of Analytical Results 654218

LT Environmental, Inc., Arvada, CO

Buttercup 27

Sample Id:	**BH02**	Matrix:	Soil	Date Received:	02.28.20 08.01
Lab Sample Id:	654218-002	Date Collected:	02.27.20 14.07	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	03.02.20 11.02	Basis:	Wet Weight
Seq Number:	3118296				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	03.02.20 19.08	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	03.02.20 19.08	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	03.02.20 19.08	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	03.02.20 19.08	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	03.02.20 19.08	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	03.02.20 19.08	U	1
Total BTEX		<0.00200	0.00200	mg/kg	03.02.20 19.08	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	97	%	70-130	03.02.20 19.08	
1,4-Difluorobenzene	540-36-3	96	%	70-130	03.02.20 19.08	

Certificate of Analytical Results 654218

LT Environmental, Inc., Arvada, CO

Buttercup 27

Sample Id:	**BH03**	Matrix:	Soil	Date Received:	02.28.20 08.01
Lab Sample Id:	654218-003	Date Collected:	02.27.20 14.23	Sample Depth:	2 ft

Analytical Method:	Chloride by EPA 300			Prep Method:	E300P
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	03.02.20 15.38	Basis:	Wet Weight
Seq Number:	3118298				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**12.6**	10.0	mg/kg	03.02.20 17.08		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	SW8015P
Tech:	DTH			% Moisture:	
Analyst:	DTH	Date Prep:	03.02.20 15.45	Basis:	Wet Weight
Seq Number:	3118317				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	03.02.20 19.15	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	03.02.20 19.15	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	03.02.20 19.15	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	03.02.20 19.15	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	03.02.20 19.15	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	03.02.20 19.15	
o-Terphenyl	84-15-1	118	%	70-135	03.02.20 19.15	

Certificate of Analytical Results 654218

LT Environmental, Inc., Arvada, CO

Buttercup 27

Sample Id:	**BH03**	Matrix:	Soil	Date Received:	02.28.20 08.01
Lab Sample Id:	654218-003	Date Collected:	02.27.20 14.23	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MAB			% Moisture:	
Analyst:	MAB	Date Prep:	03.02.20 11.02	Basis:	Wet Weight
Seq Number:	3118296				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	03.02.20 20.10	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	03.02.20 20.10	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	03.02.20 20.10	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	03.02.20 20.10	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	03.02.20 20.10	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	03.02.20 20.10	U	1
Total BTEX		<0.00200	0.00200	mg/kg	03.02.20 20.10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	113	%	70-130	03.02.20 20.10	
4-Bromofluorobenzene	460-00-4	95	%	70-130	03.02.20 20.10	

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 654218

LT Environmental, Inc.

Buttercup 27

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3118298 — Matrix: Solid — Date Prep: 03.02.20
MB Sample Id: 7697885-1-BLK — LCS Sample Id: 7697885-1-BKS — LCSD Sample Id: 7697885-1-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	253	101	255	102	90-110	1	20	mg/kg	03.02.20 16:26	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3118298 — Matrix: Soil — Date Prep: 03.02.20
Parent Sample Id: 654218-001 — MS Sample Id: 654218-001 S — MSD Sample Id: 654218-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	9.66	200	210	100	211	101	90-110	0	20	mg/kg	03.02.20 16:50	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3118298 — Matrix: Soil — Date Prep: 03.02.20
Parent Sample Id: 654220-001 — MS Sample Id: 654220-001 S — MSD Sample Id: 654220-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	277	198	508	117	508	117	90-110	0	20	mg/kg	03.02.20 18:22	X

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3118317 — Matrix: Solid — Date Prep: 03.02.20
MB Sample Id: 7697940-1-BLK — LCS Sample Id: 7697940-1-BKS — LCSD Sample Id: 7697940-1-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	784	78	850	85	70-135	8	35	mg/kg	03.02.20 17:13	
Diesel Range Organics (DRO)	<50.0	1000	838	84	943	94	70-135	12	35	mg/kg	03.02.20 17:13	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	87		94		105		70-135	%	03.02.20 17:13
o-Terphenyl	98		95		109		70-135	%	03.02.20 17:13

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3118317 — Matrix: Solid — Date Prep: 03.02.20
MB Sample Id: 7697940-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	03.02.20 16:53	

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

QC Summary 654218

LT Environmental, Inc.

Buttercup 27

Analytical Method: TPH by SW8015 Mod — Prep Method: SW8015P
Seq Number: 3118317 — Matrix: Soil — Date Prep: 03.02.20
Parent Sample Id: 654218-001 — MS Sample Id: 654218-001 S — MSD Sample Id: 654218-001 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)	<50.0	999	1030	103	1070	108	70-135	4	35	mg/kg	03.02.20 18:14	
Diesel Range Organics (DRO)	<50.0	999	1140	114	1200	121	70-135	5	35	mg/kg	03.02.20 18:14	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	127		132		70-135	%	03.02.20 18:14
o-Terphenyl	132		120		70-135	%	03.02.20 18:14

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3118296 — Matrix: Solid — Date Prep: 03.02.20
MB Sample Id: 7697872-1-BLK — LCS Sample Id: 7697872-1-BKS — LCSD Sample Id: 7697872-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.118	118	0.117	117	70-130	1	35	mg/kg	03.02.20 13:42	
Toluene	<0.00200	0.100	0.107	107	0.106	106	70-130	1	35	mg/kg	03.02.20 13:42	
Ethylbenzene	<0.00200	0.100	0.101	101	0.0986	99	71-129	2	35	mg/kg	03.02.20 13:42	
m,p-Xylenes	<0.00400	0.200	0.194	97	0.188	94	70-135	3	35	mg/kg	03.02.20 13:42	
o-Xylene	<0.00200	0.100	0.0998	100	0.0981	98	71-133	2	35	mg/kg	03.02.20 13:42	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	113		111		111		70-130	%	03.02.20 13:42
4-Bromofluorobenzene	89		90		89		70-130	%	03.02.20 13:42

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3118296 — Matrix: Soil — Date Prep: 03.02.20
Parent Sample Id: 654217-002 — MS Sample Id: 654217-002 S — MSD Sample Id: 654217-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.124	123	0.115	114	70-130	8	35	mg/kg	03.02.20 14:23	
Toluene	<0.00202	0.101	0.112	111	0.105	104	70-130	6	35	mg/kg	03.02.20 14:23	
Ethylbenzene	<0.00202	0.101	0.109	108	0.101	100	71-129	8	35	mg/kg	03.02.20 14:23	
m,p-Xylenes	<0.00404	0.202	0.209	103	0.196	97	70-135	6	35	mg/kg	03.02.20 14:23	
o-Xylene	<0.00202	0.101	0.107	106	0.100	99	71-133	7	35	mg/kg	03.02.20 14:23	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	111		109		70-130	%	03.02.20 14:23
4-Bromofluorobenzene	92		93		70-130	%	03.02.20 14:23

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: 054218

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., Permian office	Company Name:	XTO Energy
Address:	3300 North A Street	Address:	3104 E Green Street
City, State ZIP:	Midland, TX 79705	City, State ZIP:	Carlsbad, NM 88220
Phone:	432.236.3849	Email:	atrejo@ltenv.com

Work Order Comments

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

Project Name:	Buttercup 27 (2RP-5586)	Turn Around	
Project Number:	012919175	Routine	X
P.O. Number:		Rush:	
Sampler's Name:	Armando Trejo	Due Date:	

SAMPLE RECEIPT			
Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Temperature (°C):	0.5	Thermometer ID	
Received Intact:	(Yes) No	TNIH007	
Cooler Custody Seals:	Yes (No) N/A	Correction Factor:	-0.2
Sample Custody Seals:	Yes (No) N/A	Total Containers:	3

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 0=8021)	Chloride (EPA 300.0)
BH01 at SS01	S	2/27/2020	1328	2'	1	X	X	X
BH02 at SS02	S	2/27/2020	1407	2'	1	X	X	X
BH 03 at SS03	S	2/27/2020	1423	2'	1	X	X	X

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

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Xenco. A minimum charge of $75.00 will be applied to each project and a charge of $5 for each sample submitted to Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
		2/28/20 08:01	2		
			4		
			6		

Revised Date 051418 Rev. 2018.1

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 02.28.2020 08.01.00 AM

Work Order #: 654218

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)?	.5
#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: 03.02.2020

Checklist reviewed by: Jessica Kramer Date: 03.02.2020

Jessica Kramer