

April 25, 2018

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

**RE: Closure Request
Big Eddy Unit #164
Remediation Permit Numbers 2RP-2414 and 2RP-3126
Eddy County, New Mexico**

Dear Mr. Bratcher;

LT Environmental, Inc. (LTE), on behalf of XTO Energy, Inc. (XTO), is pleased to present the following letter report detailing the soil sampling activities at the Big Eddy Unit (BEU)#164 well pad (Site) in Section 27, Township 21 South, Range 29 East, in Eddy County, New Mexico (Figure 1). The purpose of the investigation was to assess impacts to soil after the well unloaded and caused the water tank to overflow on two separate occasions (July 27, 2014, and July 5, 2015).

On July 27, 2014, the well unloaded and caused the produced water tank to overflow causing a release of approximately 0.5 barrels (bbls) of crude oil and 10.5 bbls of produced water. The spill impacted approximately 515 square feet of the earthen containment surrounding the production tanks. No free-standing liquid was recovered.

On July 5, 2015, the well unloaded during the night and the tank overflowed approximately 1 bbl of crude oil and 6 bbls of produced water in the earthen berm containment. Approximately 305 square feet of the caliche pad within the earthen containment was affected by the release. Approximately 0.5 bbls of crude oil and 2 bbls of produced water were recovered with a vacuum truck.

The previous operator reported the releases to the New Mexico Oil Conservation Division (NMOCD) on a *Release Notification and Corrective Action Form C-141* on August 4, 2014 and July 14, 2015. The 2014 release was assigned Remediation Permit Number (RP) 2RP-2414 (Attachment 1) and the 2015 release was assigned 2RP-3126 (Attachment 2, the latitude and longitude were incorrect on the original and have been updated on the final C-141). Although the impacts occurred while the well was operated by the previous operator, XTO is the current operator and is committed to addressing any releases that remain unresolved. The sampling was conducted to assess current site conditions. Based on the results of the sampling event as described herein, XTO is requesting no further action for this release.

BACKGROUND

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 and known aquifer properties. The nearest permitted



water well with depth to water data is C 02223, located approximately 2.12 miles east of the Site, with a depth to groundwater of 200 feet bgs and a total depth of 350 feet bgs. The Site is greater than 1,000 feet from a water source and greater than 200 feet from a private domestic water source. The closest surface water to the Site is an unnamed arroyo located approximately 1,720 feet north of the Site. Based on these criteria, the NMOCD site ranking for remediation action levels is 0, and the following remediation action levels apply: 10 milligrams per kilogram (mg/kg) benzene; 50 mg/kg benzene, toluene, ethylbenzene, and total xylenes (BTEX); and 5,000 mg/kg total petroleum hydrocarbons (TPH). Based on standard practice in this region, LTE proposes a site-specific chloride action level of 600 mg/kg or within 10 percent (%) of the background concentrations.

SOIL SAMPLING

Soil sample locations were based on visual inspection of the Site and the information provided on the two C-141 Forms. Based on the description of the affected area, LTE determined the release occurred within the berm near the water tank. LTE made an effort to collect representative samples around the reported release source and areas potentially affected by the release. Because the C-141 Forms do not specify that remediation occurred, other than removal of standing fluids following the 2015 release, and because the release occurred within an earthen containment, it is unlikely that any soil was removed. LTE collected six soil samples on February 26, 2018, as depicted on Figure 2. Two samples were collected within the earthen containment, one directly adjacent to the water tank. To ensure the release did not extend outside of the containment, samples were collected in each cardinal direction from the described release location. No visual or olfactory evidence of the release was observed at the Site.

To eliminate the effects from weathering and natural degradation of contaminants at the ground surface, subsurface samples were collected from each location at roughly 1-foot bgs by hand auger. The soil samples were collected directly into pre-cleaned glass jars, labeled with location, date, time, sampler, and method of analysis, and immediately placed on ice. The samples were delivered at 4 degrees Celsius (°C) under strict chain-of-custody procedures to Xenco Laboratories in Midland, Texas, for analysis of BTEX by United States Environmental Protection Agency (USEPA) Method 8021B, TPH-diesel range organics (DRO), TPH-motor oil range organics (MRO), and TPH-gasoline range organics (GRO) by USEPA Method SW8015 Modified, and chloride by USEPA Method 300.0.

ANALYTICAL RESULTS

Laboratory analytical results indicated BTEX and TPH concentrations in five of the six samples were below laboratory reporting limits and one sample (SS1) had a total BTEX concentration of 0.0455 mg/kg and a TPH concentration of 1,200 mg/kg. Chloride concentrations in all six samples were below the laboratory reporting limit. Laboratory analytical results are presented on Figure 2 and in Table 1, and the complete laboratory analytical report is included as Attachment 3.





CONCLUSIONS

Laboratory analytical results for soil samples collected within the former release footprint indicate impact to soil, as defined by concentrations of BTEX, TPH, and chloride, do not exceed NMOCD site-specific standards. Initial response efforts and natural degradation have remediated this Site, and XTO requests no further action for this release.

If you have any questions or comments, do not hesitate to contact Adrian Baker at (432) 887-1255 or abaker@ltenv.com.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in blue ink that reads 'Adrian Baker'.

Adrian Baker
Project Geologist

A handwritten signature in blue ink that reads 'Ashley L. Ager'.

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

cc: Kyle Littrell, XTO
Crystal Weaver, NMOCD
Jim Amos, BLM
Shelly Tucker, BLM

Attachments:

Figure 1 Site Location Map
Figure 2 Soil Sample Locations
Table 1 Soil Analytical Results
Attachment 1 2RP-2414 Initial/Final NMOCD Form C-141
Attachment 2 2RP-3126 Initial/Final NMOCD Form C-141
Attachment 3 Laboratory Analytical Report



FIGURES



P:\XTO Energy\GIS\MXD\012918064_BEU-164\012918064_FIG01_SL_2018.mxd

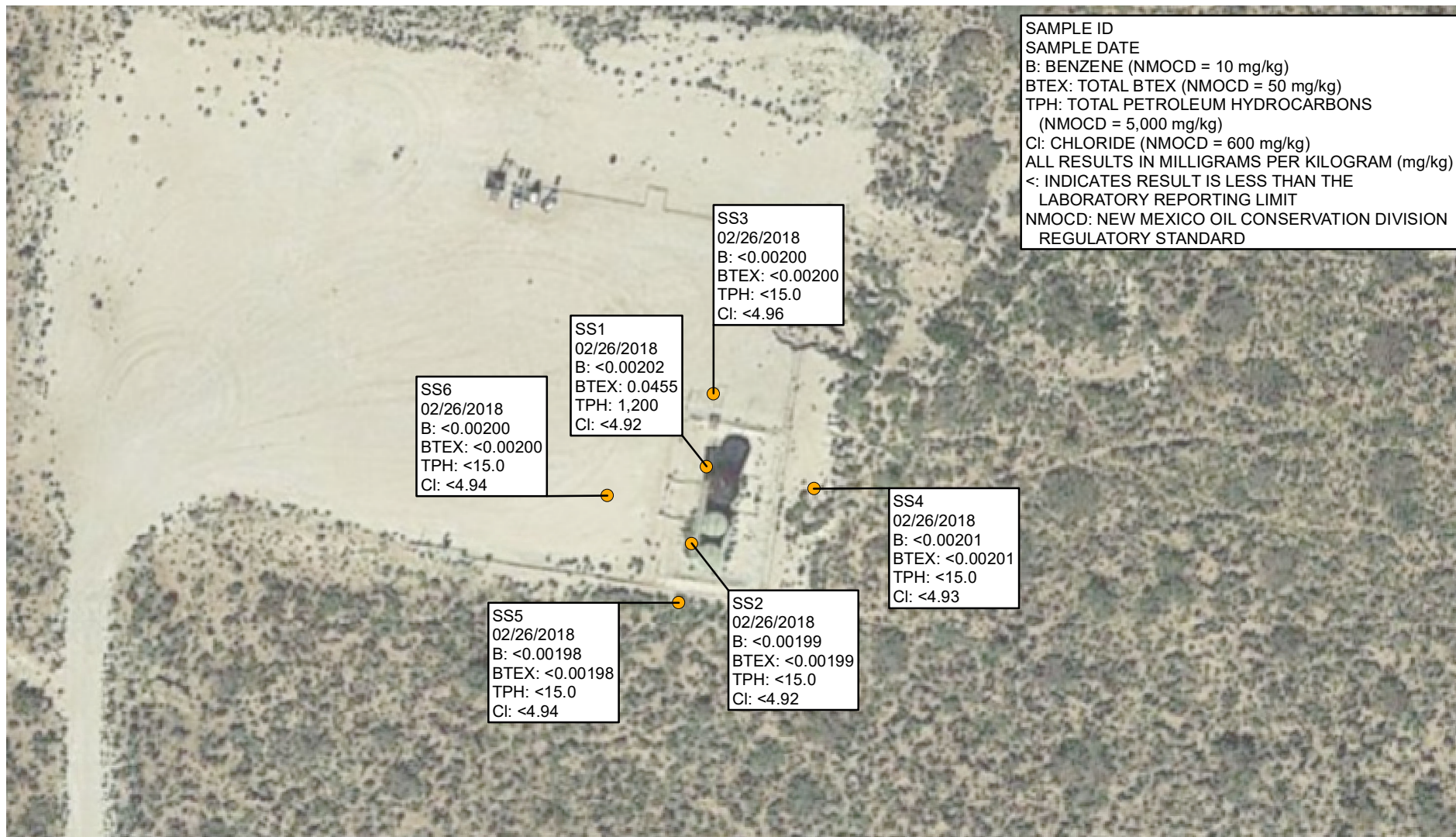


IMAGE COURTESY OF GOOGLE EARTH 2017

LEGEND

● SOIL SAMPLE

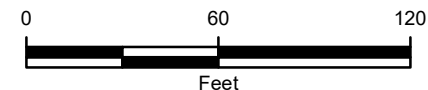


FIGURE 2
SOIL SAMPLE LOCATIONS
BEU#164
NWSE SEC 27 T21S R29E
EDDY COUNTY, NEW MEXICO
XTO ENERGY, INC.



NOTE: Remediation Permit Number 2RP-2414 and 2RP-3126

TABLE

TABLE 1
SOIL ANALYTICAL RESULTS
BEU #164
REMEDIATION PERMIT NUMBERS 2RP-2414 AND 2RP-3126
EDDY COUNTY, NEW MEXICO
XTO ENERGY INC.

Sample Name	Sample Depth (feet bgs)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	C6-C10 Gasoline Range Organics (mg/kg)	C10-C28 Diesel Range Organics (mg/kg)	C28-40 Motor Oil Range Organics (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
SS1	1.0	02/26/2018	<0.00202	<0.00202	0.00481	0.0407	0.0455	25.8	1,110	63.9	1,200	<4.92
SS2	1.0	02/26/2018	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	<4.92
SS3	1.0	02/26/2018	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	<4.96
SS4	1.0	02/26/2018	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	<4.93
SS5	1.0	02/26/2018	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	<4.94
SS6	1.0	02/26/2018	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	<4.94
NMOCD Remediation Action Level			10	NE	NE	NE	50	NE	NE	NE	5,000	600

Notes:

bgs - below ground surface

BTEX - benzene, toluene, ethylbenzene, and total xylenes

mg/kg - milligrams per kilogram

NE - not established

NMOCD - New Mexico Oil Conservation Division

TPH - total petroleum hydrocarbons

< - indicates result is below laboratory reporting limit

ATTACHMENT 1
2RP-2414 INITIAL/FINAL NMOCD FORM C-141



Advancing Opportunity

NM OIL CONSERVATION

ARTESIA DISTRICT

AUG 05 2014

Form C-141
Revised August 8, 2011

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

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

RECEIVED

Release Notification and Corrective Action

1 AB1421854563

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: BOPCO, L.P. 360737
Address: 522 W. Mermod, Suite 704 Carlsbad, N.M. 88220
Facility Name: Big Eddy Unit 164 Tank Battery

Contact: Tony Savoie
Telephone No. 575-887-7329
Facility Type: Exploration and Production

Surface Owner: Federal

Mineral Owner: Federal

API No. 30-015-35592

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	27	21S	29E	1650	South	1650	East	Eddy

Latitude N 32.447365 Longitude W 103.968959

NATURE OF RELEASE

Type of Release: Crude oil and produced water	Volume of Release: 1/2 bbl of crude oil and 10.5 bbls produced water	Volume Recovered: None
Source of Release: Produced water tank	Date and Hour of Occurrence: 7/27/14 time unknown	Date and Hour of Discovery: 7/27/14 at 12:54 p.m.
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The well unloaded and caused the water tank to overflow. Water hauler failed to off-load water. Pumper called the water transport company to verify when water needs to be hauled.

Describe Area Affected and Cleanup Action Taken.*

The spill impacted approximately 515 sq.ft. of the earthen containment around the production tanks. All of the fluid soaked into the ground. The tanks will be evaluated for relocation and placement inside O perm containment. The spill area will be cleaned up in accordance to the NMOCD and BLM remediation guidelines.

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

Signature: <u>Tony Savoie</u>		OIL CONSERVATION DIVISION	
Printed Name: Tony Savoie		Approved by <u>[Signature]</u> <u>[Signature]</u>	
Title: Waste Management and Remediation Specialist		Approval Date: <u>8/7/14</u>	Expiration Date: <u>N/A</u>
E-mail Address: <u>tasavoie@basspet.com</u>		Conditions of Approval: Remediation Per O.C.D. Rule & Guidelines	
Date: <u>8/4/14</u>	Phone: <u>432-556-8730</u>	Attached <input type="checkbox"/>	

* Attach Additional Sheets If Necessary

SUBMIT REMEDIATION PROPOSAL NO LATER THAN: 9/7/14

2RP-2414

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company XTO Energy	Contact Kyle Littrell	
Address 3104 E Greene Street Carlsbad, N.M. 88220	Telephone No. 432-221-7331	
Facility Name Big Eddy Unit 164 Tank Battery	Facility Type Exploration and Production	
Surface Owner Federal	Mineral Owner Federal	API No. 30-015-35592

LOCATION OF RELEASE

Unit Letter J	Section 27	Township 21S	Range 29E	Feet from the 1650	North/South Line South	Feet from the 1650	East/West Line East	County Eddy
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Latitude N 32.447365 Longitude -103.968959 NAD83

NATURE OF RELEASE

Type of Release Produced Water and crude oil	Volume of Release 0.5 bbl Crude Oil and 10.5 bbl Produced Water	Volume Recovered 0 bbls
Source of Release Produced water tank	Date and Hour of Occurrence 7/27/14 time unknown	Date and Hour of Discovery 7/27/2014 @ 12:54 pm
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom? NA	
By Whom? NA	Date and Hour NA	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.* N/A

Describe Cause of Problem and Remedial Action Taken.*

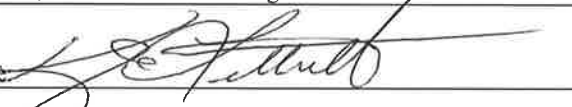
The well unloaded and caused the water tank to overflow. Water hauler failed to off-load water. Pumper called the water transport company to verify when water needs to be hauled.

Describe Area Affected and Cleanup Action Taken.*

The spill impacted approximately 515 sq. ft. of the earthen containment around the production tanks. All of the fluid soaked into the ground. The tanks were evaluated for relocation and placement inside O perm containment. The spill area will be cleaned up in accordance with the NMOCD and BLM remediation guidelines.

LTE collected six soil samples on February 26, 2018. Laboratory analytical results for the six soil samples indicated BTEX, TPH, and chloride were below the NMOCD remediation action levels for this site. XTO requests no further action for the release.

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

Signature: 	OIL CONSERVATION DIVISION		
Printed Name: Kyle Littrell	Approved by Environmental Specialist:		
Title: SH&E Coordinator	Approval Date:	Expiration Date:	
E-mail Address: Kyle.Littrell@xtoenergy.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 5/01/2018	Phone: 432-221-7331		

* Attach Additional Sheets If Necessary

ATTACHMENT 2
2RP-3126 INITIAL/FINAL NMOCD FORM C-141



Advancing Opportunity

NM OIL CONSERVATION
ARTESIA DISTRICT

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

JUL 14 2015

Form C-141
Revised August 8, 2011

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

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

RECEIVED

Release Notification and Corrective Action

NAB1519 853006

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: BOPCO, L.P.	Contact: Amy Ruth
Address: 522 W. Mermod, Suite 704 Carlsbad, N.M. 88220	Telephone No. 575-887-7329
Facility Name: Big Eddy Unit #164	Facility Type: Exploration and Production

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-015-35592
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LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
J	27	21S	29E	1650	South	1650	East	Eddy

Latitude 32.447313° Longitude -104.968975°

NATURE OF RELEASE

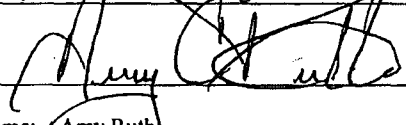
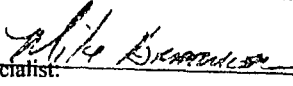
Type of Release Crude Oil and Produced Water	Volume of Release 1 bbl oil, 6 bbls PW	Volume Recovered 1/2 bbl oil, 2 bbls PW
Source of Release Tank Overflow	Date and Hour of Occurrence 7/5/2015 at 12 am	Date and Hour of Discovery 7/5/2015 at 12 am
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Bratcher/Heather Patterson (NMOCD), Jim Amos (BLM)	
By Whom? Amy Ruth	Date and Hour 7/5/2015 at 5:09 pm	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
BEU 164 well unloaded during the night and tank overflowed into earthen berm containment. Alarm levels were then set during the afternoon on 7/5/2015 to prevent future over flow events.

Describe Area Affected and Cleanup Action Taken.*
Leak affected 305 square feet of caliche pad within the earthen containment. Vac truck recovered standing fluids.

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

Signature: 	OIL CONSERVATION DIVISION	
Printed Name: Amy Ruth	Signed By  Approved by Environmental Specialist:	
Title: Assistant Remediation Foreman	Approval Date: 7/17/15	Expiration Date: N/A
E-mail Address: ACRuth@basspet.com	Conditions of Approval: Attached <input type="checkbox"/>	
Date: 7/14/2015 Phone: 432-661-0571	Remediation per O.C.D. Rules & Guidelines	

* Attach Additional Sheets If Necessary

SUBMIT REMEDIATION PROPOSAL NO
LATER THAN: 8/20/15

2RP-3126

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
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State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

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Facility Name Big Eddy Unit 164 Tank Battery	Facility Type Exploration and Production	
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Latitude N 32.447365 Longitude -103.968959 NAD83

NATURE OF RELEASE

Type of Release Produced Water and Crude Oil	Volume of Release 1 bbl Crude Oil and 6 bbl Produced Water	Volume Recovered 0.5 bbls crude oil and 2 bbl produced water
Source of Release Tank Overflow	Date and Hour of Occurrence 7/5/2015 at 12 am	Date and Hour of Discovery 7/5/2015 at 12 am
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Bratcher/ Heather Patterson (NMOCD), Jim Amos (BLM)	
By Whom? Amy Ruth	Date and Hour 7/5/2015 at 5:09 pm	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.* N/A

Describe Cause of Problem and Remedial Action Taken.*

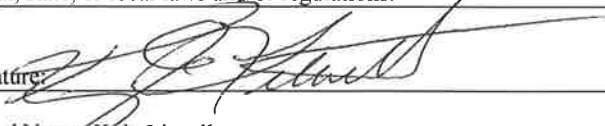
The well unloaded during the night and caused the tank to overflow into earthen berm containment. Alarm levels were then set during the afternoon on 7/5/15 to prevent future overflow events.

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The spill impacted approximately 305 sq. ft. of the caliche pad within the earthen containment. Vac truck removed standing liquids.

LTE collected six soil samples on February 26, 2018. Laboratory analytical results for the six soil samples indicated BTEX, TPH, and chloride were below the NMOCD remediation action levels for this site. XTO requests no further action for the release.

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Signature: 	<u>OIL CONSERVATION DIVISION</u>	
Printed Name: Kyle Littrell	Approved by Environmental Specialist:	
Title: SH&E Coordinator	Approval Date:	Expiration Date:
E-mail Address: Kyle_Littrell@xtoenergy.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 5/01/2018 Phone: 432-221-7331		

* Attach Additional Sheets If Necessary

ATTACHMENT 3
LABORATORY ANALYTICAL REPORT



Advancing Opportunity

Analytical Report 577908

for
LT Environmental, Inc.

Project Manager: Adrian Baker

BEU-164

30-015-35592

09-MAR-18

Collected By: Client



1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-18-24), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):

Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)

Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-18-14)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco-Atlanta (LELAP Lab ID #04176)



09-MAR-18

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

Reference: XENCO Report No(s): **577908**
BEU-164
Project Address: NM

Adrian Baker:

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) 577908. 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. 577908 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
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

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



Sample Cross Reference 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS1	S	02-26-18 13:45	12 In	577908-001
SS2	S	02-26-18 13:58	12 In	577908-002
SS3	S	02-26-18 14:10	12 In	577908-003
SS4	S	02-26-18 14:20	12 In	577908-004
SS5	S	02-26-18 14:25	12 In	577908-005
SS6	S	02-26-18 14:35	12 In	577908-006



CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: BEU-164

Project ID: 30-015-35592
Work Order Number(s): 577908

Report Date: 09-MAR-18
Date Received: 03/01/2018

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3042733 BTEX by EPA 8021B

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

Lab Sample ID 577908-006 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).

Toluene recovered below QC limits in the Matrix Spike. Benzene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 577908-001, -002, -003, -004, -005, -006.

The Laboratory Control Sample for Toluene, Benzene is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3043190 Inorganic Anions by EPA 300

Lab Sample ID 577909-002 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).

Chloride recovered above QC limits in the Matrix Spike. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 577908-001, -002, -003, -004, -005, -006.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.



Certificate of Analysis Summary 577908

LT Environmental, Inc., Arvada, CO

Project Name: BEU-164



Project Id: 30-015-35592

Contact: Adrian Baker

Project Location: NM

Date Received in Lab: Thu Mar-01-18 01:10 pm

Report Date: 09-MAR-18

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	577908-001	577908-002	577908-003	577908-004	577908-005	577908-006
	<i>Field Id:</i>	SS1	SS2	SS3	SS4	SS5	SS6
	<i>Depth:</i>	12- In	12- In	12- In	12- In	12- In	12- In
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Feb-26-18 13:45	Feb-26-18 13:58	Feb-26-18 14:10	Feb-26-18 14:20	Feb-26-18 14:25	Feb-26-18 14:35
BTEX by EPA 8021B	<i>Extracted:</i>	Mar-04-18 10:30	Mar-04-18 10:30	Mar-04-18 10:30	Mar-04-18 10:30	Mar-04-18 10:30	Mar-04-18 10:30
	<i>Analyzed:</i>	Mar-04-18 22:24	Mar-04-18 22:41	Mar-04-18 23:01	Mar-04-18 23:20	Mar-04-18 23:39	Mar-04-18 22:05
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Benzene		<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Toluene		<0.00202 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Ethylbenzene		0.00481 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
m,p-Xylenes		0.0377 0.00404	<0.00398 0.00398	<0.00399 0.00399	<0.00402 0.00402	<0.00397 0.00397	<0.00399 0.00399
o-Xylene		0.00300 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Total Xylenes		0.0407 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Total BTEX		0.0455 0.00202	<0.00199 0.00199	<0.00200 0.00200	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200
Inorganic Anions by EPA 300	<i>Extracted:</i>	Mar-07-18 12:00	Mar-07-18 12:00	Mar-07-18 12:00	Mar-07-18 12:00	Mar-07-18 12:00	Mar-07-18 12:00
	<i>Analyzed:</i>	Mar-08-18 20:06	Mar-08-18 19:18	Mar-08-18 20:11	Mar-08-18 20:17	Mar-08-18 20:22	Mar-08-18 20:27
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Chloride		<4.92 4.92	<4.92 4.92	<4.96 4.96	<4.93 4.93	<4.94 4.94	<4.94 4.94
TPH by SW8015 Mod	<i>Extracted:</i>	Mar-06-18 16:00	Mar-06-18 16:00	Mar-06-18 16:00	Mar-06-18 16:00	Mar-06-18 16:00	Mar-06-18 16:00
	<i>Analyzed:</i>	Mar-06-18 23:23	Mar-06-18 23:49	Mar-07-18 01:09	Mar-07-18 01:35	Mar-07-18 02:01	Mar-07-18 02:28
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Gasoline Range Hydrocarbons (GRO)		25.8 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Diesel Range Organics (DRO)		1110 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Oil Range Hydrocarbons (ORO)		63.9 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0
Total TPH		1200 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Jessica Kramer
Project Assistant



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS1
Lab Sample Id: 577908-001

Matrix: Soil
Date Collected: 02.26.18 13.45

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: Inorganic Anions by EPA 300

Tech: OJS

Analyst: OJS

Seq Number: 3043190

Date Prep: 03.07.18 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.92	4.92	mg/kg	03.08.18 20.06	U	1

Analytical Method: TPH by SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3042997

Date Prep: 03.06.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	25.8	15.0	mg/kg	03.06.18 23.23		1
Diesel Range Organics (DRO)	C10C28DRO	1110	15.0	mg/kg	03.06.18 23.23		1
Oil Range Hydrocarbons (ORO)	PHCG2835	63.9	15.0	mg/kg	03.06.18 23.23		1
Total TPH	PHC635	1200	15.0	mg/kg	03.06.18 23.23		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	99	%	70-135	03.06.18 23.23	
o-Terphenyl	84-15-1	108	%	70-135	03.06.18 23.23	



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS1
Lab Sample Id: 577908-001

Matrix: Soil
Date Collected: 02.26.18 13.45

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 03.04.18 10.30

Basis: Wet Weight

Seq Number: 3042733

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	03.04.18 22.24	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	03.04.18 22.24	U	1
Ethylbenzene	100-41-4	0.00481	0.00202	mg/kg	03.04.18 22.24		1
m,p-Xylenes	179601-23-1	0.0377	0.00404	mg/kg	03.04.18 22.24		1
o-Xylene	95-47-6	0.00300	0.00202	mg/kg	03.04.18 22.24		1
Total Xylenes	1330-20-7	0.0407	0.00202	mg/kg	03.04.18 22.24		1
Total BTEX		0.0455	0.00202	mg/kg	03.04.18 22.24		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	71	%	70-130	03.04.18 22.24		
4-Bromofluorobenzene	460-00-4	127	%	70-130	03.04.18 22.24		



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS2
Lab Sample Id: 577908-002

Matrix: Soil
Date Collected: 02.26.18 13.58

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: Inorganic Anions by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3043190

Date Prep: 03.07.18 12.00

Prep Method: E300P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.92	4.92	mg/kg	03.08.18 19.18	U	1

Analytical Method: TPH by SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3042997

Date Prep: 03.06.18 16.00

Prep Method: TX1005P
% Moisture:
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	03.06.18 23.49	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	03.06.18 23.49	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	03.06.18 23.49	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.06.18 23.49	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	03.06.18 23.49	
o-Terphenyl	84-15-1	101	%	70-135	03.06.18 23.49	



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS2
Lab Sample Id: 577908-002

Matrix: Soil
Date Collected: 02.26.18 13.58

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 03.04.18 10.30

Basis: Wet Weight

Seq Number: 3042733

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	03.04.18 22.41	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	03.04.18 22.41	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	03.04.18 22.41	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	03.04.18 22.41	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	03.04.18 22.41	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	03.04.18 22.41	U	1
Total BTEX		<0.00199	0.00199	mg/kg	03.04.18 22.41	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	03.04.18 22.41		
1,4-Difluorobenzene	540-36-3	80	%	70-130	03.04.18 22.41		



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS3
Lab Sample Id: 577908-003

Matrix: Soil
Date Collected: 02.26.18 14.10

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: Inorganic Anions by EPA 300

Tech: OJS

Analyst: OJS

Seq Number: 3043190

Date Prep: 03.07.18 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.96	4.96	mg/kg	03.08.18 20.11	U	1

Analytical Method: TPH by SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3042997

Date Prep: 03.06.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	03.07.18 01.09	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	03.07.18 01.09	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	03.07.18 01.09	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.07.18 01.09	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	112	%	70-135	03.07.18 01.09	
o-Terphenyl	84-15-1	109	%	70-135	03.07.18 01.09	



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS3
Lab Sample Id: 577908-003

Matrix: Soil
Date Collected: 02.26.18 14.10

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 03.04.18 10.30

Basis: Wet Weight

Seq Number: 3042733

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	03.04.18 23.01	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	03.04.18 23.01	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	03.04.18 23.01	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	03.04.18 23.01	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	03.04.18 23.01	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	03.04.18 23.01	U	1
Total BTEX		<0.00200	0.00200	mg/kg	03.04.18 23.01	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	77	%	70-130	03.04.18 23.01		
4-Bromofluorobenzene	460-00-4	112	%	70-130	03.04.18 23.01		



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: **SS4**
Lab Sample Id: 577908-004

Matrix: Soil
Date Collected: 02.26.18 14.20

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: Inorganic Anions by EPA 300

Tech: OJS

Analyst: OJS

Seq Number: 3043190

Date Prep: 03.07.18 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.93	4.93	mg/kg	03.08.18 20.17	U	1

Analytical Method: TPH by SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3042997

Date Prep: 03.06.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	03.07.18 01.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	03.07.18 01.35	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	03.07.18 01.35	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.07.18 01.35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	03.07.18 01.35	
o-Terphenyl	84-15-1	100	%	70-135	03.07.18 01.35	



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: **SS4**
Lab Sample Id: 577908-004

Matrix: Soil
Date Collected: 02.26.18 14.20

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: BTEX by EPA 8021B

Tech: ALJ

Analyst: ALJ

Seq Number: 3042733

Date Prep: 03.04.18 10.30

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	03.04.18 23.20	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	03.04.18 23.20	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	03.04.18 23.20	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	03.04.18 23.20	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	03.04.18 23.20	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	03.04.18 23.20	U	1
Total BTEX		<0.00201	0.00201	mg/kg	03.04.18 23.20	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	70-130	03.04.18 23.20		
1,4-Difluorobenzene	540-36-3	73	%	70-130	03.04.18 23.20		



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS5
Lab Sample Id: 577908-005

Matrix: Soil
Date Collected: 02.26.18 14.25

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: Inorganic Anions by EPA 300

Tech: OJS

Analyst: OJS

Seq Number: 3043190

Date Prep: 03.07.18 12.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.94	4.94	mg/kg	03.08.18 20.22	U	1

Analytical Method: TPH by SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3042997

Date Prep: 03.06.18 16.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	03.07.18 02.01	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	03.07.18 02.01	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	03.07.18 02.01	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.07.18 02.01	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	105	%	70-135	03.07.18 02.01	
o-Terphenyl	84-15-1	99	%	70-135	03.07.18 02.01	



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS5
Lab Sample Id: 577908-005

Matrix: Soil
Date Collected: 02.26.18 14.25

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 03.04.18 10.30

Basis: Wet Weight

Seq Number: 3042733

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	03.04.18 23.39	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	03.04.18 23.39	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	03.04.18 23.39	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	03.04.18 23.39	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	03.04.18 23.39	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	03.04.18 23.39	U	1
Total BTEX		<0.00198	0.00198	mg/kg	03.04.18 23.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	77	%	70-130	03.04.18 23.39		
4-Bromofluorobenzene	460-00-4	111	%	70-130	03.04.18 23.39		



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS6
Lab Sample Id: 577908-006

Matrix: Soil
Date Collected: 02.26.18 14.35

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: Inorganic Anions by EPA 300
Tech: OJS
Analyst: OJS
Seq Number: 3043190

Prep Method: E300P
% Moisture:
Date Prep: 03.07.18 12.00
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.94	4.94	mg/kg	03.08.18 20.27	U	1

Analytical Method: TPH by SW8015 Mod
Tech: ARM
Analyst: ARM
Seq Number: 3042997

Prep Method: TX1005P
% Moisture:
Date Prep: 03.06.18 16.00
Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	03.07.18 02.28	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	03.07.18 02.28	U	1
Oil Range Hydrocarbons (ORO)	PHCG2835	<15.0	15.0	mg/kg	03.07.18 02.28	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	03.07.18 02.28	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	03.07.18 02.28	
o-Terphenyl	84-15-1	97	%	70-135	03.07.18 02.28	



Certificate of Analytical Results 577908



LT Environmental, Inc., Arvada, CO

BEU-164

Sample Id: SS6
Lab Sample Id: 577908-006

Matrix: Soil
Date Collected: 02.26.18 14.35

Date Received: 03.01.18 13.10
Sample Depth: 12 In

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: ALJ

% Moisture:

Analyst: ALJ

Date Prep: 03.04.18 10.30

Basis: Wet Weight

Seq Number: 3042733

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	03.04.18 22.05	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	03.04.18 22.05	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	03.04.18 22.05	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	03.04.18 22.05	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	03.04.18 22.05	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	03.04.18 22.05	U	1
Total BTEX		<0.00200	0.00200	mg/kg	03.04.18 22.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	74	%	70-130	03.04.18 22.05		
4-Bromofluorobenzene	460-00-4	113	%	70-130	03.04.18 22.05		

- 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 **SQL** 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 577908

LT Environmental, Inc. BEU-164

Analytical Method: Inorganic Anions by EPA 300

Seq Number: 3043190

MB Sample Id: 7640423-1-BLK

Matrix: Solid

LCS Sample Id: 7640423-1-BKS

Prep Method: E300P

Date Prep: 03.07.18

LCSD Sample Id: 7640423-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	274	110	275	110	90-110	0	20	mg/kg	03.08.18 19:08	

Analytical Method: Inorganic Anions by EPA 300

Seq Number: 3043190

Parent Sample Id: 577908-002

Matrix: Soil

MS Sample Id: 577908-002 S

Prep Method: E300P

Date Prep: 03.07.18

MSD Sample Id: 577908-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<4.92	246	272	111	263	107	90-110	3	20	mg/kg	03.08.18 19:24	X

Analytical Method: Inorganic Anions by EPA 300

Seq Number: 3043190

Parent Sample Id: 577909-002

Matrix: Soil

MS Sample Id: 577909-002 S

Prep Method: E300P

Date Prep: 03.07.18

MSD Sample Id: 577909-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	216	246	485	109	492	112	90-110	1	20	mg/kg	03.08.18 20:38	X

Analytical Method: TPH by SW8015 Mod

Seq Number: 3042997

MB Sample Id: 7640327-1-BLK

Matrix: Solid

LCS Sample Id: 7640327-1-BKS

Prep Method: TX1005P

Date Prep: 03.06.18

LCSD Sample Id: 7640327-1-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)	<15.0	1000	1040	104	1030	103	70-135	1	35	mg/kg	03.06.18 22:30	
Diesel Range Organics (DRO)	<15.0	1000	1090	109	1070	107	70-135	2	35	mg/kg	03.06.18 22:30	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	101		120		117		70-135	%	03.06.18 22:30
o-Terphenyl	103		116		111		70-135	%	03.06.18 22:30

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

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

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 577908

LT Environmental, Inc.

BEU-164

Analytical Method: TPH by SW8015 Mod

Seq Number: 3042997

Parent Sample Id: 577908-002

Matrix: Soil

MS Sample Id: 577908-002 S

Prep Method: TX1005P

Date Prep: 03.06.18

MSD Sample Id: 577908-002 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)	<15.0	999	1050	105	1020	102	70-135	3	35	mg/kg	03.07.18 00:15	
Diesel Range Organics (DRO)	<15.0	999	1080	108	1050	105	70-135	3	35	mg/kg	03.07.18 00:15	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	116		111		70-135	%	03.07.18 00:15
o-Terphenyl	115		110		70-135	%	03.07.18 00:15

Analytical Method: BTEX by EPA 8021B

Seq Number: 3042733

MB Sample Id: 7640122-1-BLK

Matrix: Solid

LCS Sample Id: 7640122-1-BKS

Prep Method: SW5030B

Date Prep: 03.04.18

LCSD Sample Id: 7640122-1-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	0.0998	0.0875	88	0.0809	81	70-130	8	35	mg/kg	03.04.18 19:51	
Toluene	<0.00200	0.0998	0.0944	95	0.0877	88	70-130	7	35	mg/kg	03.04.18 19:51	
Ethylbenzene	<0.00200	0.0998	0.108	108	0.100	100	70-130	8	35	mg/kg	03.04.18 19:51	
m,p-Xylenes	<0.00399	0.200	0.214	107	0.198	99	70-130	8	35	mg/kg	03.04.18 19:51	
o-Xylene	<0.00200	0.0998	0.108	108	0.0988	99	70-130	9	35	mg/kg	03.04.18 19:51	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	75		78		88		70-130	%	03.04.18 19:51
4-Bromofluorobenzene	104		111		118		70-130	%	03.04.18 19:51

Analytical Method: BTEX by EPA 8021B

Seq Number: 3042733

Parent Sample Id: 577908-006

Matrix: Soil

MS Sample Id: 577908-006 S

Prep Method: SW5030B

Date Prep: 03.04.18

MSD Sample Id: 577908-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0655	66	0.0683	68	70-130	4	35	mg/kg	03.04.18 20:29	X
Toluene	<0.00201	0.100	0.0678	68	0.0726	72	70-130	7	35	mg/kg	03.04.18 20:29	X
Ethylbenzene	<0.00201	0.100	0.0770	77	0.0826	82	70-130	7	35	mg/kg	03.04.18 20:29	
m,p-Xylenes	<0.00402	0.201	0.151	75	0.165	82	70-130	9	35	mg/kg	03.04.18 20:29	
o-Xylene	<0.00201	0.100	0.0776	78	0.0818	81	70-130	5	35	mg/kg	03.04.18 20:29	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	79		82		70-130	%	03.04.18 20:29
4-Bromofluorobenzene	113		119		70-130	%	03.04.18 20:29

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

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

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



Service Center- Amarillo, TX (806)678-4514
Service Center- Hobbs, NM (575) 392-7550

Page 1 Of 1

1
2
3
4
5

W = Water
S = Soil/Sed/Solid
GW = Ground Water
DW = Drinking Water
P = Product
SW = Surface Water
SL - Sludge
OW = Ocean/Sea Water
WI = Wipe
O = Oil
WW = Waste Water
A = Air

Final 1.000



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: LT Environmental, Inc.

Date/ Time Received: 03/01/2018 01:10:00 PM

Work Order #: 577908

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	3.2	
#2 *Shipping container in good condition?	Yes	
#3 *Samples received on ice?	Yes	
#4 *Custody Seals intact on shipping container/ cooler?	N/A	
#5 Custody Seals intact on sample bottles?	N/A	
#6 *Custody Seals Signed and dated?	N/A	
#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?	No	TPH received in bulk jars
#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:

Connie Hernandez

Connie Hernandez

Date: 03/01/2018

Checklist reviewed by:

Jessica Kramer

Jessica Kramer

Date: 03/01/2018