

August 19, 2019

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

**RE: Closure Request  
Remuda Basin SWD #1  
Remediation Permit Number 2RP-5476  
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 Remuda Basin Salt Water Disposal (SWD) #1 (Site) in Unit J, Section 25, Township 23 South, Range 29 East, in Eddy County, New Mexico (Figure 1). The purpose of the site assessment and soil sampling activities was to address impacts to soil following the release of hydrochloric acid on the northern edge of the caliche well pad at the Site. Based on the site assessment and laboratory analytical results of soil sampling activities, XTO is submitting this Closure Request and requesting no further action for the release event.

## **RELEASE BACKGROUND**

On May 22, 2019, a leaking rear hatch of a frac tank resulted in the release of 10 barrels (bbls) of hydrochloric acid onto the northern edge of the caliche well pad at the Site. The remaining acid was transferred into another tank and the tanks and tank battery containment were moved to another location on the well pad. The free-standing acid was neutralized and recovered; approximately 5 bbls of acid 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 June 5, 2019, and was subsequently assigned Remediation Permit (RP) Number 2RP-5476 (Attachment 1).

## **SITE CHARACTERIZATION**

LTE characterized the Site according to Table 1, *Closure Criteria for Soils Impacted by a Release*, of Title 19, Chapter 15, Part 29, Section 12 (19.15.29.12) of the New Mexico Administrative Code (NMAC). Depth to groundwater at the Site is estimated to be between 51 and 100 feet below ground surface (bgs) based on the nearest water well data. The nearest permitted water well with depth to water data is United States Geological Survey (USGS) well 321717103561001,



located approximately 5,664 feet north of the Site. The water well has a depth to groundwater of 52 feet bgs and the total depth is not determined. Ground surface elevation at the water well location is 3,034 feet above mean sea level (AMSL), which is approximately 19 feet lower in elevation than the Site. The closest continuously flowing water or significant watercourse to the Site is a tributary to an unnamed lake located approximately 475 feet southwest 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 medium potential karst area.

### CLOSURE CRITERIA

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

- Benzene: 10 milligrams per kilogram (mg/kg);
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg;
- Total petroleum hydrocarbons (TPH)-gasoline range organics (GRO) and TPH-diesel range organics (DRO): 1,000 mg/kg;
- TPH: 2,500 mg/kg; and
- Chloride: 10,00 mg/kg.

### SITE ASSESSMENT AND SOIL SAMPLING ACTIVITIES

On June 17, 2019, LTE personnel was on Site to evaluate the release extent based on information provided on the Form C-141. LTE personnel collected three preliminary soil samples (SS01 through SS03) within the release extent at a depth of approximately 0.5 feet bgs to assess the magnitude 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. Field screening of soil indicated volatile aromatic hydrocarbons and chloride concentrations were not elevated and soil staining and petroleum hydrocarbon odors were not observed from within the release extent. The release extent and preliminary soil sample locations were mapped utilizing a handheld Global Positioning System (GPS) unit and are depicted on Figure 2.

The preliminary 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 Midland, Texas, for analysis of BTEX following





United States Environmental Protection Agency (USEPA) Method 8021B; TPH-GRO, TPH-DRO, and TPH-oil range organics (ORO) following USEPA Method 8015M/D; and chloride following USEPA Method 300.0.

Based on laboratory analytical results for preliminary soil samples SS01 through SS03, excavation activities did not appear warranted. Laboratory analytical results for the preliminary soil samples are presented on Figure 2 and summarized in Table 1. The complete laboratory analytical reports are included as Attachment 2. Photographic documentation was conducted during the Site visit. Photographs are included in Attachment 3.

On July 31, 2019, LTE personnel returned to the Site to oversee assessment activities of the soil as indicated by the laboratory analytical results of preliminary soil samples. Potholes were advanced via a track-mounted backhoe at three locations within the release extent. Potholes PH01 through PH03 were advanced to a depth of approximately 4 feet bgs. Soil samples were collected at depths of approximately 2 feet and 4 feet bgs in pothole PH01, and 1 foot and 4 feet bgs in potholes PH02 and PH03. Soil from the potholes was field screened for volatile aromatic hydrocarbons and chloride utilizing a calibrated PID and Hach® chloride QuanTab® test strips, respectively. Field screening results and observations for each pothole were logged on lithologic/soil sampling logs, which are included in Attachment 4. The delineation soil samples were collected, handled and analyzed as described above at Xenco in Midland, Texas. All potholes were backfilled with the soil removed from the potholes. The potholes and delineation soil sample locations are depicted on Figure 3.

## **ANALYTICAL RESULTS**

Laboratory analytical results indicated benzene, BTEX, TPH-GRO+TPH-DRO, TPH, and chloride concentrations were compliant with the Closure Criteria in preliminary soil samples SS01 through SS03, collected at approximately 0.5 feet bgs. Laboratory analytical results indicated benzene, BTEX, TPH-GRO+TPH-DRO, TPH, and chloride concentrations were compliant with the Closure Criteria at all depths in delineation soil samples PH01, PH02, and PH03. Laboratory analytical results are presented on Figure 2 and Figure 3, and summarized in Table 1. The complete laboratory analytical reports are included as Attachment 2.

## **CONCLUSIONS**

Preliminary soil samples SS01 through SS03 and delineation soil samples PH01/PH01A through PH03/PH03A were collected from within the release extent from intervals ranging from approximately 0.5 feet to 4 feet bgs to assess the presence or absence of soil impacts as a result of the May 22, 2019 release. Field screening of soil indicated volatile aromatic hydrocarbons and chloride concentrations were not elevated and soil staining and petroleum hydrocarbon odors were not observed from within the release extent. 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 the absence of elevated field screening results, no visual or olfactory observations indicative soil impact, and laboratory analytical results, it appears all of the acid released has been recovered or remediated.

As a result of the site assessment and soil sampling activities at the Remuda Basin SWD #1, XTO requests no further action for RP Number 2RP-5476. An updated Form C-141 is included as Attachment 1.

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

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in black ink that reads "Carol Ann Whaley".

Carol Ann Whaley  
Staff Geologist

A handwritten signature in black ink that reads "Ashley L. Ager".

Ashley L. Ager, P.G.  
Senior Geologist

cc: Kyle Littrell, XTO  
Ryan Mann, State Land Office  
Robert Hamlet, NMOCD  
Victoria Venegas, NMOCD

Attachments:

Figure 1 Site Location Map  
Figure 2 Preliminary Soil Sample Locations  
Figure 3 Delineation Soil Sample Locations  
Table 1 Soil Analytical Results  
Attachment 1 Initial/Final NMOCD Form C-141 (2RP-5476)  
Attachment 2 Laboratory Analytical Reports  
Attachment 3 Photographic Log  
Attachment 4 Lithologic / Soil Sample Logs





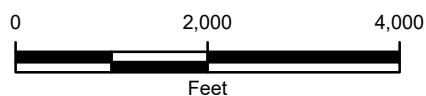




IMAGE COURTESY OF ESRI/USGS

# LEGEND

○ SITE LOCATION



NOTE: REMEDIATION PERMIT  
NUMBER 2RP-5476

**FIGURE 1**  
**SITE LOCATION MAP**  
**REMUDA BASIN SWD #1**  
**UNIT J SEC 25 T23S R29E**  
**EDDY COUNTY, NEW MEXICO**  
**XTO ENERGY, INC.**



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  
 GRO+DRO = 1,000 mg/kg  
 TPH = 2,500 mg/kg  
 Cl = 10,000 mg/kg  
 ALL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)  
 <: INDICATES RESULT IS LESS THAN THE  
 LABORATORY REPORTING LIMIT

SS01@0.5'  
 06/17/2019  
 B: <0.00200  
 BTEX: <0.00200  
 GRO+DRO: <15.0  
 TPH: <15.0  
 Cl: 1,680

SS02@0.5'  
 06/17/2019  
 B: <0.00201  
 BTEX: <0.00201  
 GRO+DRO: <15.0  
 TPH: <15.0  
 Cl: 332

SS03@0.5'  
 06/17/2019  
 B: <0.00200  
 BTEX: <0.00200  
 GRO+DRO: <15.0  
 TPH: <15.0  
 Cl: 10.9

## LEGEND



RELEASE LOCATION



PRELIMINARY SOIL SAMPLE IN COMPLIANCE  
 WITH APPLICABLE CLOSURE CRITERIA

— WATER LINE



RELEASE EXTENT

B: BENZENE

BTEX: TOTAL BENZENE, TOLUENE, ETHYLBENZENE,  
 AND TOTAL XYLENES

GRO: GASOLINE RANGE ORGANICS

DRO: DIESEL RANGE ORGANICS

TPH: TOTAL PETROLEUM HYDROCARBONS

Cl: CHLORIDE

NMAC: NEW MEXICO ADMINISTRATIVE CODE

NMOCD: NEW MEXICO OIL CONSERVATION DIVISION

NOTE: REMEDIATION PERMIT NUMBER 2RP-5476

IMAGE COURTESY OF ESRI

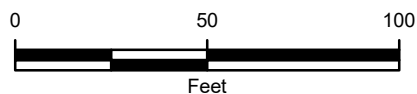


FIGURE 2  
 PRELIMINARY SOIL SAMPLE LOCATIONS  
 REMUDA BASIN SWD #1  
 UNIT J SEC 25 T23S R29E  
 EDDY COUNTY, NEW MEXICO  
 XTO ENERGY, INC.







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  
 GRO+DRO = 1,000 mg/kg  
 TPH = 2,500 mg/kg  
 Cl = 10,000 mg/kg  
 ALL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)  
 <: INDICATES RESULT IS LESS THAN THE  
 LABORATORY REPORTING LIMIT

PH02@1' 07/31/2019 B: <0.00200 BTEX: <0.00200 GRO+DRO: 18.7 TPH: 18.7 Cl: 106	PH02A@4' 07/31/2019 B: <0.00200 BTEX: <0.00200 GRO+DRO: <15.0 TPH: <15.0 Cl: 221
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PH01@2' 07/31/2019 B: <0.00200 BTEX: <0.00200 GRO+DRO: <15.0 TPH: <15.0 Cl: 616	PH01A@4' 07/31/2019 B: <0.00200 BTEX: <0.00200 GRO+DRO: <15.0 TPH: <15.0 Cl: 376
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PH03@1' 07/31/2019 B: <0.00198 BTEX: <0.00198 GRO+DRO: <15.0 TPH: <15.0 Cl: 379	PH03A@4' 07/31/2019 B: <0.00199 BTEX: <0.00199 GRO+DRO: <14.9 TPH: <14.9 Cl: 499
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**LEGEND**

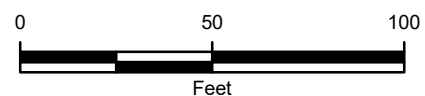
-  RELEASE LOCATION
-  DELINEATION SOIL SAMPLE IN COMPLIANCE WITH APPLICABLE CLOSURE CRITERIA

 WATER LINE

 RELEASE EXTENT

B: BENZENE  
 BTEX: TOTAL BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES  
 GRO: GASOLINE RANGE ORGANICS  
 DRO: DIESEL RANGE ORGANICS  
 TPH: TOTAL PETROLEUM HYDROCARBONS  
 Cl: CHLORIDE  
 NMAC: NEW MEXICO ADMINISTRATIVE CODE  
 NMOCD: NEW MEXICO OIL CONSERVATION DIVISION  
 NOTE: REMEDIATION PERMIT NUMBER 2RP-5476

IMAGE COURTESY OF ESRI



**FIGURE 3**  
**DELINEATION SOIL SAMPLE LOCATIONS**  
 REMUDA BASIN SWD #1  
 UNIT J SEC 25 T23S R29E  
 EDDY COUNTY, NEW MEXICO  
 XTO ENERGY, INC.







**TABLE 1  
SOIL ANALYTICAL RESULTS**

**REMUDA BASIN SWD #1  
REMEDATION PERMIT NUMBER 2RP-5476  
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)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	GRO+DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
SS01	0.5	06/17/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	<15.0	1,680
SS02	0.5	06/17/2019	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<15.0	<15.0	<15.0	<15.0	<15.0	332
SS03	0.5	06/17/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	<15.0	10.9
PH01	2	07/31/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	<15.0	616
PH01A	4	07/31/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	<15.0	376
PH02	1	07/31/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	18.7	<15.0	<15.0	18.7	18.7	106
PH02A	4	07/31/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	<15.0	<15.0	<15.0	<15.0	221
PH03	1	07/31/2019	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<15.0	<15.0	<15.0	<15.0	<15.0	379
PH03A	4	07/31/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<14.9	<14.9	<14.9	<14.9	<14.9	499
<b>NMOCDC Table 1 Closure Criteria</b>			<b>10</b>	NE	NE	NE	<b>50</b>	NE	NE	NE	<b>1,000</b>	<b>2,500</b>	<b>10,000</b>

**Notes:**

bgs - below ground surface

BTEX - benzene, toluene, ethylbenzene, and total xylenes

mg/kg - milligrams per kilogram

NE - not established

DRO - diesel range organics

GRO - gasoline range organics

ORO - oil range organics

TPH - total petroleum hydrocarbons

NMOCDC - New Mexico Oil Conservation Division

Table 1 - closure criteria for soils impacted by a release per NMAC 19.15.29 August 2

NMAC -New Mexico Administrative Code

< - indicates result is below laboratory reporting limits



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	NAB1916254098
District RP	2RP-5476
Facility ID	
Application ID	pAB1916253866

## Release Notification

### 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) NAB1916254098
Contact mailing address 522 W. Mermod, Carlsbad, NM 88220	

### Location of Release Source

Latitude 32.272575° Longitude -103.935807°  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Remuda Basin SWD #1	Site Type Salt Water Disposal Bulk Storage/Separation Facility
Date Release Discovered 5/22/2019	API# (if applicable) 30-015-44312 (Nearby - Remuda N 25 St 126H)

Unit Letter	Section	Township	Range	County
J	25	23S	29E	Eddy

Surface Owner: ☒ State ☐ Federal ☐ Tribal ☐ Private (Name: New Mexico)

### Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input checked="" type="checkbox"/> Other (describe) 20% HCl-	Volume/Weight Released (provide units) 10 barrels	Volume/Weight Recovered (provide units) 5 barrels

#### Cause of Release

Acid was released to the facility pad through a leaking rear hatch of a frac tank. Remaining acid was transferred into another tank and tanks/containments were moved away from the spill area. The free acid was neutralized and recovered. Additional third party resources have been retained to assist with remediation.



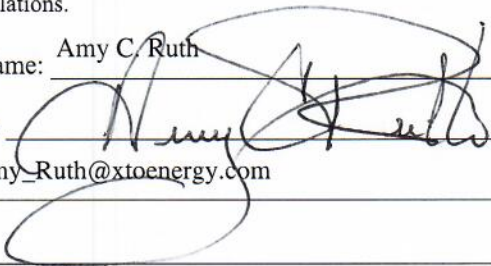
State of New Mexico  
Oil Conservation Division

Incident ID	NAB1916254098
District RP	2RP-5476
Facility ID	
Application ID	pAB1916253866

Was this a major release as defined by 19.15.29.7(A) NMAC?  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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*

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> 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: <u>Amy C. Ruth</u> Signature:  email: <u>Amy_Ruth@xtoenergy.com</u>	Title: <u>SH&amp;E Coordinator</u> Date: <u>6/5/2019</u> Telephone: <u>575-689-3380</u>
<b><u>OCD Only</u></b> Received by: <u>Amalia Bustamante</u> Date: <u>6/11/2019</u>	

Incident ID	NAB1916254098
District RP	2RP-5476
Facility ID	
Application ID	pAB1916253866

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?	<u>51 - 100</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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.

<p><b>Characterization Report Checklist:</b> <i>Each of the following items must be included in the report.</i></p> <ul style="list-style-type: none"><li><input checked="" type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.</li><li><input checked="" type="checkbox"/> Field data</li><li><input checked="" type="checkbox"/> Data table of soil contaminant concentration data</li><li><input checked="" type="checkbox"/> Depth to water determination</li><li><input checked="" type="checkbox"/> Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release</li><li><input checked="" type="checkbox"/> Boring or excavation logs</li><li><input checked="" type="checkbox"/> Photographs including date and GIS information</li><li><input checked="" type="checkbox"/> Topographic/Aerial maps</li><li><input checked="" type="checkbox"/> Laboratory data including chain of custody</li></ul>
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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.

Incident ID	NAB1916254098
District RP	2RP-5476
Facility ID	
Application ID	pAB1916253866

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: \_\_\_\_\_ 08/19/2019 \_\_\_\_\_

email: \_\_\_\_\_ Kyle\_Littrell@xtoenergy.com \_\_\_\_\_ Telephone: \_\_\_\_\_ 432-221-7331 \_\_\_\_\_

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Incident ID	NAB1916254098
District RP	2RP-5476
Facility ID	
Application ID	pAB1916253866

## 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: 08/19/2019

email: Kyle\_Littrell@xtoenergy.com Telephone: 432-221-7331

### OCD Only

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

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

Closure Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_





# Analytical Report 628189

for  
**LT Environmental, Inc.**

**Project Manager: Dan Moir**  
**Remuda Basin WD #1 (2RP-5476)**

**012919131**

**01-JUL-19**

Collected By: Client



**1211 W. Florida Ave**  
**Midland TX 79701**

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

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-Atlanta (LELAP Lab ID #04176)  
Xenco-Tampa: Florida (E87429), North Carolina (483)



01-JUL-19

Project Manager: **Dan Moir**

**LT Environmental, Inc.**

4600 W. 60th Avenue

Arvada, CO 80003

Reference: XENCO Report No(s): **628189**

**Remuda Basin WD #1 (2RP-5476)**

Project Address: Delaware Basin

**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) 628189. 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. 628189 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 628189



**LT Environmental, Inc., Arvada, CO**

Remuda Basin WD #1 (2RP-5476)

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS01	S	06-17-19 11:15	0.5 ft	628189-001
SS02	S	06-17-19 11:31	0.5 ft	628189-002
SS03	S	06-17-19 11:41	0.5 ft	628189-003





## CASE NARRATIVE

*Client Name: LT Environmental, Inc.*

*Project Name: Remuda Basin WD #1 (2RP-5476)*

Project ID: 012919131  
Work Order Number(s): 628189

Report Date: 01-JUL-19  
Date Received: 06/19/2019

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**Sample receipt non conformances and comments:**

None

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**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-3093943 BTEX by EPA 8021B

Lab Sample ID 628189-002 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene, m,p-Xylenes recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 628189-001, -002.

The Laboratory Control Sample for m,p-Xylenes, Ethylbenzene is within laboratory Control Limits, therefore the data was accepted.

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

Batch: LBA-3094000 BTEX by EPA 8021B

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



# Certificate of Analysis Summary 628189

LT Environmental, Inc., Arvada, CO

Project Name: Remuda Basin WD #1 (2RP-5476)



**Project Id:** 012919131  
**Contact:** Dan Moir  
**Project Location:** Delaware Basin

**Date Received in Lab:** Wed Jun-19-19 11:40 am  
**Report Date:** 01-JUL-19  
**Project Manager:** Jessica Kramer

<b>Analysis Requested</b>	<b>Lab Id:</b>	628189-001	628189-002	628189-003			
	<b>Field Id:</b>	SS01	SS02	SS03			
	<b>Depth:</b>	0.5- ft	0.5- ft	0.5- ft			
	<b>Matrix:</b>	SOIL	SOIL	SOIL			
	<b>Sampled:</b>	Jun-17-19 11:15	Jun-17-19 11:31	Jun-17-19 11:41			
<b>BTEX by EPA 8021B</b>	<b>Extracted:</b>	Jun-28-19 17:12	Jun-28-19 17:12	Jun-29-19 14:05			
	<b>Analyzed:</b>	Jun-29-19 11:05	Jun-29-19 10:43	Jun-30-19 17:03			
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL	mg/kg RL			
Benzene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200			
Toluene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200			
Ethylbenzene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200			
m,p-Xylenes		<0.00400 0.00400	<0.00402 0.00402	<0.00400 0.00400			
o-Xylene		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200			
Total Xylenes		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200			
Total BTEX		<0.00200 0.00200	<0.00201 0.00201	<0.00200 0.00200			
<b>Chloride by EPA 300</b>	<b>Extracted:</b>	Jun-22-19 19:00	Jun-22-19 19:00	Jun-22-19 19:00			
	<b>Analyzed:</b>	Jun-23-19 06:37	Jun-23-19 06:45	Jun-23-19 07:10			
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL	mg/kg RL			
Chloride		1680 25.2	332 4.98	10.9 4.95			
<b>TPH by SW8015 Mod</b>	<b>Extracted:</b>	Jun-25-19 12:00	Jun-25-19 12:00	Jun-25-19 12:00			
	<b>Analyzed:</b>	Jun-25-19 23:41	Jun-26-19 00:06	Jun-26-19 00:32			
	<b>Units/RL:</b>	mg/kg RL	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons (GRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0			
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0			
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0			
Total TPH		<15.0 15.0	<15.0 15.0	<15.0 15.0			
Total GRO-DRO		<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 - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Version: 1.9%

*Jessica Kramer*

Jessica Kramer  
Project Assistant



# Certificate of Analytical Results 628189



## LT Environmental, Inc., Arvada, CO

Remuda Basin WD #1 (2RP-5476)

Sample Id: **SS01**  
Lab Sample Id: 628189-001

Matrix: Soil  
Date Collected: 06.17.19 11.15

Date Received: 06.19.19 11.40  
Sample Depth: 0.5 ft

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3093325

Date Prep: 06.22.19 19.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1680	25.2	mg/kg	06.23.19 06.37		5

Analytical Method: TPH by SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3093578

Date Prep: 06.25.19 12.00

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	06.25.19 23.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	06.25.19 23.41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.25.19 23.41	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.25.19 23.41	U	1
Total GRO-DRO	PHC628	<15.0	15.0	mg/kg	06.25.19 23.41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	06.25.19 23.41	
o-Terphenyl	84-15-1	77	%	70-135	06.25.19 23.41	



# Certificate of Analytical Results 628189



## LT Environmental, Inc., Arvada, CO

Remuda Basin WD #1 (2RP-5476)

Sample Id: **SS01**  
Lab Sample Id: 628189-001

Matrix: Soil  
Date Collected: 06.17.19 11.15

Date Received: 06.19.19 11.40  
Sample Depth: 0.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: DVM

% Moisture:

Analyst: FOV

Date Prep: 06.28.19 17.12

Basis: Wet Weight

Seq Number: 3093943

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.29.19 11.05	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.29.19 11.05	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.29.19 11.05	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	06.29.19 11.05	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.29.19 11.05	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.29.19 11.05	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.29.19 11.05	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	93	%	70-130	06.29.19 11.05		
4-Bromofluorobenzene	460-00-4	107	%	70-130	06.29.19 11.05		





# Certificate of Analytical Results 628189



## LT Environmental, Inc., Arvada, CO

Remuda Basin WD #1 (2RP-5476)

Sample Id: **SS02**  
Lab Sample Id: 628189-002

Matrix: Soil  
Date Collected: 06.17.19 11.31

Date Received: 06.19.19 11.40  
Sample Depth: 0.5 ft

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3093325

Date Prep: 06.22.19 19.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	332	4.98	mg/kg	06.23.19 06.45		1

Analytical Method: TPH by SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3093578

Date Prep: 06.25.19 12.00

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	06.26.19 00.06	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	06.26.19 00.06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.26.19 00.06	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.26.19 00.06	U	1
Total GRO-DRO	PHC628	<15.0	15.0	mg/kg	06.26.19 00.06	U	1

### Surrogate

1-Chlorooctane

o-Terphenyl

Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
111-85-3	88	%	70-135	06.26.19 00.06	
84-15-1	81	%	70-135	06.26.19 00.06	



# Certificate of Analytical Results 628189



## LT Environmental, Inc., Arvada, CO

Remuda Basin WD #1 (2RP-5476)

Sample Id: **SS02**  
Lab Sample Id: 628189-002

Matrix: Soil  
Date Collected: 06.17.19 11.31

Date Received: 06.19.19 11.40  
Sample Depth: 0.5 ft

Analytical Method: BTEX by EPA 8021B

Tech: DVM

Analyst: FOV

Seq Number: 3093943

Date Prep: 06.28.19 17.12

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	06.29.19 10.43	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	06.29.19 10.43	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	06.29.19 10.43	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	06.29.19 10.43	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	06.29.19 10.43	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	06.29.19 10.43	U	1
Total BTEX		<0.00201	0.00201	mg/kg	06.29.19 10.43	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	106	%	70-130	06.29.19 10.43		
1,4-Difluorobenzene	540-36-3	97	%	70-130	06.29.19 10.43		



# Certificate of Analytical Results 628189



## LT Environmental, Inc., Arvada, CO

Remuda Basin WD #1 (2RP-5476)

Sample Id: **SS03**  
Lab Sample Id: 628189-003

Matrix: Soil  
Date Collected: 06.17.19 11.41

Date Received: 06.19.19 11.40  
Sample Depth: 0.5 ft

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3093325

Date Prep: 06.22.19 19.00

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	10.9	4.95	mg/kg	06.23.19 07.10		1

Analytical Method: TPH by SW8015 Mod

Tech: ARM

Analyst: ARM

Seq Number: 3093578

Date Prep: 06.25.19 12.00

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	06.26.19 00.32	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	06.26.19 00.32	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	06.26.19 00.32	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	06.26.19 00.32	U	1
Total GRO-DRO	PHC628	<15.0	15.0	mg/kg	06.26.19 00.32	U	1

### Surrogate

1-Chlorooctane

o-Terphenyl

Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
111-85-3	88	%	70-135	06.26.19 00.32	
84-15-1	74	%	70-135	06.26.19 00.32	



# Certificate of Analytical Results 628189



## LT Environmental, Inc., Arvada, CO

Remuda Basin WD #1 (2RP-5476)

Sample Id: **SS03**  
Lab Sample Id: 628189-003

Matrix: Soil  
Date Collected: 06.17.19 11.41

Date Received: 06.19.19 11.40  
Sample Depth: 0.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: JHB

% Moisture:

Analyst: JHB

Date Prep: 06.29.19 14.05

Basis: Wet Weight

Seq Number: 3094000

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	06.30.19 17.03	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	06.30.19 17.03	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	06.30.19 17.03	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	06.30.19 17.03	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	06.30.19 17.03	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	06.30.19 17.03	U	1
Total BTEX		<0.00200	0.00200	mg/kg	06.30.19 17.03	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	110	%	70-130	06.30.19 17.03		
1,4-Difluorobenzene	540-36-3	97	%	70-130	06.30.19 17.03		

- 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



LT Environmental, Inc.  
Remuda Basin WD #1 (2RP-5476)

Analytical Method: Chloride by EPA 300

Seq Number: 3093325

MB Sample Id: 7680539-1-BLK

Matrix: Solid

LCS Sample Id: 7680539-1-BKS

Prep Method: E300P

Date Prep: 06.22.19

LCSD Sample Id: 7680539-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RP D	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	247	99	246	98	90-110	0	20	mg/kg	06.23.19 04:02	

Analytical Method: Chloride by EPA 300

Seq Number: 3093325

Parent Sample Id: 628029-002

Matrix: Soil

MS Sample Id: 628029-002 S

Prep Method: E300P

Date Prep: 06.22.19

MSD Sample Id: 628029-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RP D	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	246	98	245	98	90-110	0	20	mg/kg	06.23.19 04:26	

Analytical Method: Chloride by EPA 300

Seq Number: 3093325

Parent Sample Id: 628188-007

Matrix: Soil

MS Sample Id: 628188-007 S

Prep Method: E300P

Date Prep: 06.22.19

MSD Sample Id: 628188-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RP D	RPD Limit	Units	Analysis Date	Flag
Chloride	4.81	248	258	102	258	102	90-110	0	20	mg/kg	06.23.19 06:21	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3093578

MB Sample Id: 7680769-1-BLK

Matrix: Solid

LCS Sample Id: 7680769-1-BKS

Prep Method: TX1005P

Date Prep: 06.25.19

LCSD Sample Id: 7680769-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RP D	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	1090	109	1060	106	70-135	3	20	mg/kg	06.25.19 14:40	
Diesel Range Organics (DRO)	<8.13	1000	1110	111	1110	111	70-135	0	20	mg/kg	06.25.19 14:40	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	111		93		94		70-135	%	06.25.19 14:40
o-Terphenyl	103		93		100		70-135	%	06.25.19 14:40

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 628189

## LT Environmental, Inc. Remuda Basin WD #1 (2RP-5476)

Analytical Method: TPH by SW8015 Mod

Seq Number: 3093578

Parent Sample Id: 628413-001

Matrix: Soil

MS Sample Id: 628413-001 S

Prep Method: TX1005P

Date Prep: 06.25.19

MSD Sample Id: 628413-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RP D	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<7.99	999	983	98	941	94	70-135	4	20	mg/kg	06.25.19 15:57	
Diesel Range Organics (DRO)	9.05	999	1060	105	1080	108	70-135	2	20	mg/kg	06.25.19 15:57	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	93		90		70-135	%	06.25.19 15:57
o-Terphenyl	102		94		70-135	%	06.25.19 15:57

Analytical Method: BTEX by EPA 8021B

Seq Number: 3093943

MB Sample Id: 7681018-1-BLK

Matrix: Solid

LCS Sample Id: 7681018-1-BKS

Prep Method: SW5030B

Date Prep: 06.28.19

LCSD Sample Id: 7681018-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RP D	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0875	88	0.0847	84	70-130	3	35	mg/kg	06.29.19 08:28	
Toluene	<0.00200	0.100	0.0838	84	0.0820	81	70-130	2	35	mg/kg	06.29.19 08:28	
Ethylbenzene	<0.00200	0.100	0.0899	90	0.0872	86	70-130	3	35	mg/kg	06.29.19 08:28	
m,p-Xylenes	<0.00401	0.200	0.178	89	0.175	87	70-130	2	35	mg/kg	06.29.19 08:28	
o-Xylene	<0.00200	0.100	0.0865	87	0.0840	83	70-130	3	35	mg/kg	06.29.19 08:28	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	94		94		97		70-130	%	06.29.19 08:28
4-Bromofluorobenzene	100		100		107		70-130	%	06.29.19 08:28

Analytical Method: BTEX by EPA 8021B

Seq Number: 3094000

MB Sample Id: 7681034-1-BLK

Matrix: Solid

LCS Sample Id: 7681034-1-BKS

Prep Method: SW5030B

Date Prep: 06.29.19

LCSD Sample Id: 7681034-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RP D	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.101	0.0875	87	0.0971	97	70-130	10	35	mg/kg	06.30.19 11:55	
Toluene	<0.00201	0.101	0.0943	93	0.102	102	70-130	8	35	mg/kg	06.30.19 11:55	
Ethylbenzene	<0.00201	0.101	0.0990	98	0.106	106	70-130	7	35	mg/kg	06.30.19 11:55	
m,p-Xylenes	<0.00102	0.201	0.197	98	0.210	104	70-130	6	35	mg/kg	06.30.19 11:55	
o-Xylene	<0.000346	0.101	0.0932	92	0.102	102	70-130	9	35	mg/kg	06.30.19 11:55	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	92		91		94		70-130	%	06.30.19 11:55
4-Bromofluorobenzene	95		95		99		70-130	%	06.30.19 11:55

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

$[D] = 100 * (C-A) / B$   
 $RPD = 200 * |(C-E) / (C+E)|$   
 $[D] = 100 * (C) / [B]$   
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

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

LT Environmental, Inc.  
Remuda Basin WD #1 (2RP-5476)

Analytical Method: BTEX by EPA 8021B

Seq Number: 3093943

Parent Sample Id: 628189-002

Matrix: Soil

MS Sample Id: 628189-002 S

Prep Method: SW5030B

Date Prep: 06.28.19

MSD Sample Id: 628189-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RP D	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0795	80	0.0781	78	70-130	2	35	mg/kg	06.29.19 09:12	
Toluene	<0.00200	0.100	0.0717	72	0.0698	70	70-130	3	35	mg/kg	06.29.19 09:12	
Ethylbenzene	<0.00200	0.100	0.0697	70	0.0683	68	70-130	2	35	mg/kg	06.29.19 09:12	X
m,p-Xylenes	<0.00401	0.200	0.142	71	0.139	69	70-130	2	35	mg/kg	06.29.19 09:12	X
o-Xylene	<0.00200	0.100	0.0717	72	0.0701	70	70-130	2	35	mg/kg	06.29.19 09:12	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		97		70-130	%	06.29.19 09:12
4-Bromofluorobenzene	112		111		70-130	%	06.29.19 09:12

Analytical Method: BTEX by EPA 8021B

Seq Number: 3094000

Parent Sample Id: 628868-008

Matrix: Soil

MS Sample Id: 628868-008 S

Prep Method: SW5030B

Date Prep: 06.29.19

MSD Sample Id: 628868-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RP D	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00199	0.0996	0.0836	84	0.0872	86	70-130	4	35	mg/kg	06.30.19 12:41	
Toluene	<0.00199	0.0996	0.0875	88	0.0910	90	70-130	4	35	mg/kg	06.30.19 12:41	
Ethylbenzene	<0.00199	0.0996	0.0928	93	0.0964	95	70-130	4	35	mg/kg	06.30.19 12:41	
m,p-Xylenes	<0.00398	0.199	0.182	91	0.188	93	70-130	3	35	mg/kg	06.30.19 12:41	
o-Xylene	<0.00199	0.0996	0.0881	88	0.0901	89	70-130	2	35	mg/kg	06.30.19 12:41	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		97		70-130	%	06.30.19 12:41
4-Bromofluorobenzene	101		100		70-130	%	06.30.19 12:41

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

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) 704 4206

Hobbs, NM (575-392-7550) Phoenix AZ (480-355-0900) Atlanta GA (770-449-8800) Tampa FL (813-630-2000)





Page 1 of 2

Project Manager:		Dan Moir	Bill to: (if different)	Kyle Littlell
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:	bbellill@lteny.com

<b>Work Order Comments</b>				
<b>Program: UST/PST</b> <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RC <input type="checkbox"/> Superfund				
<b>State of Project:</b>				
Reporting Level II <input type="checkbox"/> Level III <input type="checkbox"/> ST/UST <input type="checkbox"/> RRP <input type="checkbox"/> Level IV <input type="checkbox"/>				
Deliverables: EDD <input type="checkbox"/> ADAPT <input type="checkbox"/> Other:				

[illegible][illegible]

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 	2 	06/15/19 09:40	3 	4 	06/18/19 14:00
5	6				



# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In



Client: LT Environmental, Inc.

Date/ Time Received: 06/19/2019 11:40:00 AM

Work Order #: 628189

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 *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?	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)?	N/A
#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:

*Brianna Teel*

Brianna Teel

Date: 06/19/2019

Checklist reviewed by:

*Jessica Kramer*

Jessica Kramer

Date: 06/19/2019

# **Analytical Report 632773**

**for  
LT Environmental, Inc.**

**Project Manager: Dan Moir**

**Remuda Basin SWD#1**

**012919131**

**05-AUG-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-Atlanta (LELAP Lab ID #04176)  
Xenco-Tampa: Florida (E87429), North Carolina (483)



05-AUG-19

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

Reference: XENCO Report No(s): **632773**  
**Remuda Basin SWD#1**  
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) 632773. 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. 632773 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,

A handwritten signature in black ink that reads 'Jessica Kramer'. The signature is written in a cursive, flowing style.

---

**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 632773

LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PH01	S	07-31-19 13:57	2 ft	632773-001
PH01A	S	07-31-19 14:04	4 ft	632773-002
PH02	S	07-31-19 14:23	1 ft	632773-003
PH02 A	S	07-31-19 14:38	4 ft	632773-004
PH03	S	07-31-19 14:50	1 ft	632773-005
PH03 A	S	07-31-19 15:02	4 ft	632773-006



## CASE NARRATIVE

*Client Name: LT Environmental, Inc.*

*Project Name: Remuda Basin SWD#1*

Project ID: 012919131  
Work Order Number(s): 632773

Report Date: 05-AUG-19  
Date Received: 08/01/2019

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**Sample receipt non conformances and comments:**

None

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**Sample receipt non conformances and comments per sample:**

None

**Analytical non conformances and comments:**

Batch: LBA-3097523 BTEX by EPA 8021B

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



# Certificate of Analysis Summary 632773

LT Environmental, Inc., Arvada, CO

Project Name: Remuda Basin SWD#1

Project Id: 012919131

Contact: Dan Moir

Project Location:

Date Received in Lab: Thu Aug-01-19 03:00 pm

Report Date: 05-AUG-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	632773-001	632773-002	632773-003	632773-004	632773-005	632773-006
	<i>Field Id:</i>	PH01	PH01A	PH02	PH02 A	PH03	PH03 A
	<i>Depth:</i>	2- ft	4- ft	1- ft	4- ft	1- ft	4- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Jul-31-19 13:57	Jul-31-19 14:04	Jul-31-19 14:23	Jul-31-19 14:38	Jul-31-19 14:50	Jul-31-19 15:02
<b>BTEX by EPA 8021B SUB: T104704400-18-16</b>	<i>Extracted:</i>	Aug-02-19 10:00	Aug-02-19 10:00	Aug-02-19 10:00	Aug-02-19 10:00	Aug-02-19 10:00	Aug-02-19 10:00
	<i>Analyzed:</i>	Aug-03-19 00:42	Aug-03-19 01:02	Aug-03-19 01:22	Aug-03-19 02:40	Aug-04-19 19:30	Aug-04-19 19:50
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Benzene		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
Toluene		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
Ethylbenzene		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
m,p-Xylenes		<0.00399 0.00399	<0.00401 0.00401	<0.00399 0.00399	<0.00400 0.00400	<0.00397 0.00397	<0.00398 0.00398
o-Xylene		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
Total Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
Total BTEX		<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
<b>Chloride by EPA 300 SUB: T104704400-18-16</b>	<i>Extracted:</i>	Aug-02-19 14:30	Aug-02-19 14:30	Aug-02-19 14:30	Aug-02-19 14:30	Aug-02-19 14:30	Aug-02-19 14:30
	<i>Analyzed:</i>	Aug-03-19 15:13	Aug-03-19 15:56	Aug-03-19 16:03	Aug-03-19 16:11	Aug-03-19 16:32	Aug-03-19 16:40
	<i>Units/RL:</i>	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		RL	RL	RL	RL	RL	RL
Chloride		616 5.02	376 4.99	106 4.99	221 5.05	379 25.2	499 25.0
<b>TPH by SW8015 Mod SUB: T104704400-18-16</b>	<i>Extracted:</i>	Aug-02-19 09:00	Aug-02-19 09:00	Aug-02-19 09:00	Aug-02-19 09:00	Aug-02-19 09:00	Aug-02-19 09:00
	<i>Analyzed:</i>	Aug-04-19 19:18	Aug-04-19 19:39	Aug-04-19 19:59	Aug-04-19 20:39	Aug-04-19 20:58	Aug-04-19 21:18
	<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)		<15.0 15.0	<15.0 15.0	18.7 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9
Diesel Range Organics (DRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9
Motor Oil Range Hydrocarbons (MRO)		<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9
Total TPH		<15.0 15.0	<15.0 15.0	18.7 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9
Total GRO-DRO		<15.0 15.0	<15.0 15.0	18.7 15.0	<15.0 15.0	<15.0 15.0	<14.9 14.9

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

Jessica Kramer  
Project Assistant



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH01**  
Lab Sample Id: 632773-001

Matrix: Soil  
Date Collected: 07.31.19 13.57

Date Received: 08.01.19 15.00  
Sample Depth: 2 ft

Analytical Method: Chloride by EPA 300  
Tech: SPC  
Analyst: SPC  
Seq Number: 3097460

Date Prep: 08.02.19 14.30

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	616	5.02	mg/kg	08.03.19 15.13		1

Analytical Method: TPH by SW8015 Mod  
Tech: DVM  
Analyst: ARM  
Seq Number: 3097503

Date Prep: 08.02.19 09.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.19 19.18	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.19 19.18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	08.04.19 19.18	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.19 19.18	U	1
Total GRO-DRO	PHC628	<15.0	15.0	mg/kg	08.04.19 19.18	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	93	%	70-135	08.04.19 19.18	
o-Terphenyl	84-15-1	92	%	70-135	08.04.19 19.18	



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH01**  
Lab Sample Id: 632773-001

Matrix: Soil  
Date Collected: 07.31.19 13.57

Date Received: 08.01.19 15.00  
Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: ALG

Seq Number: 3097523

Prep Method: SW5030B

% Moisture:

Date Prep: 08.02.19 10.00

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.03.19 00.42	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.03.19 00.42	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.03.19 00.42	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.03.19 00.42	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.03.19 00.42	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.03.19 00.42	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.03.19 00.42	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	107	%	70-130	08.03.19 00.42		
4-Bromofluorobenzene	460-00-4	124	%	70-130	08.03.19 00.42		



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH01A**  
Lab Sample Id: 632773-002

Matrix: Soil  
Date Collected: 07.31.19 14.04

Date Received: 08.01.19 15.00  
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3097460

Date Prep: 08.02.19 14.30

Prep Method: E300P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	376	4.99	mg/kg	08.03.19 15.56		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3097503

Date Prep: 08.02.19 09.00

Prep Method: TX1005P

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.19 19.39	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.19 19.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	08.04.19 19.39	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.19 19.39	U	1
Total GRO-DRO	PHC628	<15.0	15.0	mg/kg	08.04.19 19.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	08.04.19 19.39	
o-Terphenyl	84-15-1	87	%	70-135	08.04.19 19.39	





## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH01A**  
Lab Sample Id: 632773-002

Matrix: Soil  
Date Collected: 07.31.19 14.04

Date Received: 08.01.19 15.00  
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: ALG

Seq Number: 3097523

Date Prep: 08.02.19 10.00

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.03.19 01.02	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.03.19 01.02	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.03.19 01.02	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	08.03.19 01.02	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.03.19 01.02	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.03.19 01.02	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.03.19 01.02	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	103	%	70-130	08.03.19 01.02		
4-Bromofluorobenzene	460-00-4	111	%	70-130	08.03.19 01.02		



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH02**  
Lab Sample Id: 632773-003

Matrix: Soil  
Date Collected: 07.31.19 14.23

Date Received: 08.01.19 15.00  
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300  
Tech: SPC  
Analyst: SPC  
Seq Number: 3097460

Date Prep: 08.02.19 14.30

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	106	4.99	mg/kg	08.03.19 16.03		1

Analytical Method: TPH by SW8015 Mod  
Tech: DVM  
Analyst: ARM  
Seq Number: 3097503

Date Prep: 08.02.19 09.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	18.7	15.0	mg/kg	08.04.19 19.59		1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.19 19.59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	08.04.19 19.59	U	1
Total TPH	PHC635	18.7	15.0	mg/kg	08.04.19 19.59		1
Total GRO-DRO	PHC628	18.7	15.0	mg/kg	08.04.19 19.59		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	08.04.19 19.59	
o-Terphenyl	84-15-1	90	%	70-135	08.04.19 19.59	



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH02**  
Lab Sample Id: 632773-003

Matrix: Soil  
Date Collected: 07.31.19 14.23

Date Received: 08.01.19 15.00  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: ALG

Seq Number: 3097523

Prep Method: SW5030B

% Moisture:

Date Prep: 08.02.19 10.00

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.03.19 01.22	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.03.19 01.22	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.03.19 01.22	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	08.03.19 01.22	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.03.19 01.22	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.03.19 01.22	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.03.19 01.22	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	96	%	70-130	08.03.19 01.22		
4-Bromofluorobenzene	460-00-4	115	%	70-130	08.03.19 01.22		



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH02 A**  
Lab Sample Id: 632773-004

Matrix: Soil  
Date Collected: 07.31.19 14.38

Date Received: 08.01.19 15.00  
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300  
Tech: SPC  
Analyst: SPC  
Seq Number: 3097460

Date Prep: 08.02.19 14.30

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	221	5.05	mg/kg	08.03.19 16.11		1

Analytical Method: TPH by SW8015 Mod  
Tech: DVM  
Analyst: ARM  
Seq Number: 3097503

Date Prep: 08.02.19 09.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.19 20.39	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.19 20.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	08.04.19 20.39	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.19 20.39	U	1
Total GRO-DRO	PHC628	<15.0	15.0	mg/kg	08.04.19 20.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	08.04.19 20.39	
o-Terphenyl	84-15-1	92	%	70-135	08.04.19 20.39	



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH02 A**  
Lab Sample Id: 632773-004

Matrix: Soil  
Date Collected: 07.31.19 14.38

Date Received: 08.01.19 15.00  
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: ALG

Seq Number: 3097523

Date Prep: 08.02.19 10.00

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	08.03.19 02.40	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	08.03.19 02.40	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	08.03.19 02.40	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	08.03.19 02.40	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	08.03.19 02.40	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	08.03.19 02.40	U	1
Total BTEX		<0.00200	0.00200	mg/kg	08.03.19 02.40	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	114	%	70-130	08.03.19 02.40		
1,4-Difluorobenzene	540-36-3	99	%	70-130	08.03.19 02.40		



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH03**  
Lab Sample Id: 632773-005

Matrix: Soil  
Date Collected: 07.31.19 14.50

Date Received: 08.01.19 15.00  
Sample Depth: 1 ft

Analytical Method: Chloride by EPA 300  
Tech: SPC  
Analyst: SPC  
Seq Number: 3097460

Date Prep: 08.02.19 14.30

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	379	25.2	mg/kg	08.03.19 16.32		5

Analytical Method: TPH by SW8015 Mod  
Tech: DVM  
Analyst: ARM  
Seq Number: 3097503

Date Prep: 08.02.19 09.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	08.04.19 20.58	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	08.04.19 20.58	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	08.04.19 20.58	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	08.04.19 20.58	U	1
Total GRO-DRO	PHC628	<15.0	15.0	mg/kg	08.04.19 20.58	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	96	%	70-135	08.04.19 20.58	
o-Terphenyl	84-15-1	95	%	70-135	08.04.19 20.58	



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH03**  
Lab Sample Id: 632773-005

Matrix: Soil  
Date Collected: 07.31.19 14.50

Date Received: 08.01.19 15.00  
Sample Depth: 1 ft

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: ALG

Seq Number: 3097523

Prep Method: SW5030B

% Moisture:

Date Prep: 08.02.19 10.00

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	08.04.19 19.30	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	08.04.19 19.30	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	08.04.19 19.30	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	08.04.19 19.30	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	08.04.19 19.30	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	08.04.19 19.30	U	1
Total BTEX		<0.00198	0.00198	mg/kg	08.04.19 19.30	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	107	%	70-130	08.04.19 19.30		
4-Bromofluorobenzene	460-00-4	106	%	70-130	08.04.19 19.30		





## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH03 A**  
Lab Sample Id: 632773-006

Matrix: Soil  
Date Collected: 07.31.19 15.02

Date Received: 08.01.19 15.00  
Sample Depth: 4 ft

Analytical Method: Chloride by EPA 300  
Tech: SPC  
Analyst: SPC  
Seq Number: 3097460

Date Prep: 08.02.19 14.30

Prep Method: E300P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	499	25.0	mg/kg	08.03.19 16.40		5

Analytical Method: TPH by SW8015 Mod  
Tech: DVM  
Analyst: ARM  
Seq Number: 3097503

Date Prep: 08.02.19 09.00

Prep Method: TX1005P  
% Moisture:  
Basis: Wet Weight  
SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	08.04.19 21.18	U	1
Diesel Range Organics (DRO)	C10C28DRO	<14.9	14.9	mg/kg	08.04.19 21.18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	14.9	mg/kg	08.04.19 21.18	U	1
Total TPH	PHC635	<14.9	14.9	mg/kg	08.04.19 21.18	U	1
Total GRO-DRO	PHC628	<14.9	14.9	mg/kg	08.04.19 21.18	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	08.04.19 21.18	
o-Terphenyl	84-15-1	92	%	70-135	08.04.19 21.18	



## Certificate of Analytical Results 632773

### LT Environmental, Inc., Arvada, CO

Remuda Basin SWD#1

Sample Id: **PH03 A**  
Lab Sample Id: 632773-006

Matrix: Soil  
Date Collected: 07.31.19 15.02

Date Received: 08.01.19 15.00  
Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Tech: KTL

Analyst: ALG

Seq Number: 3097523

Date Prep: 08.02.19 10.00

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

SUB: T104704400-18-16

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	08.04.19 19.50	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	08.04.19 19.50	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	08.04.19 19.50	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	08.04.19 19.50	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	08.04.19 19.50	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	08.04.19 19.50	U	1
Total BTEX		<0.00199	0.00199	mg/kg	08.04.19 19.50	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	108	%	70-130	08.04.19 19.50		
1,4-Difluorobenzene	540-36-3	107	%	70-130	08.04.19 19.50		

## 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

**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 632773

### LT Environmental, Inc. Remuda Basin SWD#1

**Analytical Method: Chloride by EPA 300**

Seq Number: 3097460

MB Sample Id: 7683472-1-BLK

Matrix: Solid

LCS Sample Id: 7683472-1-BKS

Prep Method: E300P

Date Prep: 08.02.19

LCSD Sample Id: 7683472-1-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	268	107	271	108	90-110	1	20	mg/kg	08.03.19 14:14	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3097460

Parent Sample Id: 632773-004

Matrix: Soil

MS Sample Id: 632773-004 S

Prep Method: E300P

Date Prep: 08.02.19

MSD Sample Id: 632773-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	221	253	498	109	474	100	90-110	5	20	mg/kg	08.03.19 16:18	

**Analytical Method: Chloride by EPA 300**

Seq Number: 3097460

Parent Sample Id: 632818-001

Matrix: Soil

MS Sample Id: 632818-001 S

Prep Method: E300P

Date Prep: 08.02.19

MSD Sample Id: 632818-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	4.66	248	266	105	265	105	90-110	0	20	mg/kg	08.03.19 14:36	

**Analytical Method: TPH by SW8015 Mod**

Seq Number: 3097503

MB Sample Id: 7683384-1-BLK

Matrix: Solid

LCS Sample Id: 7683384-1-BKS

Prep Method: TX1005P

Date Prep: 08.02.19

LCSD Sample Id: 7683384-1-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)	<8.00	1000	1010	101	1060	106	70-135	5	20	mg/kg	08.04.19 12:55	
Diesel Range Organics (DRO)	<8.13	1000	951	95	998	100	70-135	5	20	mg/kg	08.04.19 12:55	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	88		110		123		70-135	%	08.04.19 12:55
o-Terphenyl	89		96		105		70-135	%	08.04.19 12:55

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

LT Environmental, Inc.  
Remuda Basin SWD#1

## Analytical Method: TPH by SW8015 Mod

Seq Number: 3097503

Parent Sample Id: 632659-001

Matrix: Soil

MS Sample Id: 632659-001 S

Prep Method: TX1005P

Date Prep: 08.02.19

MSD Sample Id: 632659-001 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)	<7.98	997	984	99	994	100	70-135	1	20	mg/kg	08.04.19 13:54	
Diesel Range Organics (DRO)	<8.10	997	919	92	939	94	70-135	2	20	mg/kg	08.04.19 13:54	

## Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	124		116		70-135	%	08.04.19 13:54
o-Terphenyl	100		99		70-135	%	08.04.19 13:54

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3097523

MB Sample Id: 7683378-1-BLK

Matrix: Solid

LCS Sample Id: 7683378-1-BKS

Prep Method: SW5030B

Date Prep: 08.02.19

LCSD Sample Id: 7683378-1-BSL

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	0.104	104	0.115	115	70-130	10	35	mg/kg	08.02.19 20:21	
Toluene	<0.00200	0.100	0.0950	95	0.106	106	70-130	11	35	mg/kg	08.02.19 20:21	
Ethylbenzene	<0.00200	0.100	0.0953	95	0.106	106	70-130	11	35	mg/kg	08.02.19 20:21	
m,p-Xylenes	<0.00101	0.200	0.190	95	0.213	107	70-130	11	35	mg/kg	08.02.19 20:21	
o-Xylene	<0.00200	0.100	0.0974	97	0.109	109	70-130	11	35	mg/kg	08.02.19 20:21	

## Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	105		100		102		70-130	%	08.02.19 20:21
4-Bromofluorobenzene	104		99		103		70-130	%	08.02.19 20:21

## Analytical Method: BTEX by EPA 8021B

Seq Number: 3097523

Parent Sample Id: 632559-001

Matrix: Soil

MD Sample Id: 632559-001 D

Prep Method: SW5030B

Date Prep: 08.02.19

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00198	<0.00198	0	35	mg/kg	08.02.19 21:22	
Toluene	<0.00198	<0.00198	0	35	mg/kg	08.02.19 21:22	
Ethylbenzene	<0.00198	<0.00198	0	35	mg/kg	08.02.19 21:22	
m,p-Xylenes	<0.00397	<0.00397	0	35	mg/kg	08.02.19 21:22	
o-Xylene	<0.00198	<0.00198	0	35	mg/kg	08.02.19 21:22	
Total Xylenes	0	0	0	20	mg/kg	08.02.19 21:22	
Total BTEX	0	0	0	20	mg/kg	08.02.19 21:22	

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





## Chain of Custody

Work Order No: 632773

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

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Page 1 of 1

Project Manager:	Dan Moir	Bill to: (if different)	Kyle Litrell
Company Name:	LT Environmental, Inc., Permian Office	Company Name:	XTO Energy
Address:	3300 North A Street	Address:	3104 E Greene St
City, State ZIP:	Midland, TX 79705	City, State ZIP:	Carlsbad, NM 88220
Phone:	(432) 236-3849	Email:	<a href="mailto:fsmith@ltenv.com">fsmith@ltenv.com</a> , <a href="mailto:dmoir@ltenv.com">dmoir@ltenv.com</a>

Program: UST/ST <input type="checkbox"/> PRP <input type="checkbox"/> Brownfields <input type="checkbox"/> RRC <input type="checkbox"/> Superfund <input type="checkbox"/>	
State of Project:	
Reporting Level II <input type="checkbox"/>	Level III <input type="checkbox"/>
Level IV <input type="checkbox"/>	TRRP <input type="checkbox"/>
Deliverables: EDD <input type="checkbox"/>	ADAPT <input type="checkbox"/>
Other:	

Project Name:	Remuda Basin SWD#1	Turn Around	<input type="checkbox"/>
Project Number:	012919131	Routine	<input type="checkbox"/>
P.O. Number:	2RP-5476	Rush: 3 days	
Sampler's Name:	Fatima Smith	Due Date: 8/4/19	

SAMPLE RECEIPT	Temp Blank:	Yes <input checked="" type="radio"/> No <input type="radio"/>	Wet Ice:	Yes <input type="radio"/> No <input type="radio"/>
Temperature (°C):	16.0	Thermometer ID	TMM007	
Received In tact:	Yes <input checked="" type="radio"/> No <input type="radio"/>	Correction Factor:	-0.2	
Cooler Custody Seals:	Yes <input checked="" type="radio"/> No <input type="radio"/> N/A	Total Containers:	6	
Sample Custody Seals:	Yes <input checked="" type="radio"/> No <input type="radio"/> N/A			

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	ANALYSIS REQUEST																Work Order Notes	
PH01	S	07/31/19	1357	2'	1	X	X	X														
PH01A	S		1404	4'	1	X	X	X														
PH02	S		1423	14'	1	X	X	X														
PH02A	S		1438	4'	1	X	X	X														
PH03	S		1450	1'	1	X	X	X														
PH03A	S		1502	4'	1	X	X	X														
TAT starts the day received 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 Ti 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 Ti 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
1 <i>[Signature]</i>	2 <i>[Signature]</i>	08/01/19 14:35	3 <i>[Signature]</i>	4 <i>[Signature]</i>	08/01/19 15:00
5	6				



## Inter-Office Shipment

Page 1 of 1

IOS Number **45458**

Date/Time: 08/01/19 16:20

Created by: Martha Castro

Please send report to: Jessica Kramer

Lab# From: **Carlsbad**

Delivery Priority:

Address: 1089 N Canal Street

Lab# To: **Midland**

Air Bill No.: 775898470040

E-Mail: jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
632773-001	S	PH01	07/31/19 13:57	SW8015MOD_NM	TPH by SW8015 Mod	08/05/19	08/14/19	JKR	GRO-DRO PHCC10C28 PI	
632773-001	S	PH01	07/31/19 13:57	E300_CL	Chloride by EPA 300	08/05/19	01/27/20	JKR	CL	
632773-001	S	PH01	07/31/19 13:57	SW8021B	BTEX by EPA 8021B	08/05/19	08/14/19	JKR	BR4FBZ BZ BZME EBZ X	
632773-002	S	PH01A	07/31/19 14:04	SW8015MOD_NM	TPH by SW8015 Mod	08/05/19	08/14/19	JKR	GRO-DRO PHCC10C28 PI	
632773-002	S	PH01A	07/31/19 14:04	E300_CL	Chloride by EPA 300	08/05/19	01/27/20	JKR	CL	
632773-002	S	PH01A	07/31/19 14:04	SW8021B	BTEX by EPA 8021B	08/05/19	08/14/19	JKR	BR4FBZ BZ BZME EBZ X	
632773-003	S	PH02	07/31/19 14:23	SW8021B	BTEX by EPA 8021B	08/05/19	08/14/19	JKR	BR4FBZ BZ BZME EBZ X	
632773-003	S	PH02	07/31/19 14:23	SW8015MOD_NM	TPH by SW8015 Mod	08/05/19	08/14/19	JKR	GRO-DRO PHCC10C28 PI	
632773-003	S	PH02	07/31/19 14:23	E300_CL	Chloride by EPA 300	08/05/19	01/27/20	JKR	CL	
632773-004	S	PH02 A	07/31/19 14:38	SW8021B	BTEX by EPA 8021B	08/05/19	08/14/19	JKR	BR4FBZ BZ BZME EBZ X	
632773-004	S	PH02 A	07/31/19 14:38	SW8015MOD_NM	TPH by SW8015 Mod	08/05/19	08/14/19	JKR	GRO-DRO PHCC10C28 PI	
632773-004	S	PH02 A	07/31/19 14:38	E300_CL	Chloride by EPA 300	08/05/19	01/27/20	JKR	CL	
632773-005	S	PH03	07/31/19 14:50	SW8015MOD_NM	TPH by SW8015 Mod	08/05/19	08/14/19	JKR	GRO-DRO PHCC10C28 PI	
632773-005	S	PH03	07/31/19 14:50	E300_CL	Chloride by EPA 300	08/05/19	01/27/20	JKR	CL	
632773-005	S	PH03	07/31/19 14:50	SW8021B	BTEX by EPA 8021B	08/05/19	08/14/19	JKR	BR4FBZ BZ BZME EBZ X	
632773-006	S	PH03 A	07/31/19 15:02	SW8015MOD_NM	TPH by SW8015 Mod	08/05/19	08/14/19	JKR	GRO-DRO PHCC10C28 PI	
632773-006	S	PH03 A	07/31/19 15:02	E300_CL	Chloride by EPA 300	08/05/19	01/27/20	JKR	CL	
632773-006	S	PH03 A	07/31/19 15:02	SW8021B	BTEX by EPA 8021B	08/05/19	08/14/19	JKR	BR4FBZ BZ BZME EBZ X	

### Inter Office Shipment or Sample Comments:

Relinquished By:

Martha Castro

Date Relinquished: 08/01/2019

Received By:

Brianna Teel

Date Received: 08/02/2019 10:37

Cooler Temperature: 0.4



## XENCO Laboratories

### Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 45458

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sent By: Martha Castro

Date Sent: 08/01/2019 04:20 PM

Received By: Brianna Teel

Date Received: 08/02/2019 10:37 AM

#### Sample Receipt Checklist

#### Comments

#1 *Temperature of cooler(s)?	.4
#2 *Shipping container in good condition?	Yes
#3 *Samples received with appropriate temperature?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 *Custody Seals Signed and dated for Containers/coolers	Yes
#6 *IOS present?	Yes
#7 Any missing/extra samples?	No
#8 IOS agrees with sample label(s)/matrix?	Yes
#9 Sample matrix/ properties agree with IOS?	Yes
#10 Samples in proper container/ bottle?	Yes
#11 Samples properly preserved?	Yes
#12 Sample container(s) intact?	Yes
#13 Sufficient sample amount for indicated test(s)?	Yes
#14 All samples received within hold time?	Yes

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

NonConformance:

Corrective Action Taken:

#### Nonconformance Documentation

Contact: \_\_\_\_\_ Contacted by : \_\_\_\_\_ Date: \_\_\_\_\_

Checklist reviewed by:

Brianna Teel

Date: 08/02/2019





# XENCO Laboratories

## Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 08/01/2019 03:00:00 PM

Work Order #: 632773

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : TNM 007

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	No
#5 Custody Seals intact on sample bottles?	No
#6 *Custody Seals Signed and dated?	No
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	Yes
#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?	Yes

Subbed to Xenco Midland

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Martha Castro

Date: 08/01/2019

Checklist reviewed by:


Jessica Kramer

Date: 08/05/2019






**Northeast view of release extent during preliminary soil sampling and site assessment.**

Project: 012919131	XTO Energy, Inc. Remuda Basin SWD #1	 <i>Advancing Opportunity</i>
June 17, 2019	Photographic Log	



**Southern view of release extent during preliminary soil sampling and site assessment.**

Project: 012919131	XTO Energy, Inc. Remuda Basin SWD #1	 <i>Advancing Opportunity</i>
June 17, 2019	Photographic Log	





**LT Environmental, Inc.**  
 508 West Stevens Street  
 Carlsbad, New Mexico 88220

Compliance · Engineering · Remediation

Identifier: PH01	Date: 07/31/2019
Project Name: Remuda Basin SWD #1	RP Number: 2RP-5476

**LITHOLOGIC / SOIL SAMPLING LOG**

Lat/Long:	Field Screening: PID/HACH	Hole Diameter: NA	Method: trackhoe
Total Depth: 4'			

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	162	26.3	no	PH01	0			
					1			
					2	2'	SP-SM	sandy SILT, poorly graded, reddish brown
					3			
dry	235	4.5	no	PH01A	4	4'	SP-SM	sandy SILT, poorly graded, reddish brown, gravelly
								Total Depth 4 foot bgs
					5			
					6			
					7			
					8			
					9			
					10			
					11			
					12			



**LT Environmental, Inc.**  
 508 West Stevens Street  
 Carlsbad, New Mexico 88220

Compliance · Engineering · Remediation

Identifier: PH02	Date: 07/31/2019
Project Name: Remuda Basin SWD #1	RP Number: 2RP-5476

**LITHOLOGIC / SOIL SAMPLING LOG**

Lat/Long:	Field Screening: PID/HACH	Hole Diameter: NA	Total Depth: 4'
-----------	------------------------------	----------------------	--------------------

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	<162	10.2	no	PH02	0			
					1	1'	SP-SM	sandy SILT, poorly graded, reddish brown
					2			
					3			
dry	252	0.7	no	PH02A	4	4'	SP-SM	sandy SILT, poorly graded, reddish brown, gravelly
								Total Depth 4 foot bgs
					5			
					6			
					7			
					8			
					9			
					10			
					11			
					12			



**LT Environmental, Inc.**  
 508 West Stevens Street  
 Carlsbad, New Mexico 88220

Compliance · Engineering · Remediation

Identifier: PH03	Date: 07/31/2019
Project Name: Remuda Basin SWD #1	RP Number: 2RP-5476

**LITHOLOGIC / SOIL SAMPLING LOG**

Lat/Long:	Field Screening: PID/HACH	Hole Diameter: NA	Total Depth: 4'
-----------	------------------------------	----------------------	--------------------

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
dry	380	12.1	no	PH03	0			
					1	1'	SP-SM	sandy SILT, poorly graded, reddish brown
					2			
					3			
dry	380	13.2	no	PH03A	4	4'	SP-SM	sandy SILT, poorly graded, reddish brown, gravelly
								Total Depth 4 foot bgs
					5			
					6			
					7			
					8			
					9			
					10			
					11			
					12			