



LT Environmental, Inc.

3300 North "A" Street
Building 1, Unit 103
Midland, Texas 79705
432.704.5178

December 4, 2019

Mr. Mike Bratcher
New Mexico Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210**RE: Deferral Request
WPX Energy Permian, Inc.
Remediation Permit Number 2RP-5649
RDX Federal 17 #035H
Eddy County, New Mexico**

Dear Mr. Bratcher:

LT Environmental, Inc. (LTE), on behalf of WPX Energy Permian, Inc. (WPX), presents the following Deferral Request detailing soil sampling and excavation activities at the RDX Federal 17 #035H (Site) in Unit D, Section 17, Township 26 South, Range 30 East, in Eddy County, New Mexico (Figure 1). The purpose of the soil sampling and excavation activities was to address impacts to soil following an event that resulted in the release of produced water to the pipeline right-of-way south of the well pad. Based on the excavation activities and results of the soil sampling events, XTO is submitting this Deferral Request, describing remediation that has occurred and requesting to leave impacted soil in the top 4 feet near active production equipment in place until final reclamation.

BACKGROUND

On September 8, 2019, a check valve failed resulting in the release of 10 barrels (bbls) of produced water to the pipeline right-of-way surface south of the well pad. A vacuum truck was dispatched to the Site to recover free-standing fluid; approximately 4 bbls of produced water were recovered. WPX 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 September 16, 2019, and was assigned Remediation Permit (RP) Number 2RP-5649 (Attachment 1).

LTE characterized the Site according to Table 1, *Closure Criteria for Soils Impacted by a Release*, of Title 19, Chapter 15, Part 29, Section 12 (19.15.29.12) of the New Mexico Administrative Code (NMAC). Depth to groundwater at the Site is estimated to be greater than 100 feet below ground surface (bgs) based on known aquifer properties and the elevation difference between the Site and an identified water well. The nearest permitted water well with depth to water data is C 01360, located approximately 6,153 feet north of the Site. Water well C 01360 has a reported





Bratcher, M.
Page 2

depth to water of 173 feet bgs and is approximately 23 feet higher in elevation than the Site. The closest significant watercourse to the Site is a dry arroyo located approximately 1,225 feet north of the Site. The Site is greater than 300 feet from any 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 an unstable area, 100-year floodplain, or overlying a subsurface mine. The Site is located in a medium-potential karst area.

Based on these criteria, the following NMOC Table 1 closure criteria apply: 10 milligrams per kilogram (mg/kg) benzene; 50 mg/kg total benzene, toluene, ethylbenzene, and total xylenes (BTEX); 2,500 mg/kg total petroleum hydrocarbons (TPH); 1,000 mg/kg TPH-gasoline range organics (GRO) and TPH-diesel range organics (DRO); and 20,000 mg/kg chloride. However, the top 4 feet of the release area is to be reclaimed immediately and therefore the reclamation standard of 600 mg/kg is being applied to the top 4 feet of impacted material.

PRELIMINARY SOIL SAMPLING

On September 9, 2019, LTE personnel inspected the Site to evaluate the release extent. LTE personnel collected one preliminary soil sample (SS01) within the release extent from a depth of approximately 0.5 feet bgs to assess soil impacts. The release extent and preliminary soil sample location were mapped using a handheld Global Positioning System (GPS) unit and are depicted on Figure 2. The soil sample was 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-gasoline range organics (GRO), TPH-diesel range organics (DRO), and TPH-oil range organics (ORO) following USEPA Method 8015M/D; and chloride following USEPA Method 300.0.

Based on visible surface staining and laboratory analytical results for preliminary soil sample SS01, excavation of impacted soil was warranted. Photographic documentation was conducted during the Site visit. Photographs are included in Attachment 2.

DELINEATION AND EXCAVATION SOIL SAMPLING

On September 13, 2019, three potholes (PH01 through PH03) were advanced within the release area. Using excavation equipment, potholes were advanced to depths ranging from 4 feet bgs in PH03 to 7 feet bgs in PH02. The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were shipped at or below 4 °C under strict COC procedures to Xenco in Midland, Texas, for analysis of chloride following USEPA Method 300.0. Pothole PH03 was limited in depth due to the presence of the 12-inch concrete water line that was identified in the northern portion of the release area. The line is owned by Solaris Water Midstream, LLC (Solaris).





Bratcher, M.
Page 3

Upon the discovery of the line, Solaris notified LTE that no ground disturbing activities could occur within 15 feet of the line without a representative on site. The pothole locations are depicted on Figure 2. Soil Sampling Logs are included as Attachment 3.

From November 21 through 26, 2019, LTE was on site to oversee excavation activities within the release area. Excavation activities were directed by field screening soil samples for volatile aromatic hydrocarbons using a photo-ionization detector (PID) and chloride using Hach® chloride QuanTab® test strips. The extents of the excavations were limited due to safety concerns associated with the Solaris 12-inch water line, surface poly lines, and sub surface pipelines. Following completion of excavation activities, 5-point composite confirmation soil samples were collected from the floor (samples labeled as "FS") and sidewalls (samples labeled as "SW") of the excavation areas. Each soil sample represented at most 200 square feet. Approximately 275 cubic yards of impacted soil were removed from the excavation area and transported to the R360 Red Bluff Facility in Orla, Texas for disposal. The excavation areas measured a total of approximately 1,600 square feet in area and ranged in depth from 2 feet to 4 feet bgs in depth. The excavation area to the north near the Solaris water line was dictated by a Solaris representative, who was on site. The Solaris representative did not allow the excavation to advance deeper than 2 feet bgs. The excavation area and soil sample locations are depicted on Figure 3.

Additionally, on November 26, 2019, six potholes (PH04 through PH09) were advanced to delineate the lateral extent of remaining soil impacts. Using excavation equipment, potholes were advanced to a depth of 4 feet bgs. Soil samples were collected from each pothole at depths of 0.5 feet bgs and from 4 feet bgs. Soil samples were handled and analyzed as previously stated. The pothole locations are depicted on Figure 2. Soil Sampling Logs are included as Attachment 3.

ANALYTICAL RESULTS

Laboratory analytical results indicated that the preliminary soil sample SS01 was compliant with the Closure Criteria but exceeded 600 mg/kg for chloride concentration in the top four feet. Impacted soil was excavated to the extent possible as allowed by the Solaris representative and health and safety protocol. Laboratory analytical results indicated that BTEX, TPH, and chloride concentrations were compliant with the Closure Criteria in all excavation sidewall and floor samples. However, laboratory analytical results indicated that chloride concentrations in excavation samples FS06 through FS09, SW01, SW02, and SW04 that were collected less than 4 feet bgs exceeded the BLM preferred chloride closure criteria.

Further excavation of impacted soil beyond excavation samples FS06 through FS09, SW01, SW02, and SW04 was limited by the presence of above ground and subsurface active pipelines. Safety policy restricted soil disturbing activities around active production equipment and pipelines. This safety policy is established to protect workers and reduce the likelihood of compromising the foundation of the production equipment or pipelines.





Bratcher, M.
Page 4

Laboratory analytical results for the delineation soil samples collected from potholes indicate BTEX, TPH, and chloride concentrations were compliant with the Closure Criteria and 600 mg/kg chloride in the top four feet of the subsurface. Therefore, no further excavation was warranted in the pipeline right-of-way. Laboratory analytical results are summarized in Table 1 and the complete laboratory analytical reports are included as Attachment 4.

CONCLUSIONS

A total of approximately 275 cubic yards of impacted soil were excavated from the Site; however, impacted soil exceeding the reclamation standard of 600 mg/kg chloride in the top 4 feet of the subsurface was left in place for compliance with the safety policy regarding earth moving activities near active pipelines. Impacted soil was excavated to the extent possible. The impacted soil remaining in place is delineated vertically and laterally by potholes PH01 through PH09. An estimated 410 cubic yards of impacted soil remain in place between 0 feet and 4 feet bgs based on excavation confirmation and delineation soil samples that were compliant with the NMOCD Table 1 Closure Criteria and the reclamation standard.

WPX requests to backfill the existing excavations and complete remediation during any future major construction/alteration or final plugging and abandonment, whichever occurs first. LTE and WPX do not believe deferment will result in imminent risk to human health, the environment, or groundwater. WPX requests deferral of final remediation permit number 2RP-5649. Upon approval of this deferral request, WPX will backfill the excavation with material purchased locally and recontour the Site to match pre-existing site conditions. An updated NMOCD Form C-141 is included as Attachment 1.

If you have any questions or comments, please do not hesitate to contact Mr. Chris McKisson at (970) 285-9985 or cmckisson@ltenv.com.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in black ink, appearing to read "Chris McKisson".

Chris McKisson
Project Environmental Scientist

A handwritten signature in black ink, appearing to read "Ashley L. Ager".

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

cc: Jim Raley, WPX

Robert Hamlet, NMOCD
Victoria Venegas, NMOCD
Jim Amos, BLM





Bratcher, M.
Page 5

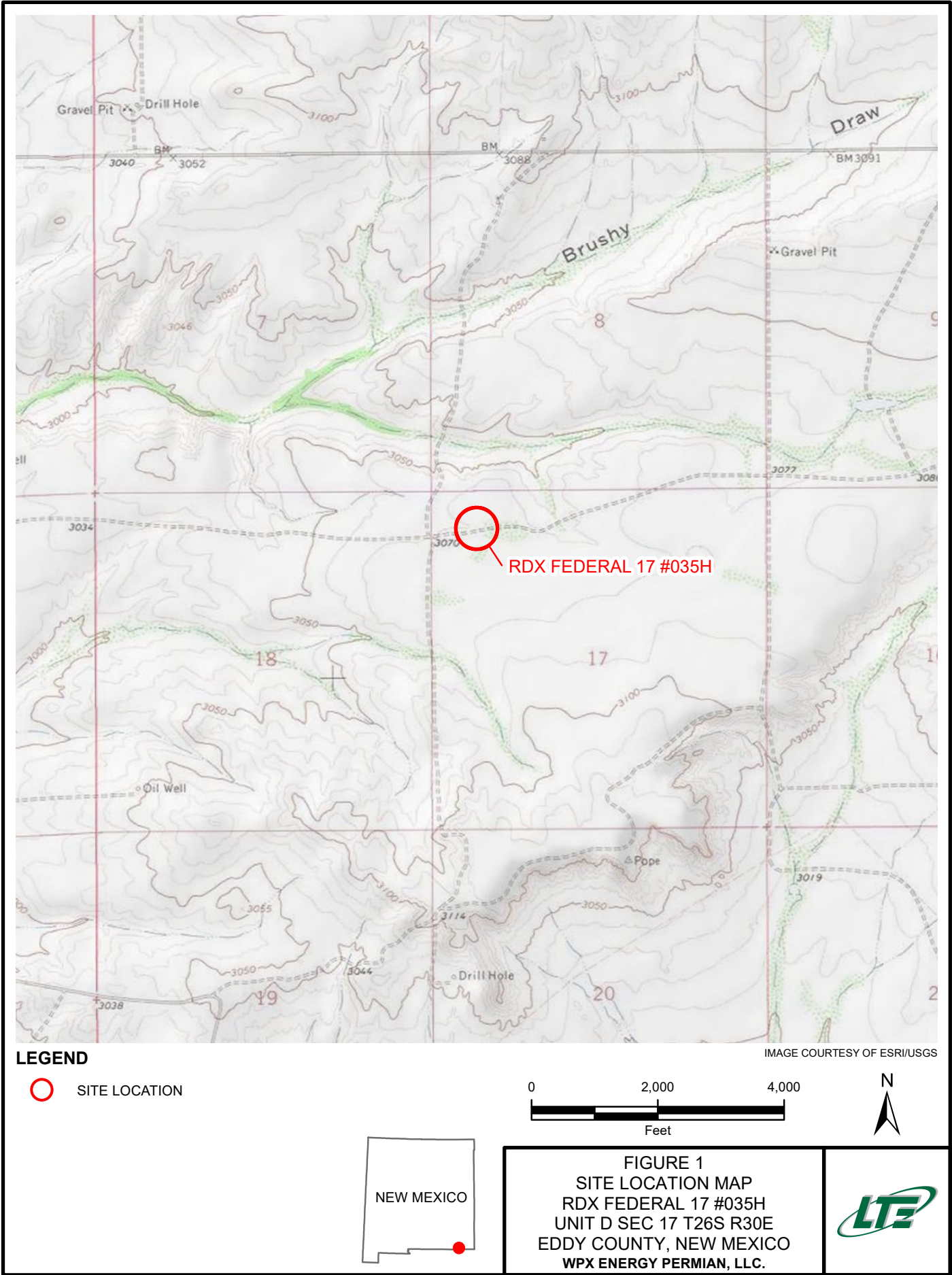
Attachments:

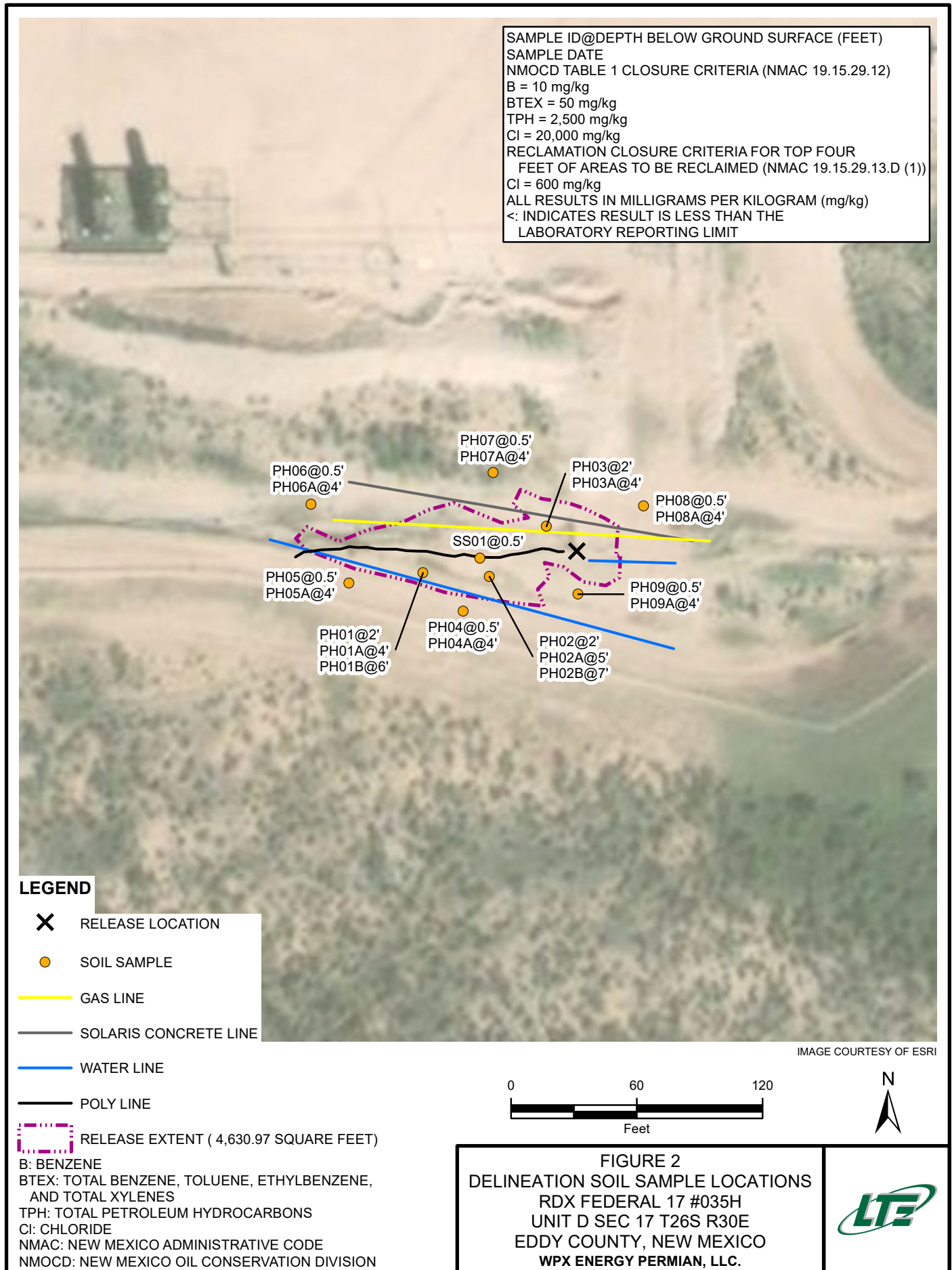
Figure 1 Site Location Map
Figure 2 Site Map
Figure 3 Excavation Soil Sample Locations
Table 1 Soil Analytical Results
Attachment 1 Form C-141
Attachment 2 Photographic Log
Attachment 3 Soil Sampling Logs
Attachment 4 Laboratory Analytical Reports

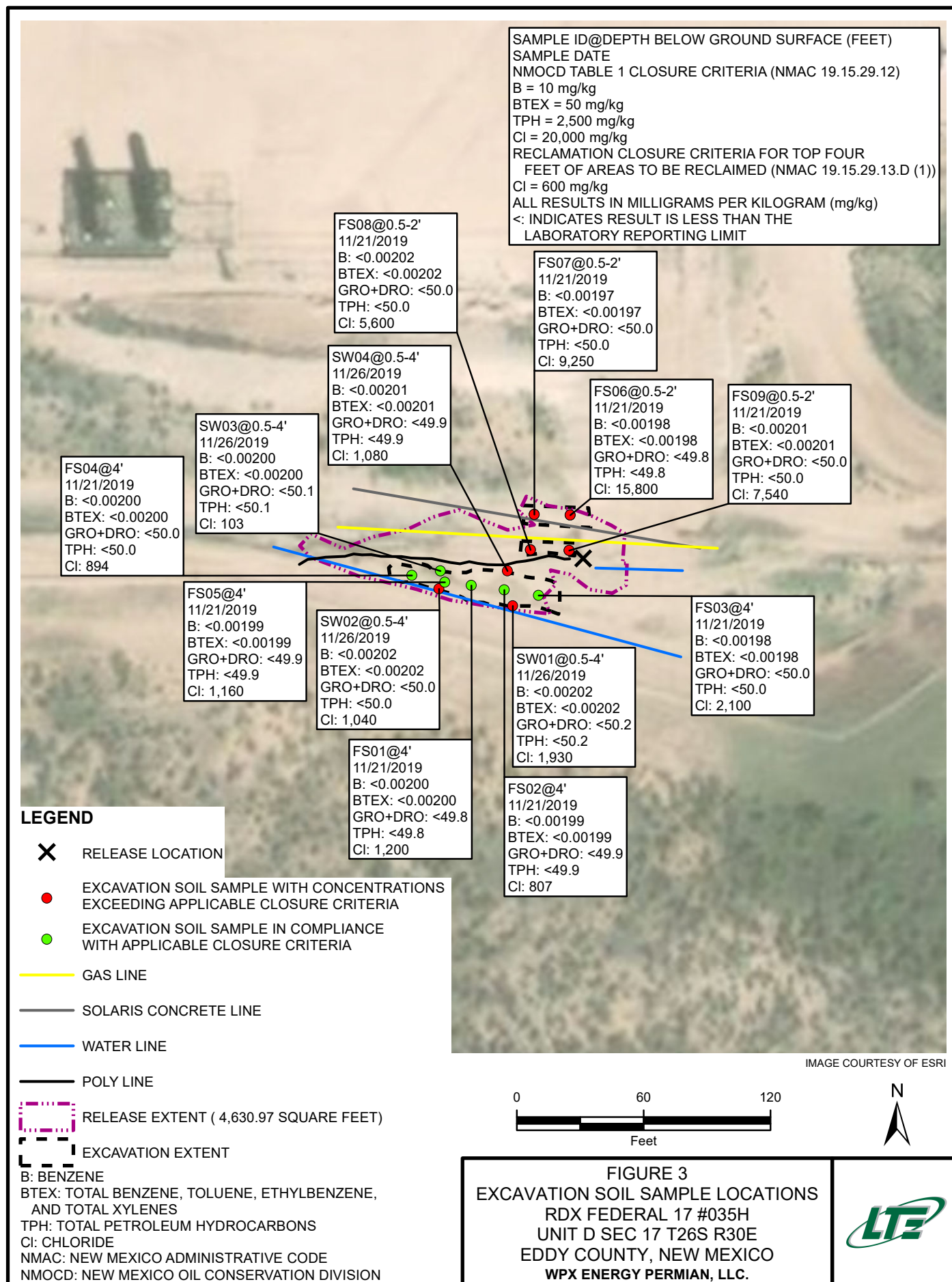


FIGURES









TABLE



TABLE 1
SOIL ANALYTICAL RESULTS

RDX Federal 17 #035H
REMEDATION PERMIT NUMBER 2RP-5649
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, INC.

Sample Name	Sample Depth (feet bgs)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	Sum of GRO + DRO (mg/kg)	TPH (mg/kg)	Chloride (mg/kg)
SS01	0.5	09/09/2019	0.00444	0.0252	0.00394	0.0738	0.107	43.4	63.4	<24.9	107	107	13,800*
PH01	2	09/13/2019	<0.00101	<0.00101	<0.00101	<0.00101	<0.00101	<25.0	<25.0	<25.0	<25.0	<25.0	691*
PH01A	4	09/13/2019	-	-	-	-	-	-	-	-	-	-	938*
PH01B	6	09/13/2019	-	-	-	-	-	-	-	-	-	-	73.4*
PH02	2	09/13/2019	<0.000996	<0.000996	<0.000996	<0.000996	<0.000996	<24.9	<24.9	<24.9	<24.9	<24.9	890*
PH02A	5	09/13/2019	-	-	-	-	-	-	-	-	-	-	308*
PH02B	7	09/13/2019	-	-	-	-	-	-	-	-	-	-	109*
PH03	2	09/13/2019	-	-	-	-	-	-	-	-	-	-	6,830*
PH03A	4	09/13/2019	-	-	-	-	-	-	-	-	-	-	4,670*
PH04	0.5	11/26/2019	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<50.3	<50.3	<50.3	<50.3	<50.3	186*
PH04A	4	11/26/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.2	<50.2	<50.2	<50.2	<50.2	13.6*
PH05	0.5	11/26/2019	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<50.1	<50.1	<50.1	<50.1	<50.1	36.3*
PH05A	4	11/26/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.1	<50.1	<50.1	<50.1	<50.1	11.5*
PH06	0.5	11/26/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<50.2	<50.2	<50.2	<50.2	<50.2	<10.0*
PH06A	4	11/26/2019	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<50.1	<50.1	<50.1	<50.1	<50.1	73.6*
PH07	0.5	11/26/2019	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<50.2	<50.2	<50.2	<50.2	<50.2	<9.82*
PH07A	4	11/26/2019	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<49.9	<49.9	<49.9	<49.9	<49.9	17.3*
PH08	0.5	11/26/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.2	<50.2	<50.2	<50.2	<50.2	14.0*
PH08A	4	11/26/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<50.3	<50.3	<50.3	<50.3	<50.3	54.3*
PH09	0.5	11/26/2019	<0.00197	<0.00197	<0.00197	<0.00197	<0.00197	<49.8	<49.8	<49.8	<49.8	<49.8	50.6*
PH09A	4	11/26/2019	<0.00196	<0.00196	<0.00196	<0.00196	<0.00196	<49.8	<49.8	<49.8	<49.8	<49.8	73.1*
FS01	4	11/21/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	<49.8	1,200*
FS02	4	11/21/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	<49.9	807*
FS03	4	11/26/2019	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	<50.0	2,100*
FS04	4	11/26/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	<50.0	894*
FS05	4	11/26/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	<49.9	1,160*
FS06	0.5 - 2	11/26/2019	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198	<49.8	<49.8	<49.8	<49.8	<49.8	15,800*
FS07	0.5 - 2	11/26/2019	<0.00197	<0.00197	<0.00197	<0.00197	<0.00197	<50.0	<50.0	<50.0	<50.0	<50.0	9,250*
FS08	0.5 - 2	11/26/2019	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	<50.0	5,600*
FS09	0.5 - 2	11/26/2019	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<50.0	<50.0	<50.0	<50.0	<50.0	7,540*
SW01	0.5 - 4	11/26/2019	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<50.2	<50.2	<50.2	<50.2	<50.2	1,930*
SW02	0.5 - 4	11/26/2019	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	<50.0	1,040*
SW03	0.5 - 4	11/26/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<50.1	<50.1	<50.1	<50.1	<50.1	103*
SW04	0.5 - 4	11/26/2019	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<49.9	<49.9	<49.9	<49.9	<49.9	1,080*
NMOCDC Table 1 Closure Criteria			10	NE	NE	NE	50	NE	NE	NE	1,000	2,500	20,000

Notes:

bgs - below ground surface
BTEX - benzene, toluene, ethylbenzene, and total xylenes
mg/kg - milligrams per kilogram
NE - not established
NMOCDC - New Mexico Oil Conservation Division
- not analyzed

DRO - diesel range organics
GRO - gasoline range organics
ORO - oil range organics
TPH - total petroleum hydrocarbons
< - indicates result is below laboratory reporting limits

Bold- indicates result exceeds the applicable regulatory standard

* - indicates sample was collected in area to be reclaimed after remediation is complete; closure criteria for chloride concentration in the top 4 feet of soil is 600 mg/kg

Table 1 - closure criteria for soils impacted by a release per NMOCDC 19.15.29 August 2018 NMOC - New Mexico Administrative Code

ATTACHMENT 1: FORM C-141



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	NAB1928154373
District RP	2RP-5649
Facility ID	
Application ID	pAB1928154046

Release Notification I9KF0-190916-C-1410

Responsible Party

Responsible Party: WPX Energy Permian, LLC.	OGRID: 246289
Contact Name: Jim Raley	Contact Telephone: 575-689-7597
Contact email: james.rale@wpenergy.com	Incident # (assigned by OCD) NAB1928154373
Contact mailing address: 5315 Buena Vista Dr., Carlsbad, NM 88220	

Location of Release Source

Latitude 32.0492796 _____ Longitude -103.909725 _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: RDX FEDERAL 17 #035H	Site Type: Production Facility
Date Release Discovered: 9/8/2019	API# (if applicable): 30-015-43884

Unit Letter	Section	Township	Range	County
D	17	26S	30E	Eddy

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (Name: Bureau of Land Management _____)

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 10	Volume Recovered (bbls) 4
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: Check valve on produced water line header failed, allowing release of 10 bbls of produced water on pipeline ROW, of which 4bbls was recovered. No waterways were threatened nor public health endangered.

Form C-141

Page 2

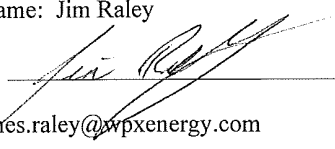
State of New Mexico
Oil Conservation Division

Incident ID	NAB1928154373
District RP	2RP-5649
Facility ID	
Application ID	pAB1928154046

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

Initial Response

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

☒ The source of the release has been stopped. ☒ The impacted area has been secured to protect human health and the environment. ☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. ☒ All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
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: Jim Raley Signature:  email: james.raley@wpenergy.com	Title: Environmental Specialist Date: 9/16/2019 Telephone: 575-689-7597
<u>OCD Only</u> Received by: <u>Amalia Bustamante</u> Date: <u>10/7/2019</u>	

Form C-141

Page 3

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5649
Facility ID	
Application ID	

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

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

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

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

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

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

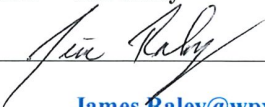
Form C-141

Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5649
Facility ID	
Application ID	

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

Printed Name: **Jim Raley**Title: **Environmental Specialist**Signature: Date: **12/4/2019**

email:

James.Raley@wpenergy.comTelephone: **575-689-7597****OCD Only**

Received by: _____

Date: _____

Form C-141

Page 5

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	2RP-5649
Facility ID	
Application ID	

Remediation Plan

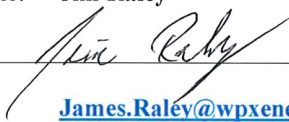
Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☒ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☒ Extents of contamination must be fully delineated.
- ☒ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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: **Jim Raley**Title: **Environmental Specialist**Signature: Date: **12/4/2019**email: James.Raley@wpenergy.comTelephone: **575-689-7597****OCD Only**

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

ATTACHMENT 2: PHOTOGRAPHIC LOG





Southern view of the release extent near the release source.

Project: 034819046	WPX Energy Permian, Inc. RDX Federal 17 #035H	 Advancing Opportunity
November 9, 2019	Photographic Log	



Southwestern view of the release extent.

Project: 034819046	WPX Energy Permian, Inc. RDX Federal 17 #035H	 Advancing Opportunity
November 9, 2019	Photographic Log	



Western view at the release point overlooking the release extent.

Project: 034819046	WPX Energy Permian, Inc. RDX Federal 17 #035H	 <i>Advancing Opportunity</i>
November 21, 2019	Photographic Log	



Western view of the excavation at 4 ft depth.

Project: 034819046	WPX Energy Permian, Inc. RDX Federal 17 #035H	 <i>Advancing Opportunity</i>
November 26, 2019	Photographic Log	



Eastern view of the excavations.

Project: 034819046	WPX Energy Permian, Inc. RDX Federal 17 #035H	 <i>Advancing Opportunity</i>
November 26, 2019	Photographic Log	

ATTACHMENT 3: SOIL SAMPLING LOGS



 LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 Compliance · Engineering · Remediation					Identifier: PH01		Date: 9/13/19	
					Project Name: RDX Federal 17-35		RP Number: 2RP-5649	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Lynda Laumbach		Method: Backhoe	
Lat/Long: Collector			Field Screening: Hach Chloride Strips (Low Range) & PID			Hole Diameter: N/A		Total Depth: 6 ft
Comments: N/C Field screening not collected in the field. *Chloride results displayed were analyzed by a lab								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
DRY	691*	N/C	No	PH01	0			
					1			
DRY	938*	N/C	No	PH01A	2	2 ft	Caliche	dry, light tan well-cemented caliche with a uniform, well-sorted sandy (m.) matrix
					3			
DRY	73.4*	N/C	No	PH01B	4	4 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix
					5			
DRY					6	6 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix
					TOT Depth			
					7			
					8			
					9			
					10			
					11			
					12			

 LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 Compliance · Engineering · Remediation					Identifier: PH02		Date: 9/13/19		
					Project Name: RDX Federal 17-35		RP Number: 2RP-5649		
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Lynda Laumbach		Method: Backhoe		
Lat/Long: Collector			Field Screening: Hach Chloride Strips (Low Range) & PID			Hole Diameter: N/A		Total Depth: 7 ft	
Comments: N/C Field screening not collected in the field. *Chloride results displayed were analyzed by a lab									
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks	
DRY	890*	N/C	No	PH02	0	2 ft	Caliche	dry, light tan well-cemented caliche with a uniform, well-sorted sandy (m.) matrix	
					1				
					2				
					3				
					4				
DRY	308*	N/C	No	PH02A	5	5 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix	
					6				
DRY	109*	N/C	NO	PH02B	7	7 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix	
TOT Depth									
					8				
					9				
					10				
					11				
					12				

 LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 Compliance · Engineering · Remediation					Identifier: PH03		Date: 9/13/19	
					Project Name: RDX Federal 17-35		RP Number: 2RP-5649	
LITHOLOGIC / SOIL SAMPLING LOG					Logged By: Lynda Laumbach		Method: Backhoe	
Lat/Long: Collector			Field Screening: Hach Chloride Strips (Low Range) & PID			Hole Diameter: N/A		Total Depth: 4 ft
Comments: N/C Field screening not collected in the field. *Chloride results displayed were analyzed by a lab								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
DRY	6830*	N/C	No	PH03	2	2 ft	Caliche	dry, light tan well-cemented caliche with a uniform, well-sorted sandy (m.) matrix
DRY	4670*	N/C	No	PH03A	4	4 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix
					TOT Depth			
					5			
					6			
					7			
					8			
					9			
					10			
					11			
					12			

 LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 Compliance · Engineering · Remediation		Identifier: PH04	Date: 11/26/19					
		Project Name: RDX Federal 17-35	RP Number: 2RP-5649					
LITHOLOGIC / SOIL SAMPLING LOG		Logged By: Anna Byers	Method: Backhoe					
Lat/Long: Collector		Field Screening: Hach Chloride Strips (Low Range) & PID	Hole Diameter: N/A Total Depth: 4 ft					
Comments: Chloride test performed with 1 part soil and 4 parts distilled water (dilution).								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
DRY	<120	0	No	PH04	0	0.5 ft	SP-SM	dry, brown poorly-graded sand (m.) with silt; non-plastic, no odor, trace organics
DRY	<120	0	No		2	2 ft	Caliche	dry, light tan well-cemented caliche with a uniform, well-sorted sandy (m.) matrix
DRY	172	0	No	PH04A	4	4 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix
TOT DEPTH								

 LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 Compliance · Engineering · Remediation		Identifier: PH05	Date: 11/26/19					
		Project Name: RDX Federal 17-35	RP Number: 2RP-5649					
LITHOLOGIC / SOIL SAMPLING LOG		Logged By: Anna Byers	Method: Backhoe					
Lat/Long: Collector		Field Screening: Hach Chloride Strips (Low Range) & PID	Hole Diameter: N/A Total Depth: 4 ft					
Comments: Chloride test performed with 1 part soil and 4 parts distilled water (dilution).								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
DRY	<120	0	No	PH05	0	0.5 ft	SP-SM	dry, brown poorly-graded sand (m.) with silt; non-plastic, no odor, trace organics
DRY	<120	0	No		2	2 ft	Caliche	dry, light tan well-cemented caliche with a uniform, well-sorted sandy (m.) matrix
DRY	<120	0	No	PH05A	4	4 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix
TOT DEPTH								

 LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 Compliance · Engineering · Remediation		Identifier: PH06	Date: 11/26/19						
		Project Name: RDX Federal 17-35	RP Number: 2RP-5649						
LITHOLOGIC / SOIL SAMPLING LOG									
Lat/Long: Collector		Field Screening: Hach Chloride Strips (Low Range) & PID	Logged By: Anna Byers Method: Backhoe Hole Diameter: N/A Total Depth: 4 ft						
Comments: Chloride test performed with 1 part soil and 4 parts distilled water (dilution).									
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks	
DRY	<120	0	No	PH06	0	0.5 ft	SP-SM	dry, brown poorly-graded sand (m.) with silt; non-plastic, no odor, trace organics	
DRY	<120	0	No		1				
DRY	<120	0	No		2	2 ft	Caliche		dry, light tan well-cemented caliche with a uniform, well-sorted sandy (m.) matrix
DRY	<120	0	No	PH06A	4	4 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix	
					TOT DEPTH				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				

 LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 Compliance · Engineering · Remediation		Identifier: PH07	Date: 11/26/19					
		Project Name: RDX Federal 17-35	RP Number: 2RP-5649					
LITHOLOGIC / SOIL SAMPLING LOG								
Lat/Long: Collector		Field Screening: Hach Chloride Strips (Low Range) & PID	Logged By: Anna Byers Method: Backhoe Hole Diameter: N/A Total Depth: 4 ft					
Comments: Chloride test performed with 1 part soil and 4 parts distilled water (dilution).								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
DRY	<120	0	No	PH07	0	0.5 ft	SP-SM	dry, brown poorly-graded sand (m.) with silt; non-plastic, no odor, trace organics
DRY	<120	0	No		2	2 ft	Caliche	dry, light tan well-cemented caliche with a uniform, well-sorted sandy (m.) matrix
DRY	<120	0	No	PH07A	4	4 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix
TOT DEPTH								

 LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 Compliance · Engineering · Remediation					Identifier: PH08		Date: 11/26/19		
					Project Name: RDX Federal 17-35		RP Number: 2RP-5649		
LITHOLOGIC / SOIL SAMPLING LOG									
Lat/Long: Collector			Field Screening: Hach Chloride Strips (Low Range) & PID			Logged By: Anna Byers		Method: Backhoe	
						Hole Diameter: N/A		Total Depth: 4 ft	
Comments: Chloride test performed with 1 part soil and 4 parts distilled water (dilution).									
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks	
DRY	<120	0	No	PH08	0	0.5 ft	SP-SM	dry, brown poorly-graded sand (m.) with silt; non-plastic, no odor, trace organics	
DRY	<120	0	No		2	2 ft	Caliche	dry, light tan well-cemented caliche with a uniform, well-sorted sandy (m.) matrix	
DRY	<120	0	No	PH08A	4	4 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix	
					TOT DEPTH				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				

 LT Environmental, Inc. 508 West Stevens Street Carlsbad, New Mexico 88220 Compliance · Engineering · Remediation		Identifier: PH09		Date: 11/26/19				
		Project Name: RDX Federal 17-35		RP Number: 2RP-5649				
LITHOLOGIC / SOIL SAMPLING LOG								
Lat/Long: Collector			Field Screening: Hach Chloride Strips (Low Range) & PID		Logged By: Anna Byers Method: Backhoe Hole Diameter: N/A Total Depth: 4 ft			
Comments: Chloride test performed with 1 part soil and 4 parts distilled water (dilution).								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Depth	Soil/Rock Type	Lithology/Remarks
DRY	<120	0	No	PH09	0	0.5 ft	SP-SM	dry, brown poorly-graded sand (m.) with silt; non-plastic, no odor, trace organics
DRY	<120	0	No		2	2 ft	Caliche	dry, light tan well-cemented caliche with a uniform, well-sorted sandy (m.) matrix
DRY	<120	0	No	PH09A	4	4 ft	Caliche	dry, light tan moderately cemented caliche with a uniform, well-sorted sandy (m.) matrix
TOT DEPTH								
					5			
					6			
					7			
					8			
					9			
					10			
					11			
					12			

ATTACHMENT 4: LABORATORY ANALYTICAL REPORTS



Analytical Report 636391

for
LT Environmental, Inc.

Project Manager: Chris McKisson

RDX 17-35

34819046

12-SEP-19

Collected By: Client



1089 N Canal Street
Carlsbad, NM 88220

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

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

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



12-SEP-19

Project Manager: **Chris McKisson**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: XENCO Report No(s): **636391**

RDX 17-35

Project Address:

Chris McKisson:

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) 636391. 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. 636391 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 636391

LT Environmental, Inc., Arvada, CO

RDX 17-35

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS01	S	09-09-19 10:50	0.5 ft	636391-001



CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: RDX 17-35

Project ID: 34819046

Work Order Number(s): 636391

Report Date: 12-SEP-19

Date Received: 09/10/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3101116 BTEX by EPA 8021B

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

Batch: LBA-3101140 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 636389-001 S.



Certificate of Analysis Summary 636391

LT Environmental, Inc., Arvada, CO

Project Name: RDX 17-35

Project Id: 34819046
Contact: Chris McKisson
Project Location:

Date Received in Lab: Tue Sep-10-19 08:05 am
Report Date: 12-SEP-19
Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	636391-001					
	Field Id:	SS01					
	Depth:	0.5- ft					
	Matrix:	SOIL					
	Sampled:	Sep-09-19 10:50					
BTEX by EPA 8021B	Extracted:	Sep-10-19 10:09					
	Analyzed:	Sep-10-19 15:20					
	Units/RL:	mg/kg RL					
Benzene		0.00444 0.00101					
Toluene		0.0252 0.00101					
Ethylbenzene		0.00394 0.00101					
m,p-Xylenes		0.0537 0.00202					
o-Xylene		0.0201 0.00101					
Total Xylenes		0.0738 0.00101					
Total BTEX		0.107 0.00101					
Chloride by EPA 300	Extracted:	Sep-10-19 10:09					
	Analyzed:	Sep-10-19 16:27					
	Units/RL:	mg/kg RL					
Chloride		13800 D 498					
TPH by SW8015 Mod	Extracted:	Sep-10-19 11:30					
	Analyzed:	Sep-10-19 22:17					
	Units/RL:	mg/kg RL					
Gasoline Range Hydrocarbons (GRO)		43.4 24.9					
Diesel Range Organics (DRO)		63.4 24.9					
Motor Oil Range Hydrocarbons (MRO)		<24.9 24.9					
Total GRO-DRO		107 24.9					
Total TPH		107 24.9					

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 636391

LT Environmental, Inc., Arvada, CO

RDX 17-35

Sample Id: **SS01** Matrix: Soil Date Received: 09.10.19 08.05
 Lab Sample Id: 636391-001 Date Collected: 09.09.19 10.50 Sample Depth: 0.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.10.19 10.09 Basis: Wet Weight
 Seq Number: 3101127

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	13800	498	mg/kg	09.10.19 16.34	D	50

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.10.19 11.30 Basis: Wet Weight
 Seq Number: 3101140

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	43.4	24.9	mg/kg	09.10.19 22.17		1
Diesel Range Organics (DRO)	C10C28DRO	63.4	24.9	mg/kg	09.10.19 22.17		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.10.19 22.17	U	1
Total GRO-DRO	PHC628	107	24.9	mg/kg	09.10.19 22.17		1
Total TPH	PHC635	107	24.9	mg/kg	09.10.19 22.17		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	129	%	70-135	09.10.19 22.17	
o-Terphenyl	84-15-1	112	%	70-135	09.10.19 22.17	



Certificate of Analytical Results 636391

LT Environmental, Inc., Arvada, CO

RDX 17-35

Sample Id: SS01	Matrix: Soil	Date Received: 09.10.19 08.05
Lab Sample Id: 636391-001	Date Collected: 09.09.19 10.50	Sample Depth: 0.5 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: MAB		% Moisture:
Analyst: DTH	Date Prep: 09.10.19 10.09	Basis: Wet Weight
Seq Number: 3101116		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	0.00444	0.00101	mg/kg	09.10.19 15.20		1
Toluene	108-88-3	0.0252	0.00101	mg/kg	09.10.19 15.20		1
Ethylbenzene	100-41-4	0.00394	0.00101	mg/kg	09.10.19 15.20		1
m,p-Xylenes	179601-23-1	0.0537	0.00202	mg/kg	09.10.19 15.20		1
o-Xylene	95-47-6	0.0201	0.00101	mg/kg	09.10.19 15.20		1
Total Xylenes	1330-20-7	0.0738	0.00101	mg/kg	09.10.19 15.20		1
Total BTEX		0.107	0.00101	mg/kg	09.10.19 15.20		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	114	%	70-130	09.10.19 15.20		
1,4-Difluorobenzene	540-36-3	122	%	70-130	09.10.19 15.20		



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** Sample 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 636391

LT Environmental, Inc.

RDX 17-35

Analytical Method: Chloride by EPA 300

Seq Number: 3101127

MB Sample Id: 7685854-1-BLK

Matrix: Solid

LCS Sample Id: 7685854-1-BKS

Prep Method: E300P

Date Prep: 09.10.19

LCSD Sample Id: 7685854-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	259	104	259	104	90-110	0	20	mg/kg	09.10.19 12:12	

Analytical Method: Chloride by EPA 300

Seq Number: 3101127

Parent Sample Id: 636389-001

Matrix: Soil

MS Sample Id: 636389-001 S

Prep Method: E300P

Date Prep: 09.10.19

MSD Sample Id: 636389-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	227	199	463	119	465	120	90-110	0	20	mg/kg	09.10.19 12:32	X

Analytical Method: Chloride by EPA 300

Seq Number: 3101127

Parent Sample Id: 636392-001

Matrix: Solid

MS Sample Id: 636392-001 S

Prep Method: E300P

Date Prep: 09.10.19

MSD Sample Id: 636392-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	10600	4040	15500	121	15600	124	90-110	1	20	mg/kg	09.10.19 15:03	X

Analytical Method: TPH by SW8015 Mod

Seq Number: 3101140

MB Sample Id: 7685918-1-BLK

Matrix: Solid

LCS Sample Id: 7685918-1-BKS

Prep Method: SW8015P

Date Prep: 09.10.19

LCSD Sample Id: 7685918-1-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)	<25.0	1000	899	90	918	92	70-135	2	35	mg/kg	09.10.19 14:22	
Diesel Range Organics (DRO)	<25.0	1000	843	84	855	86	70-135	1	35	mg/kg	09.10.19 14:22	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	120		123		128		70-135	%	09.10.19 14:22
o-Terphenyl	96		112		112		70-135	%	09.10.19 14:22

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 Result

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



QC Summary 636391

LT Environmental, Inc.

RDX 17-35

Analytical Method: TPH by SW8015 Mod

Seq Number: 3101140

Parent Sample Id: 636389-001

Matrix: Soil

MS Sample Id: 636389-001 S

Prep Method: SW8015P

Date Prep: 09.10.19

MSD Sample Id: 636389-001 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)	<25.1	1010	1020	101	949	95	70-135	7	35	mg/kg	09.10.19 15:24	
Diesel Range Organics (DRO)	<25.1	1010	950	94	875	88	70-135	8	35	mg/kg	09.10.19 15:24	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	138	**	126		70-135	%	09.10.19 15:24
o-Terphenyl	122		113		70-135	%	09.10.19 15:24

Analytical Method: BTEX by EPA 8021B

Seq Number: 3101116

MB Sample Id: 7685989-1-BLK

Matrix: Solid

LCS Sample Id: 7685989-1-BKS

Prep Method: SW5030B

Date Prep: 09.10.19

LCSD Sample Id: 7685989-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0787	79	0.0812	81	70-130	3	35	mg/kg	09.10.19 10:44	
Toluene	<0.00100	0.100	0.0947	95	0.0953	95	70-130	1	35	mg/kg	09.10.19 10:44	
Ethylbenzene	<0.00100	0.100	0.115	115	0.117	117	71-129	2	35	mg/kg	09.10.19 10:44	
m,p-Xylenes	<0.00200	0.200	0.236	118	0.240	120	70-135	2	35	mg/kg	09.10.19 10:44	
o-Xylene	<0.00100	0.100	0.118	118	0.122	122	71-133	3	35	mg/kg	09.10.19 10:44	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	105		111		107		70-130	%	09.10.19 10:44
4-Bromofluorobenzene	118		127		127		70-130	%	09.10.19 10:44

Analytical Method: BTEX by EPA 8021B

Seq Number: 3101116

Parent Sample Id: 636389-001

Matrix: Soil

MS Sample Id: 636389-001 S

Prep Method: SW5030B

Date Prep: 09.10.19

MSD Sample Id: 636389-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00101	0.101	0.0991	98	0.0919	92	70-130	8	35	mg/kg	09.10.19 12:03	
Toluene	<0.00101	0.101	0.105	104	0.0979	98	70-130	7	35	mg/kg	09.10.19 12:03	
Ethylbenzene	<0.00101	0.101	0.117	116	0.110	111	71-129	6	35	mg/kg	09.10.19 12:03	
m,p-Xylenes	<0.00202	0.202	0.241	119	0.228	115	70-135	6	35	mg/kg	09.10.19 12:03	
o-Xylene	<0.00101	0.101	0.119	118	0.113	114	71-133	5	35	mg/kg	09.10.19 12:03	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	112		104		70-130	%	09.10.19 12:03
4-Bromofluorobenzene	128		126		70-130	%	09.10.19 12:03

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



Houston, TX (281) 240-4200 Dallas, TX (214) 902-0050 San Antonio, TX (210) 508-3334
Midland, TX (432-704-5440) El Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296
Phoenix, AZ (480-355-0900) Atlanta, GA (770-449-8800) Tampa, FL (813) 291-1111
Hobbs, NM (575-392-7550)

Chain of Custody

Work Order No: 630391

Project Manager:	Chris McKisson	Bill to: (if different)	Chris McKisson
Company Name:	LT Environmental, Inc.	Company Name:	LT Environmental
Address:	820 Megan Avenue, Unit B	Address:	
City, State ZIP:	Rifle, CO 81650	City, State ZIP:	
Phone:	(970) 285-9985	Email:	jlambach@ltenv.com, cmckisson@ltenv.com, asmith@ltenv.com

Work Order Comments	
Program: UST/ST	☒ BRP ☒ Brownfields ☒ RRC ☒ Superfund
State of Project:	
Reporting: Level II	☒ Level III ☐ PST/UST ☐ TRP ☐ Level IV
Deliverables: EDD	☐ ADAPT ☐ Other:

Project Name:	RDX 17-35	Turn Around	ANALYSIS REQUEST							Work Order Notes
Project Number:	34819046	Routine ☒								
P.O. Number:		Rush: ☐								
Sampler's Name:	Lynda Laumbach	Due Date:								

SAMPLE RECEIPT		Temp Blank:	Yes	No	Wet Ice:	Yes	No
Temperature (°C):	4.8	Thermometer ID					
Received Intact:	Yes	No	TMM007				
Cooler Custody Seals:	Yes	No	N/A	Correction Factor:		-0.2	
Sample Custody Seals:	Yes	No	N/A	Total Containers:		1	

Number of Containers

PA 8015)

EPA 0=8021)

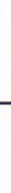
le (EPA 300.0)

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

[illegible]

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
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 Xencro, its affiliates and subcontractors. It assigns standard terms and conditions of service. Xencro 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 Xencro. A minimum charge of \$75.00 will be applied to each project and a charge of \$6 for each sample submitted to Xencro, 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
		805 9.10.19			09-10-17 8

Revised Date 05/14/18 Rev. 2018



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: LT Environmental, Inc.

Date/ Time Received: 09/10/2019 08:05:00 AM

Work Order #: 636391

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	4.8
#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?	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)?	No
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Elizabeth McClellan

Date: 09/10/2019

Checklist reviewed by:

Jessica Kramer

Date: 09/10/2019

Analytical Report 637305

**for
LT Environmental, Inc.**

Project Manager: Chris McKisson

RDX 17-35

034819046

23-SEP-19

Collected By: Client



**1089 N Canal Street
Carlsbad, NM 88220**

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

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

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



23-SEP-19

Project Manager: **Chris McKisson**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: XENCO Report No(s): **637305**

RDX 17-35

Project Address:

Chris McKisson:

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) 637305. 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. 637305 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.

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

**Sample Cross Reference 637305****LT Environmental, Inc., Arvada, CO**

RDX 17-35

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PH01	S	09-13-19 09:30	2 ft	637305-001
PH01A	S	09-13-19 09:40	4 ft	637305-002
PH01B	S	09-13-19 09:50	6 ft	637305-003
PH02	S	09-13-19 10:00	2 ft	637305-004
PH02A	S	09-13-19 10:20	5 ft	637305-005
PH02B	S	09-13-19 10:40	7 ft	637305-006
PH03	S	09-13-19 11:00	2 ft	637305-007
PH03A	S	09-13-19 11:45	4 ft	637305-008



CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: RDX 17-35

Project ID: 034819046

Work Order Number(s): 637305

Report Date: 23-SEP-19

Date Received: 09/18/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3101958 BTEX by EPA 8021B

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

Batch: LBA-3102031 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7686459-1-BSD,637191-021 S,637305-004.



Certificate of Analysis Summary 637305

LT Environmental, Inc., Arvada, CO

Project Name: RDX 17-35

Project Id: 034819046
Contact: Chris McKisson
Project Location:

Date Received in Lab: Wed Sep-18-19 01:45 pm

Report Date: 23-SEP-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	637305-001	637305-002	637305-003	637305-004	637305-005	637305-006
	<i>Field Id:</i>	PH01	PH01A	PH01B	PH02	PH02A	PH02B
	<i>Depth:</i>	2- ft	4- ft	6- ft	2- ft	5- ft	7- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-13-19 09:30	Sep-13-19 09:40	Sep-13-19 09:50	Sep-13-19 10:00	Sep-13-19 10:20	Sep-13-19 10:40
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-18-19 16:09			Sep-18-19 16:09		
	<i>Analyzed:</i>	Sep-19-19 04:37			Sep-19-19 04:57		
	<i>Units/RL:</i>	mg/kg RL			mg/kg RL		
Benzene		<0.00101 0.00101			<0.000996 0.000996		
Toluene		<0.00101 0.00101			<0.000996 0.000996		
Ethylbenzene		<0.00101 0.00101			<0.000996 0.000996		
m,p-Xylenes		<0.00202 0.00202			<0.00199 0.00199		
o-Xylene		<0.00101 0.00101			<0.000996 0.000996		
Total Xylenes		<0.00101 0.00101			<0.000996 0.000996		
Total BTEX		<0.00101 0.00101			<0.000996 0.000996		
Chloride by EPA 300	<i>Extracted:</i>	Sep-18-19 16:00	Sep-18-19 16:00	Sep-18-19 16:00	Sep-18-19 16:00	Sep-18-19 16:00	Sep-18-19 16:00
	<i>Analyzed:</i>	Sep-19-19 12:16	Sep-18-19 20:27	Sep-18-19 20:33	Sep-18-19 20:40	Sep-18-19 20:46	Sep-18-19 21:06
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		691 D 20.0	938 99.4	73.4 D 9.90	890 50.4	308 20.2	109 D 50.4
TPH by SW8015 Mod	<i>Extracted:</i>	Sep-18-19 16:45			Sep-18-19 16:45		
	<i>Analyzed:</i>	Sep-19-19 18:31			Sep-19-19 18:52		
	<i>Units/RL:</i>	mg/kg RL			mg/kg RL		
Gasoline Range Hydrocarbons (GRO)		<25.0 25.0			<24.9 24.9		
Diesel Range Organics (DRO)		<25.0 25.0			<24.9 24.9		
Motor Oil Range Hydrocarbons (MRO)		<25.0 25.0			<24.9 24.9		
Total TPH		<25.0 25.0			<24.9 24.9		
Total GRO-DRO		<25.0 25.0			<24.9 24.9		

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

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 637305

LT Environmental, Inc., Arvada, CO

Project Name: RDX 17-35

Project Id: 034819046
 Contact: Chris McKisson
 Project Location:

Date Received in Lab: Wed Sep-18-19 01:45 pm
 Report Date: 23-SEP-19
 Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	637305-007	637305-008				
	Field Id:	PH03	PH03A				
	Depth:	2- ft	4- ft				
	Matrix:	SOIL	SOIL				
	Sampled:	Sep-13-19 11:00	Sep-13-19 11:45				
Chloride by EPA 300	Extracted:	Sep-18-19 16:00	Sep-18-19 16:00				
	Analyzed:	Sep-18-19 21:12	Sep-18-19 21:19				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		6830 D 201	4670 D 202				

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.

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Jessica Kramer
 Project Assistant



Certificate of Analytical Results 637305

LT Environmental, Inc., Arvada, CO

RDX 17-35

Sample Id: **PH01** Matrix: Soil Date Received: 09.18.19 13.45
 Lab Sample Id: 637305-001 Date Collected: 09.13.19 09.30 Sample Depth: 2 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.18.19 16.00 Basis: Wet Weight
 Seq Number: 3101899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	691	20.0	mg/kg	09.19.19 13.44	D	20

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.18.19 16.45 Basis: Wet Weight
 Seq Number: 3102031

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<25.0	25.0	mg/kg	09.19.19 18.31	U	1
Diesel Range Organics (DRO)	C10C28DRO	<25.0	25.0	mg/kg	09.19.19 18.31	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<25.0	25.0	mg/kg	09.19.19 18.31	U	1
Total TPH	PHC635	<25.0	25.0	mg/kg	09.19.19 18.31	U	1
Total GRO-DRO	PHC628	<25.0	25.0	mg/kg	09.19.19 18.31	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	127	%	70-135	09.19.19 18.31	
o-Terphenyl	84-15-1	106	%	70-135	09.19.19 18.31	



Certificate of Analytical Results 637305

LT Environmental, Inc., Arvada, CO

RDX 17-35

Sample Id: PH01	Matrix: Soil	Date Received: 09.18.19 13.45
Lab Sample Id: 637305-001	Date Collected: 09.13.19 09.30	Sample Depth: 2 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: MAB		% Moisture:
Analyst: DTH	Date Prep: 09.18.19 16.09	Basis: Wet Weight
Seq Number: 3101958		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00101	0.00101	mg/kg	09.19.19 04.37	U	1
Toluene	108-88-3	<0.00101	0.00101	mg/kg	09.19.19 04.37	U	1
Ethylbenzene	100-41-4	<0.00101	0.00101	mg/kg	09.19.19 04.37	U	1
m,p-Xylenes	179601-23-1	<0.00202	0.00202	mg/kg	09.19.19 04.37	U	1
o-Xylene	95-47-6	<0.00101	0.00101	mg/kg	09.19.19 04.37	U	1
Total Xylenes	1330-20-7	<0.00101	0.00101	mg/kg	09.19.19 04.37	U	1
Total BTEX		<0.00101	0.00101	mg/kg	09.19.19 04.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	115	%	70-130	09.19.19 04.37		
1,4-Difluorobenzene	540-36-3	101	%	70-130	09.19.19 04.37		

**Certificate of Analytical Results 637305****LT Environmental, Inc., Arvada, CO**

RDX 17-35

Sample Id: **PH01A** Matrix: Soil Date Received: 09.18.19 13.45
Lab Sample Id: 637305-002 Date Collected: 09.13.19 09.40 Sample Depth: 4 ft
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: MAB % Moisture:
Analyst: MAB Date Prep: 09.18.19 16.00 Basis: Wet Weight
Seq Number: 3101899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	938	99.4	mg/kg	09.18.19 20.27		10

**Certificate of Analytical Results 637305****LT Environmental, Inc., Arvada, CO****RDX 17-35**

Sample Id: **PH01B** Matrix: Soil Date Received: 09.18.19 13.45
Lab Sample Id: 637305-003 Date Collected: 09.13.19 09.50 Sample Depth: 6 ft
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: MAB % Moisture:
Analyst: MAB Date Prep: 09.18.19 16.00 Basis: Wet Weight
Seq Number: 3101899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	73.4	9.90	mg/kg	09.19.19 17.30	D	1



Certificate of Analytical Results 637305

LT Environmental, Inc., Arvada, CO

RDX 17-35

Sample Id: **PH02** Matrix: Soil Date Received: 09.18.19 13.45
 Lab Sample Id: 637305-004 Date Collected: 09.13.19 10.00 Sample Depth: 2 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 09.18.19 16.00 Basis: Wet Weight
 Seq Number: 3101899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	890	50.4	mg/kg	09.18.19 20.40		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 09.18.19 16.45 Basis: Wet Weight
 Seq Number: 3102031

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<24.9	24.9	mg/kg	09.19.19 18.52	U	1
Diesel Range Organics (DRO)	C10C28DRO	<24.9	24.9	mg/kg	09.19.19 18.52	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<24.9	24.9	mg/kg	09.19.19 18.52	U	1
Total TPH	PHC635	<24.9	24.9	mg/kg	09.19.19 18.52	U	1
Total GRO-DRO	PHC628	<24.9	24.9	mg/kg	09.19.19 18.52	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	147	%	70-135	09.19.19 18.52	**
o-Terphenyl	84-15-1	123	%	70-135	09.19.19 18.52	



Certificate of Analytical Results 637305

LT Environmental, Inc., Arvada, CO

RDX 17-35

Sample Id: **PH02**

Matrix: Soil

Date Received: 09.18.19 13.45

Lab Sample Id: 637305-004

Date Collected: 09.13.19 10.00

Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: DTH

Date Prep: 09.18.19 16.09

Basis: Wet Weight

Seq Number: 3101958

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000996	0.000996	mg/kg	09.19.19 04.57	U	1
Toluene	108-88-3	<0.000996	0.000996	mg/kg	09.19.19 04.57	U	1
Ethylbenzene	100-41-4	<0.000996	0.000996	mg/kg	09.19.19 04.57	U	1
m,p-Xylenes	179601-23-1	<0.00199	0.00199	mg/kg	09.19.19 04.57	U	1
o-Xylene	95-47-6	<0.000996	0.000996	mg/kg	09.19.19 04.57	U	1
Total Xylenes	1330-20-7	<0.000996	0.000996	mg/kg	09.19.19 04.57	U	1
Total BTEX		<0.000996	0.000996	mg/kg	09.19.19 04.57	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	118	%	70-130	09.19.19 04.57		
4-Bromofluorobenzene	460-00-4	106	%	70-130	09.19.19 04.57		

**Certificate of Analytical Results 637305****LT Environmental, Inc., Arvada, CO**

RDX 17-35

Sample Id: PH02A	Matrix: Soil	Date Received: 09.18.19 13.45
Lab Sample Id: 637305-005	Date Collected: 09.13.19 10.20	Sample Depth: 5 ft
Analytical Method: Chloride by EPA 300		Prep Method: E300P
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 09.18.19 16.00	Basis: Wet Weight
Seq Number: 3101899		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	308	20.2	mg/kg	09.18.19 20.46		2

**Certificate of Analytical Results 637305****LT Environmental, Inc., Arvada, CO****RDX 17-35**

Sample Id: **PH02B** Matrix: Soil Date Received: 09.18.19 13.45
Lab Sample Id: 637305-006 Date Collected: 09.13.19 10.40 Sample Depth: 7 ft
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: MAB % Moisture:
Analyst: MAB Date Prep: 09.18.19 16.00 Basis: Wet Weight
Seq Number: 3101899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	109	50.4	mg/kg	09.19.19 13.12	D	5

**Certificate of Analytical Results 637305****LT Environmental, Inc., Arvada, CO****RDX 17-35**

Sample Id: **PH03** Matrix: Soil Date Received: 09.18.19 13.45
Lab Sample Id: 637305-007 Date Collected: 09.13.19 11.00 Sample Depth: 2 ft
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: MAB % Moisture:
Analyst: MAB Date Prep: 09.18.19 16.00 Basis: Wet Weight
Seq Number: 3101899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6830	201	mg/kg	09.19.19 13.18	D	20

**Certificate of Analytical Results 637305****LT Environmental, Inc., Arvada, CO**

RDX 17-35

Sample Id: **PH03A** Matrix: Soil Date Received: 09.18.19 13.45
Lab Sample Id: 637305-008 Date Collected: 09.13.19 11.45 Sample Depth: 4 ft
Analytical Method: Chloride by EPA 300 Prep Method: E300P
Tech: MAB % Moisture:
Analyst: MAB Date Prep: 09.18.19 16.00 Basis: Wet Weight
Seq Number: 3101899

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4670	202	mg/kg	09.19.19 13.31	D	20



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 637305

LT Environmental, Inc.

RDX 17-35

Analytical Method: Chloride by EPA 300

Seq Number: 3101899

MB Sample Id: 7686418-1-BLK

Matrix: Solid

LCS Sample Id: 7686418-1-BKS

Prep Method: E300P

Date Prep: 09.18.19

LCSD Sample Id: 7686418-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	260	104	258	103	90-110	1	20	mg/kg	09.18.19 18:50	

Analytical Method: Chloride by EPA 300

Seq Number: 3101899

Parent Sample Id: 637191-020

Matrix: Soil

MS Sample Id: 637191-020 S

Prep Method: E300P

Date Prep: 09.18.19

MSD Sample Id: 637191-020 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	4.71	200	204	100	216	106	90-110	6	20	mg/kg	09.18.19 19:10	

Analytical Method: Chloride by EPA 300

Seq Number: 3101899

Parent Sample Id: 637312-001

Matrix: Solid

MS Sample Id: 637312-001 S

Prep Method: E300P

Date Prep: 09.18.19

MSD Sample Id: 637312-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	1220	1010	2390	116	2400	117	90-110	0	20	mg/kg	09.18.19 21:44	X

Analytical Method: TPH by SW8015 Mod

Seq Number: 3102031

MB Sample Id: 7686459-1-BLK

Matrix: Solid

LCS Sample Id: 7686459-1-BKS

Prep Method: SW8015P

Date Prep: 09.18.19

LCSD Sample Id: 7686459-1-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)	<25.0	1000	951	95	986	99	70-135	4	35	mg/kg	09.19.19 15:45	
Diesel Range Organics (DRO)	<25.0	1000	914	91	942	94	70-135	3	35	mg/kg	09.19.19 15:45	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	135		133		138	**	70-135	%	09.19.19 15:45
o-Terphenyl	105		104		107		70-135	%	09.19.19 15:45

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 637305

LT Environmental, Inc.

RDX 17-35

Analytical Method: TPH by SW8015 Mod

Seq Number: 3102031

Parent Sample Id: 637191-021

Matrix: Soil

MS Sample Id: 637191-021 S

Prep Method: SW8015P

Date Prep: 09.18.19

MSD Sample Id: 637191-021 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)	<25.1	1000	917	92	948	94	70-135	3	35	mg/kg	09.19.19 16:47	
Diesel Range Organics (DRO)	<25.1	1000	874	87	907	90	70-135	4	35	mg/kg	09.19.19 16:47	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	137	**	130		70-135	%	09.19.19 16:47
o-Terphenyl	102		110		70-135	%	09.19.19 16:47

Analytical Method: BTEX by EPA 8021B

Seq Number: 3101958

MB Sample Id: 7686555-1-BLK

Matrix: Solid

LCS Sample Id: 7686555-1-BKS

Prep Method: SW5030B

Date Prep: 09.18.19

LCSD Sample Id: 7686555-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0813	81	0.0900	90	70-130	10	35	mg/kg	09.19.19 02:00	
Toluene	<0.00100	0.100	0.0977	98	0.0936	94	70-130	4	35	mg/kg	09.19.19 02:00	
Ethylbenzene	<0.00100	0.100	0.119	119	0.116	116	71-129	3	35	mg/kg	09.19.19 02:00	
m,p-Xylenes	<0.00200	0.200	0.242	121	0.233	117	70-135	4	35	mg/kg	09.19.19 02:00	
o-Xylene	<0.00100	0.100	0.120	120	0.116	116	71-133	3	35	mg/kg	09.19.19 02:00	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		107		102		70-130	%	09.19.19 02:00
4-Bromofluorobenzene	104		121		112		70-130	%	09.19.19 02:00

Analytical Method: BTEX by EPA 8021B

Seq Number: 3101958

Parent Sample Id: 637191-021

Matrix: Soil

MS Sample Id: 637191-021 S

Prep Method: SW5030B

Date Prep: 09.18.19

MSD Sample Id: 637191-021 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00101	0.101	0.0795	79	0.0831	82	70-130	4	35	mg/kg	09.19.19 03:18	
Toluene	<0.00101	0.101	0.0856	85	0.0825	82	70-130	4	35	mg/kg	09.19.19 03:18	
Ethylbenzene	<0.00101	0.101	0.0929	92	0.102	101	71-129	9	35	mg/kg	09.19.19 03:18	
m,p-Xylenes	<0.00201	0.201	0.189	94	0.206	102	70-135	9	35	mg/kg	09.19.19 03:18	
o-Xylene	<0.00101	0.101	0.0954	94	0.103	102	71-133	8	35	mg/kg	09.19.19 03:18	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	115		114		70-130	%	09.19.19 03:18
4-Bromofluorobenzene	127		130		70-130	%	09.19.19 03:18

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

Chain of Custody

Work Order No: 637305

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



www.xenco.com Page 1 of 1

Project Manager: Chris McKisson		Bill to: (if different) Chris McKisson	
Company Name: LT Environmental, Inc.		Company Name: LT Environmental	
Address: 820 Megan Avenue, Unit B		Address:	
City, State ZIP: Rifle, CO 81650		City, State ZIP:	
Phone: (970) 285-9985		Email: laumbach@ltenv.com, cmckisson@ltenv.com, asmith@ltenv.com	

Project Name: RDX 17-35	Turn Around
Project Number: 34819046	Routine ☒
P.O. Number:	Rush: ☐
Sampler's Name: Lynda Laumbach	Due Date:

SAMPLE RECEIPT				Turn Around				ANALYSIS REQUEST												Work Order Notes			
Temperature (°C):	Received Intact:	Cooler Custody Seals:	Sample Custody Seals:	Temp Blank:	Yes	No	Wet Ice:	Yes	No	Thermometer ID: T-NM-007												TAT starts the day received by the lab, if received by 4:30pm	
				Yes	No	Yes	No	Correction Factor: -0.2															
				Yes	No	Yes	No	Total Containers: 8															
Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers												Sample Comments						
PH-01	S	08/13/2019	9:30	2'	1	TPH (EPA 8015)	TPH (EPA 8015)	BTEX (EPA 0-8021)	Chloride (EPA 300.0)														
PH-02A	S		9:40	4'	1																		
PH-02B	S		9:50	6'	1																		
PH-02	S		10:00	2'	1																		
PH-02A	S		10:20	5'	1																		
PH-02B	S		10:40	7'	1																		
PH-03	S		11:00	2'	1																		
PH-03A	S		11:45	4'	1																		

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

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		09/18/2019 13:45	2		
3			4		
5			6		



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 09/18/2019 01:45:00 PM

Work Order #: 637305

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	0
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6* Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	N/A

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Elizabeth McClellan

Date: 09/18/2019

Checklist reviewed by:

Jessica Kramer

Date: 09/20/2019

Analytical Report 644213

**for
LT Environmental, Inc.**

Project Manager: Chris McKisson

RDX Federal 17-35H

034819046

26-NOV-19

Collected By: Client



**1089 N Canal Street
Carlsbad, NM 88220**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)

Xenco-Carlsbad (LELAP): Louisiana (05092)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)

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

Xenco-Tampa: Florida (E87429), North Carolina (483)



26-NOV-19

Project Manager: **Chris McKisson**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: XENCO Report No(s): **644213**

RDX Federal 17-35H

Project Address: Rural Eddy County

Chris McKisson:

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) 644213. 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. 644213 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 644213

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
FS01	S	11-21-19 15:00	4 ft	644213-001
FS02	S	11-21-19 15:05	4 ft	644213-002



CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: RDX Federal 17-35H

Project ID: 034819046

Work Order Number(s): 644213

Report Date: 26-NOV-19

Date Received: 11/22/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3108683 BTEX by EPA 8021B

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



Certificate of Analysis Summary 644213

LT Environmental, Inc., Arvada, CO

Project Name: RDX Federal 17-35H

Project Id: 034819046
Contact: Chris McKisson
Project Location: Rural Eddy County

Date Received in Lab: Fri Nov-22-19 09:13 am
Report Date: 26-NOV-19
Project Manager: Jessica Kramer

Analysis Requested	Lab Id:	644213-001	644213-002				
	Field Id:	FS01	FS02				
	Depth:	4- ft	4- ft				
	Matrix:	SOIL	SOIL				
	Sampled:	Nov-21-19 15:00	Nov-21-19 15:05				
BTEX by EPA 8021B SUB: T104704400-19-19	Extracted:	Nov-25-19 11:45	Nov-25-19 11:45				
	Analyzed:	Nov-25-19 19:45	Nov-25-19 20:05				
	Units/RL:	mg/kg RL	mg/kg RL				
Benzene		<0.00200 0.00200	<0.00199 0.00199				
Toluene		<0.00200 0.00200	<0.00199 0.00199				
Ethylbenzene		<0.00200 0.00200	<0.00199 0.00199				
m,p-Xylenes		<0.00401 0.00401	<0.00398 0.00398				
o-Xylene		<0.00200 0.00200	<0.00199 0.00199				
Xylenes, Total		<0.00200 0.00200	<0.00199 0.00199				
Total BTEX		<0.00200 0.00200	<0.00199 0.00199				
Chloride by EPA 300 SUB: T104704400-19-19	Extracted:	Nov-25-19 11:55	Nov-25-19 11:55				
	Analyzed:	Nov-25-19 13:31	Nov-25-19 13:52				
	Units/RL:	mg/kg RL	mg/kg RL				
Chloride		1200 25.1	807 25.3				
TPH by SW8015 Mod SUB: T104704400-19-19	Extracted:	Nov-25-19 12:00	Nov-25-19 12:00				
	Analyzed:	Nov-25-19 22:10	Nov-25-19 22:32				
	Units/RL:	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons (GRO)		<49.8 49.8	<49.9 49.9				
Diesel Range Organics (DRO)		<49.8 49.8	<49.9 49.9				
Motor Oil Range Hydrocarbons (MRO)		<49.8 49.8	<49.9 49.9				
Total GRO-DRO		<49.8 49.8	<49.9 49.9				
Total TPH		<49.8 49.8	<49.9 49.9				

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 644213

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS01** Matrix: Soil Date Received: 11.22.19 09.13
 Lab Sample Id: 644213-001 Date Collected: 11.21.19 15.00 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 11.25.19 11.55 Basis: Wet Weight
 Seq Number: 3108630 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1200	25.1	mg/kg	11.25.19 13.31		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 11.25.19 12.00 Basis: Wet Weight
 Seq Number: 3108709 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	11.25.19 22.10	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	11.25.19 22.10	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	11.25.19 22.10	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	11.25.19 22.10	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	11.25.19 22.10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	110	%	70-135	11.25.19 22.10	
o-Terphenyl	84-15-1	117	%	70-135	11.25.19 22.10	



Certificate of Analytical Results 644213

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS01** Matrix: Soil Date Received: 11.22.19 09.13
 Lab Sample Id: 644213-001 Date Collected: 11.21.19 15.00 Sample Depth: 4 ft
 Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B
 Tech: KTL % Moisture:
 Analyst: KTL Date Prep: 11.25.19 11.45 Basis: Wet Weight
 Seq Number: 3108683 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.25.19 19.45	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	11.25.19 19.45	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	11.25.19 19.45	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	11.25.19 19.45	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	11.25.19 19.45	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	11.25.19 19.45	U	1
Total BTEX		<0.00200	0.00200	mg/kg	11.25.19 19.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	106	%	70-130	11.25.19 19.45		
1,4-Difluorobenzene	540-36-3	110	%	70-130	11.25.19 19.45		



Certificate of Analytical Results 644213

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS02** Matrix: Soil Date Received: 11.22.19 09.13
 Lab Sample Id: 644213-002 Date Collected: 11.21.19 15.05 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: CHE % Moisture:
 Analyst: CHE Date Prep: 11.25.19 11.55 Basis: Wet Weight
 Seq Number: 3108630 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	807	25.3	mg/kg	11.25.19 13.52		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DVM % Moisture:
 Analyst: ARM Date Prep: 11.25.19 12.00 Basis: Wet Weight
 Seq Number: 3108709 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	11.25.19 22.32	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	11.25.19 22.32	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	11.25.19 22.32	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	11.25.19 22.32	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	11.25.19 22.32	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	11.25.19 22.32	
o-Terphenyl	84-15-1	115	%	70-135	11.25.19 22.32	



Certificate of Analytical Results 644213

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: FS02	Matrix: Soil	Date Received: 11.22.19 09.13
Lab Sample Id: 644213-002	Date Collected: 11.21.19 15.05	Sample Depth: 4 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: KTL		% Moisture:
Analyst: KTL	Date Prep: 11.25.19 11.45	Basis: Wet Weight
Seq Number: 3108683		SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	11.25.19 20.05	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	11.25.19 20.05	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	11.25.19 20.05	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	11.25.19 20.05	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	11.25.19 20.05	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	11.25.19 20.05	U	1
Total BTEX		<0.00199	0.00199	mg/kg	11.25.19 20.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	110	%	70-130	11.25.19 20.05		
4-Bromofluorobenzene	460-00-4	102	%	70-130	11.25.19 20.05		



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 644213

LT Environmental, Inc.

RDX Federal 17-35H

Analytical Method: Chloride by EPA 300

Seq Number: 3108630

MB Sample Id: 7691116-1-BLK

Matrix: Solid

LCS Sample Id: 7691116-1-BKS

Prep Method: E300P

Date Prep: 11.25.19

LCSD Sample Id: 7691116-1-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	234	94	234	94	90-110	0	20	mg/kg	11.25.19 12:07	

Analytical Method: Chloride by EPA 300

Seq Number: 3108630

Parent Sample Id: 644209-008

Matrix: Soil

MS Sample Id: 644209-008 S

Prep Method: E300P

Date Prep: 11.25.19

MSD Sample Id: 644209-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	97.4	200	305	104	296	99	90-110	3	20	mg/kg	11.25.19 12:27	

Analytical Method: Chloride by EPA 300

Seq Number: 3108630

Parent Sample Id: 644209-017

Matrix: Soil

MS Sample Id: 644209-017 S

Prep Method: E300P

Date Prep: 11.25.19

MSD Sample Id: 644209-017 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	203	200	401	99	402	100	90-110	0	20	mg/kg	11.25.19 13:42	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3108709

MB Sample Id: 7691145-1-BLK

Matrix: Solid

LCS Sample Id: 7691145-1-BKS

Prep Method: SW8015P

Date Prep: 11.25.19

LCSD Sample Id: 7691145-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	987	99	965	97	70-135	2	20	mg/kg	11.25.19 12:42	
Diesel Range Organics (DRO)	<15.0	1000	1010	101	994	99	70-135	2	20	mg/kg	11.25.19 12:42	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	100		101		100		70-135	%	11.25.19 12:42
o-Terphenyl	110		100		88		70-135	%	11.25.19 12:42

Analytical Method: TPH by SW8015 Mod

Seq Number: 3108709

Matrix: Solid
MB Sample Id: 7691145-1-BLK

Prep Method: SW8015P

Date Prep: 11.25.19

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	11.25.19 12:21	

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 644213

LT Environmental, Inc.

RDX Federal 17-35H

Analytical Method: TPH by SW8015 Mod

Seq Number: 3108709

Parent Sample Id: 644215-001

Matrix: Soil

MS Sample Id: 644215-001 S

Prep Method: SW8015P

Date Prep: 11.25.19

MSD Sample Id: 644215-001 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)	<15.0	999	1040	104	1070	107	70-135	3	20	mg/kg	11.25.19 15:06	
Diesel Range Organics (DRO)	40.0	999	1070	103	1120	108	70-135	5	20	mg/kg	11.25.19 15:06	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	111		115		70-135	%	11.25.19 15:06
o-Terphenyl	110		116		70-135	%	11.25.19 15:06

Analytical Method: BTEX by EPA 8021B

Seq Number: 3108683

MB Sample Id: 7691109-1-BLK

Matrix: Solid

LCS Sample Id: 7691109-1-BKS

Prep Method: SW5030B

Date Prep: 11.25.19

LCSD Sample Id: 7691109-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.112	112	0.109	109	70-130	3	35	mg/kg	11.25.19 13:06	
Toluene	<0.00200	0.100	0.104	104	0.104	104	70-130	0	35	mg/kg	11.25.19 13:06	
Ethylbenzene	<0.00200	0.100	0.106	106	0.108	108	70-130	2	35	mg/kg	11.25.19 13:06	
m,p-Xylenes	<0.00400	0.200	0.216	108	0.221	111	70-130	2	35	mg/kg	11.25.19 13:06	
o-Xylene	<0.00200	0.100	0.106	106	0.109	109	70-130	3	35	mg/kg	11.25.19 13:06	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	107		112		111		70-130	%	11.25.19 13:06
4-Bromofluorobenzene	93		101		104		70-130	%	11.25.19 13:06

Analytical Method: BTEX by EPA 8021B

Seq Number: 3108683

Parent Sample Id: 644216-001

Matrix: Soil

MS Sample Id: 644216-001 S

Prep Method: SW5030B

Date Prep: 11.25.19

MSD Sample Id: 644216-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00198	0.0992	0.126	127	0.133	133	70-130	5	35	mg/kg	11.25.19 13:46	X
Toluene	<0.00198	0.0992	0.106	107	0.110	110	70-130	4	35	mg/kg	11.25.19 13:46	
Ethylbenzene	<0.00198	0.0992	0.117	118	0.120	120	70-130	3	35	mg/kg	11.25.19 13:46	
m,p-Xylenes	<0.00397	0.198	0.0814	41	0.0840	42	70-130	3	35	mg/kg	11.25.19 13:46	X
o-Xylene	<0.00198	0.0992	0.136	137	0.150	150	70-130	10	35	mg/kg	11.25.19 13:46	X

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	116		113		70-130	%	11.25.19 13:46
4-Bromofluorobenzene	115		114		70-130	%	11.25.19 13:46

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. = $\text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

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



Chain of Custody

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 Crashtad, NM (432) 704-5440

Phoenix, AZ (480) 355-0900 Atlanta, GA (770) 449-8800 Tampa, FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

www.xenco.com Page 1 of 1

Work Order No:

644219

Project Manager:	Chris McKisson	Bill to: (if different)	Chris McKisson
Company Name:	LT Environmental	Company Name:	LT Environmental
Address:	820 Megan Ave, Unit B	Address:	
City, State ZIP:	Rifle, CO 81650	City, State ZIP:	
Phone:	970-285-9985	Email:	cmckisson@ltenv.com

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

Project Name:	RDX Federal 17-354	Turn Around	
Project Number:	034819046	Routine	☐
Project Location:	Rural Eddy County	Rush:	5 DAY
Sampler's Name:	Anna Byers	Due Date:	
PO #:	28P-5649	Quote #:	

SAMPLE RECEIPT		Temp Blank:	Yes ☒ No ☐	Wet Ice:	Yes ☒ No ☐
Temperature (°C):	14	Thermometer ID			
Received In tact:	Yes ☒ No ☐	Correction Factor:	T-NM-003		
Cooler Custody Seals:	Yes ☒ No ☐	Total Containers:	-0.2		
Sample Custody Seals:	Yes ☒ No ☐				

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	Pres. Code
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F501		S	11/24/19	1520	4'	1	
F502		S	11/24/19	1505	4'	1	

TPH (EPA 8015)	BTEX (EPA 8021)	Chloride (EPA 800.0)
X	X	X
X	X	X

ANALYSIS REQUEST

Preservative Codes
MeOH: Me
None: NO
HNO3: HN
H2SO4: H2
HCL: HL
NaOH: Na
Zn Acetate+ NaOH: Zn
TAT starts the day received by the lab, if received by 4:00pm

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
Anna Byers	Chris McKisson	11/24/19 1900			
		11/24/19 9:05			

Inter-Office Shipment

IOS Number : **52994**

Date/Time: 11.22.2019

Created by: Elizabeth McClellan

Please send report to: Jessica Kramer

Lab# From: **Carlsbad**

Delivery Priority:

Address: 1089 N Canal Street

Lab# To: **Midland**

Air Bill No.:

E-Mail: jessica.kramer@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
644213-001	S	FS01	11.21.2019 15:00	SW8015MOD_NM	TPH by SW8015 Mod	11.29.2019	12.05.2019	JKR	GRO-DRO PHCC10C28	
644213-001	S	FS01	11.21.2019 15:00	SW8021B	BTEX by EPA 8021B	11.29.2019	12.05.2019	JKR	BZ BZME EBZ XYLENE	
644213-001	S	FS01	11.21.2019 15:00	E300_CL	Chloride by EPA 300	11.29.2019	05.19.2020	JKR	CL	
644213-002	S	FS02	11.21.2019 15:05	SW8021B	BTEX by EPA 8021B	11.29.2019	12.05.2019	JKR	BZ BZME EBZ XYLENE	
644213-002	S	FS02	11.21.2019 15:05	E300_CL	Chloride by EPA 300	11.29.2019	05.19.2020	JKR	CL	
644213-002	S	FS02	11.21.2019 15:05	SW8015MOD_NM	TPH by SW8015 Mod	11.29.2019	12.05.2019	JKR	GRO-DRO PHCC10C28	

Inter Office Shipment or Sample Comments:

Relinquished By:



Elizabeth McClellan

Date Relinquished: 11.22.2019

Received By:



Jessica Kramer

Date Received: 11.25.2019

Cooler Temperature: 1.2



XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 52994

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sent By: Elizabeth McClellan

Date Sent: 11.22.2019 12.19 PM

Received By: Jessica Kramer

Date Received: 11.25.2019 08.00 AM

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	1.2
#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:

Jessica Kramer

Date: 11.25.2019



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: LT Environmental, Inc.

Date/ Time Received: 11/22/2019 09:13:00 AM

Work Order #: 644213

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1.5	
#2 *Shipping container in good condition?	Yes	
#3 *Samples received on ice?	Yes	
#4 *Custody Seals intact on shipping container/ cooler?	Yes	
#5 Custody Seals intact on sample bottles?	Yes	
#6* Custody Seals Signed and dated?	Yes	
#7 *Chain of Custody present?	Yes	
#8 Any missing/extra samples?	No	
#9 Chain of Custody signed when relinquished/ received?	Yes	
#10 Chain of Custody agrees with sample labels/matrix?	Yes	
#11 Container label(s) legible and intact?	Yes	
#12 Samples in proper container/ bottle?	Yes	
#13 Samples properly preserved?	Yes	
#14 Sample container(s) intact?	Yes	
#15 Sufficient sample amount for indicated test(s)?	Yes	
#16 All samples received within hold time?	Yes	
#17 Subcontract of sample(s)?	Yes	Subbed to Midland.
#18 Water VOC samples have zero headspace?	N/A	

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Elizabeth McClellan

Date: 11/22/2019

Checklist reviewed by:

Jessica Kramer

Date: 11/23/2019

Analytical Report 644603

for
LT Environmental, Inc.

Project Manager: Chris McKisson

RDX Federal 17-35H

034819046

02-DEC-19

Collected By: Client



1089 N Canal Street
Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)

Xenco-Carlsbad (LELAP): Louisiana (05092)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)

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

Xenco-Tampa: Florida (E87429), North Carolina (483)



02-DEC-19

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

Reference: XENCO Report No(s): **644603**
RDX Federal 17-35H
Project Address: Rural Eddy County

Chris McKisson:

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) 644603. 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. 644603 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 644603****LT Environmental, Inc., Arvada, CO**

RDX Federal 17-35H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PH04	S	11-26-19 12:15	0.5 ft	644603-001
PH04A	S	11-26-19 12:25	4 ft	644603-002
PH05	S	11-26-19 12:35	0.5 ft	644603-003
PH05A	S	11-26-19 13:00	4 ft	644603-004
PH06	S	11-26-19 14:25	0.5 ft	644603-005
PH06A	S	11-26-19 14:35	4 ft	644603-006
PH07	S	11-26-19 14:45	0.5 ft	644603-007
PH07A	S	11-26-19 15:10	4 ft	644603-008
PH08	S	11-26-19 15:20	0.5 ft	644603-009
PH08A	S	11-26-19 15:30	4 ft	644603-010
PH09	S	11-26-19 15:40	0.5 ft	644603-011
PH09A	S	11-26-19 15:50	4 ft	644603-012

**CASE NARRATIVE****Client Name: LT Environmental, Inc.****Project Name: RDX Federal 17-35H**

Project ID: 034819046
Work Order Number(s): 644603

Report Date: 02-DEC-19
Date Received: 11/27/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3109010 Chloride by EPA 300

Lab Sample ID 644603-011 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 644603-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012.

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

Batch: LBA-3109024 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 644603-005, 644603-012, 644603-009.

Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 644603-012, 644603-009.

Batch: LBA-3109032 BTEX by EPA 8021B

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



Certificate of Analysis Summary 644603

LT Environmental, Inc., Arvada, CO

Project Name: RDX Federal 17-35H

Project Id: 034819046
Contact: Chris McKisson
Project Location: Rural Eddy County

Date Received in Lab: Wed Nov-27-19 09:10 am

Report Date: 02-DEC-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	644603-001	644603-002	644603-003	644603-004	644603-005	644603-006
	<i>Field Id:</i>	PH04	PH04A	PH05	PH05A	PH06	PH06A
	<i>Depth:</i>	0.5- ft	4- ft	0.5- ft	4- ft	0.5- ft	4- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Nov-26-19 12:15	Nov-26-19 12:25	Nov-26-19 12:35	Nov-26-19 13:00	Nov-26-19 14:25	Nov-26-19 14:35
BTEX by EPA 8021B	<i>Extracted:</i>	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11
	<i>Analyzed:</i>	Nov-27-19 12:51	Nov-27-19 13:10	Nov-27-19 13:30	Nov-27-19 13:49	Nov-27-19 14:08	Nov-27-19 14:27
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Toluene		<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Ethylbenzene		<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
m,p-Xylenes		<0.00403 0.00403	<0.00399 0.00399	<0.00397 0.00397	<0.00399 0.00399	<0.00398 0.00398	<0.00403 0.00403
o-Xylene		<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Xylenes, Total		<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Total BTEX		<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Chloride by EPA 300	<i>Extracted:</i>	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11
	<i>Analyzed:</i>	Nov-27-19 12:11	Nov-27-19 12:28	Nov-27-19 12:33	Nov-27-19 12:39	Nov-27-19 12:44	Nov-27-19 13:01
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		186 99.8	13.6 D 10.0	36.3 10.1	11.5 10.1	<10.0 10.0	73.6 D 9.94
TPH by SW8015 Mod	<i>Extracted:</i>	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00
	<i>Analyzed:</i>	Nov-27-19 11:03	Nov-27-19 11:24	Nov-28-19 07:53	Nov-27-19 11:44	Nov-27-19 12:05	Nov-28-19 08:13
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.3 50.3	<50.2 50.2	<50.1 50.1	<50.1 50.1	<50.2 50.2	<50.1 50.1
Diesel Range Organics (DRO)		<50.3 50.3	<50.2 50.2	<50.1 50.1	<50.1 50.1	<50.2 50.2	<50.1 50.1
Motor Oil Range Hydrocarbons (MRO)		<50.3 50.3	<50.2 50.2	<50.1 50.1	<50.1 50.1	<50.2 50.2	<50.1 50.1
Total GRO-DRO		<50.3 50.3	<50.2 50.2	<50.1 50.1	<50.1 50.1	<50.2 50.2	<50.1 50.1
Total TPH		<50.3 50.3	<50.2 50.2	<50.1 50.1	<50.1 50.1	<50.2 50.2	<50.1 50.1

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.

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Version: 1.0%

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 644603

LT Environmental, Inc., Arvada, CO

Project Name: RDX Federal 17-35H

Project Id: 034819046
Contact: Chris McKisson
Project Location: Rural Eddy County

Date Received in Lab: Wed Nov-27-19 09:10 am

Report Date: 02-DEC-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	644603-007	644603-008	644603-009	644603-010	644603-011	644603-012
	<i>Field Id:</i>	PH07	PH07A	PH08	PH08A	PH09	PH09A
	<i>Depth:</i>	0.5- ft	4- ft	0.5- ft	4- ft	0.5- ft	4- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Nov-26-19 14:45	Nov-26-19 15:10	Nov-26-19 15:20	Nov-26-19 15:30	Nov-26-19 15:40	Nov-26-19 15:50
BTEX by EPA 8021B	<i>Extracted:</i>	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11
	<i>Analyzed:</i>	Nov-27-19 14:46	Nov-27-19 15:05	Nov-27-19 15:24	Nov-27-19 15:43	Nov-27-19 17:43	Nov-27-19 18:02
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00197 0.00197	<0.00196 0.00196
Toluene		<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00197 0.00197	<0.00196 0.00196
Ethylbenzene		<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00197 0.00197	<0.00196 0.00196
m,p-Xylenes		<0.00404 0.00404	<0.00404 0.00404	<0.00401 0.00401	<0.00398 0.00398	<0.00394 0.00394	<0.00393 0.00393
o-Xylene		<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00197 0.00197	<0.00196 0.00196
Xylenes, Total		<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00197 0.00197	<0.00196 0.00196
Total BTEX		<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00199 0.00199	<0.00197 0.00197	<0.00196 0.00196
Chloride by EPA 300	<i>Extracted:</i>	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11
	<i>Analyzed:</i>	Nov-27-19 13:07	Nov-27-19 13:12	Nov-27-19 13:18	Nov-27-19 13:23	Nov-27-19 13:29	Nov-27-19 13:46
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		<9.82 9.82	17.3 9.94	14.0 9.98	54.3 10.0	50.6 50.3	73.1 D 9.92
TPH by SW8015 Mod	<i>Extracted:</i>	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00
	<i>Analyzed:</i>	Nov-27-19 12:25	Nov-27-19 12:25	Nov-27-19 12:45	Nov-27-19 12:45	Nov-27-19 13:05	Nov-27-19 13:25
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.2 50.2	<49.9 49.9	<50.2 50.2	<50.3 50.3	<49.8 49.8	<49.8 49.8
Diesel Range Organics (DRO)		<50.2 50.2	<49.9 49.9	<50.2 50.2	<50.3 50.3	<49.8 49.8	<49.8 49.8
Motor Oil Range Hydrocarbons (MRO)		<50.2 50.2	<49.9 49.9	<50.2 50.2	<50.3 50.3	<49.8 49.8	<49.8 49.8
Total GRO-DRO		<50.2 50.2	<49.9 49.9	<50.2 50.2	<50.3 50.3	<49.8 49.8	<49.8 49.8
Total TPH		<50.2 50.2	<49.9 49.9	<50.2 50.2	<50.3 50.3	<49.8 49.8	<49.8 49.8

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.

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Version: 1.0%

Jessica Kramer
Project Assistant



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH04** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644603-001 Date Collected: 11.26.19 12.15 Sample Depth: 0.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	186	99.8	mg/kg	11.27.19 12.11		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.3	50.3	mg/kg	11.27.19 11.03	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.3	50.3	mg/kg	11.27.19 11.03	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	11.27.19 11.03	U	1
Total GRO-DRO	PHC628	<50.3	50.3	mg/kg	11.27.19 11.03	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	11.27.19 11.03	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	133	%	70-135	11.27.19 11.03	
o-Terphenyl	84-15-1	133	%	70-135	11.27.19 11.03	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH04**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644603-001

Date Collected: 11.26.19 12.15

Sample Depth: 0.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	11.27.19 12.51	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	11.27.19 12.51	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	11.27.19 12.51	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	11.27.19 12.51	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	11.27.19 12.51	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	11.27.19 12.51	U	1
Total BTEX		<0.00202	0.00202	mg/kg	11.27.19 12.51	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		107	%	70-130	11.27.19 12.51	
1,4-Difluorobenzene	540-36-3		101	%	70-130	11.27.19 12.51	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH04A** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644603-002 Date Collected: 11.26.19 12.25 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	13.6	10.0	mg/kg	11.30.19 23.31	D	1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	11.27.19 11.24	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	11.27.19 11.24	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	11.27.19 11.24	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	11.27.19 11.24	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	11.27.19 11.24	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	120	%	70-135	11.27.19 11.24	
o-Terphenyl	84-15-1	128	%	70-135	11.27.19 11.24	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH04A**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644603-002

Date Collected: 11.26.19 12.25

Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.27.19 13.10	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	11.27.19 13.10	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	11.27.19 13.10	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	11.27.19 13.10	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	11.27.19 13.10	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	11.27.19 13.10	U	1
Total BTEX		<0.00200	0.00200	mg/kg	11.27.19 13.10	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	111	%	70-130	11.27.19 13.10		
1,4-Difluorobenzene	540-36-3	98	%	70-130	11.27.19 13.10		



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: PH05	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644603-003	Date Collected: 11.26.19 12.35	Sample Depth: 0.5 ft
Analytical Method: Chloride by EPA 300		Prep Method: E300P
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 11.11	Basis: Wet Weight
Seq Number: 3109010		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	36.3	10.1	mg/kg	11.27.19 12.33		1

Analytical Method: TPH by SW8015 Mod	Prep Method: SW8015P
Tech: DTH	% Moisture:
Analyst: DTH	Basis: Wet Weight
Seq Number: 3109024	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	11.28.19 07.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	11.28.19 07.53	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	11.28.19 07.53	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	11.28.19 07.53	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	11.28.19 07.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	112	%	70-135	11.28.19 07.53	
o-Terphenyl	84-15-1	121	%	70-135	11.28.19 07.53	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: PH05	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644603-003	Date Collected: 11.26.19 12.35	Sample Depth: 0.5 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 10.11	Basis: Wet Weight
Seq Number: 3109032		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	11.27.19 13.30	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	11.27.19 13.30	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	11.27.19 13.30	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	11.27.19 13.30	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	11.27.19 13.30	U	1
Xylenes, Total	1330-20-7	<0.00198	0.00198	mg/kg	11.27.19 13.30	U	1
Total BTEX		<0.00198	0.00198	mg/kg	11.27.19 13.30	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		115	%	70-130	11.27.19 13.30	
1,4-Difluorobenzene	540-36-3		100	%	70-130	11.27.19 13.30	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH05A** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644603-004 Date Collected: 11.26.19 13.00 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	11.5	10.1	mg/kg	11.27.19 12.39		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	11.27.19 11.44	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	11.27.19 11.44	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	11.27.19 11.44	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	11.27.19 11.44	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	11.27.19 11.44	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-135	11.27.19 11.44	
o-Terphenyl	84-15-1	91	%	70-135	11.27.19 11.44	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH05A**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644603-004

Date Collected: 11.26.19 13.00

Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.27.19 13.49	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	11.27.19 13.49	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	11.27.19 13.49	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	11.27.19 13.49	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	11.27.19 13.49	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	11.27.19 13.49	U	1
Total BTEX		<0.00200	0.00200	mg/kg	11.27.19 13.49	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		116	%	70-130	11.27.19 13.49	
1,4-Difluorobenzene	540-36-3		97	%	70-130	11.27.19 13.49	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH06** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644603-005 Date Collected: 11.26.19 14.25 Sample Depth: 0.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<10.0	10.0	mg/kg	11.27.19 12.44	U	1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	11.27.19 12.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	11.27.19 12.05	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	11.27.19 12.05	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	11.27.19 12.05	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	11.27.19 12.05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	136	%	70-135	11.27.19 12.05	***
o-Terphenyl	84-15-1	135	%	70-135	11.27.19 12.05	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: PH06	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644603-005	Date Collected: 11.26.19 14.25	Sample Depth: 0.5 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 10.11	Basis: Wet Weight
Seq Number: 3109032		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	11.27.19 14.08	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	11.27.19 14.08	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	11.27.19 14.08	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	11.27.19 14.08	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	11.27.19 14.08	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	11.27.19 14.08	U	1
Total BTEX		<0.00199	0.00199	mg/kg	11.27.19 14.08	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		108	%	70-130	11.27.19 14.08	
1,4-Difluorobenzene	540-36-3		105	%	70-130	11.27.19 14.08	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: PH06A	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644603-006	Date Collected: 11.26.19 14.35	Sample Depth: 4 ft
Analytical Method: Chloride by EPA 300		Prep Method: E300P
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 11.11	Basis: Wet Weight
Seq Number: 3109010		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	73.6	9.94	mg/kg	12.01.19 10.45	D	1

Analytical Method: TPH by SW8015 Mod	Prep Method: SW8015P
Tech: DTH	% Moisture:
Analyst: DTH	Basis: Wet Weight
Seq Number: 3109024	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	11.28.19 08.13	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	11.28.19 08.13	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	11.28.19 08.13	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	11.28.19 08.13	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	11.28.19 08.13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	11.28.19 08.13	
o-Terphenyl	84-15-1	112	%	70-135	11.28.19 08.13	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH06A**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644603-006

Date Collected: 11.26.19 14.35

Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	11.27.19 14.27	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	11.27.19 14.27	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	11.27.19 14.27	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	11.27.19 14.27	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	11.27.19 14.27	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	11.27.19 14.27	U	1
Total BTEX		<0.00202	0.00202	mg/kg	11.27.19 14.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	90	%	70-130	11.27.19 14.27		
1,4-Difluorobenzene	540-36-3	81	%	70-130	11.27.19 14.27		



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH07** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644603-007 Date Collected: 11.26.19 14.45 Sample Depth: 0.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<9.82	9.82	mg/kg	11.27.19 13.07	U	1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	11.27.19 12.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	11.27.19 12.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	11.27.19 12.25	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	11.27.19 12.25	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	11.27.19 12.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	11.27.19 12.25	
o-Terphenyl	84-15-1	108	%	70-135	11.27.19 12.25	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: PH07	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644603-007	Date Collected: 11.26.19 14.45	Sample Depth: 0.5 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 10.11	Basis: Wet Weight
Seq Number: 3109032		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	11.27.19 14.46	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	11.27.19 14.46	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	11.27.19 14.46	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	11.27.19 14.46	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	11.27.19 14.46	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	11.27.19 14.46	U	1
Total BTEX		<0.00202	0.00202	mg/kg	11.27.19 14.46	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		103	%	70-130	11.27.19 14.46	
1,4-Difluorobenzene	540-36-3		96	%	70-130	11.27.19 14.46	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH07A** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644603-008 Date Collected: 11.26.19 15.10 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	17.3	9.94	mg/kg	11.27.19 13.12		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	11.27.19 12.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	11.27.19 12.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	11.27.19 12.25	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	11.27.19 12.25	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	11.27.19 12.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	11.27.19 12.25	
o-Terphenyl	84-15-1	131	%	70-135	11.27.19 12.25	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: PH07A	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644603-008	Date Collected: 11.26.19 15.10	Sample Depth: 4 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 10.11	Basis: Wet Weight
Seq Number: 3109032		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	11.27.19 15.05	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	11.27.19 15.05	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	11.27.19 15.05	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	11.27.19 15.05	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	11.27.19 15.05	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	11.27.19 15.05	U	1
Total BTEX		<0.00202	0.00202	mg/kg	11.27.19 15.05	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		107	%	70-130	11.27.19 15.05	
1,4-Difluorobenzene	540-36-3		101	%	70-130	11.27.19 15.05	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH08** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644603-009 Date Collected: 11.26.19 15.20 Sample Depth: 0.5 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.0	9.98	mg/kg	11.27.19 13.18		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	11.27.19 12.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	11.27.19 12.45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	11.27.19 12.45	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	11.27.19 12.45	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	11.27.19 12.45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	138	%	70-135	11.27.19 12.45	**
o-Terphenyl	84-15-1	138	%	70-135	11.27.19 12.45	**



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH08**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644603-009

Date Collected: 11.26.19 15.20

Sample Depth: 0.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.27.19 15.24	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	11.27.19 15.24	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	11.27.19 15.24	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	11.27.19 15.24	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	11.27.19 15.24	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	11.27.19 15.24	U	1
Total BTEX		<0.00200	0.00200	mg/kg	11.27.19 15.24	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		115	%	70-130	11.27.19 15.24	
1,4-Difluorobenzene	540-36-3		105	%	70-130	11.27.19 15.24	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH08A** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644603-010 Date Collected: 11.26.19 15.30 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	54.3	10.0	mg/kg	11.27.19 13.23		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.3	50.3	mg/kg	11.27.19 12.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.3	50.3	mg/kg	11.27.19 12.45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	11.27.19 12.45	U	1
Total GRO-DRO	PHC628	<50.3	50.3	mg/kg	11.27.19 12.45	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	11.27.19 12.45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	117	%	70-135	11.27.19 12.45	
o-Terphenyl	84-15-1	128	%	70-135	11.27.19 12.45	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH08A**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644603-010

Date Collected: 11.26.19 15.30

Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	11.27.19 15.43	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	11.27.19 15.43	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	11.27.19 15.43	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	11.27.19 15.43	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	11.27.19 15.43	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	11.27.19 15.43	U	1
Total BTEX		<0.00199	0.00199	mg/kg	11.27.19 15.43	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		114	%	70-130	11.27.19 15.43	
1,4-Difluorobenzene	540-36-3		105	%	70-130	11.27.19 15.43	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: PH09	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644603-011	Date Collected: 11.26.19 15.40	Sample Depth: 0.5 ft
Analytical Method: Chloride by EPA 300		Prep Method: E300P
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 11.11	Basis: Wet Weight
Seq Number: 3109010		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	50.6	50.3	mg/kg	11.27.19 13.29		5

Analytical Method: TPH by SW8015 Mod	Prep Method: SW8015P
Tech: DTH	% Moisture:
Analyst: DTH	Basis: Wet Weight
Seq Number: 3109024	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	11.27.19 13.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	11.27.19 13.05	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	11.27.19 13.05	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	11.27.19 13.05	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	11.27.19 13.05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	11.27.19 13.05	
o-Terphenyl	84-15-1	128	%	70-135	11.27.19 13.05	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH09**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644603-011

Date Collected: 11.26.19 15.40

Sample Depth: 0.5 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00197	0.00197	mg/kg	11.27.19 17.43	U	1
Toluene	108-88-3	<0.00197	0.00197	mg/kg	11.27.19 17.43	U	1
Ethylbenzene	100-41-4	<0.00197	0.00197	mg/kg	11.27.19 17.43	U	1
m,p-Xylenes	179601-23-1	<0.00394	0.00394	mg/kg	11.27.19 17.43	U	1
o-Xylene	95-47-6	<0.00197	0.00197	mg/kg	11.27.19 17.43	U	1
Xylenes, Total	1330-20-7	<0.00197	0.00197	mg/kg	11.27.19 17.43	U	1
Total BTEX		<0.00197	0.00197	mg/kg	11.27.19 17.43	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		106	%	70-130	11.27.19 17.43	
1,4-Difluorobenzene	540-36-3		89	%	70-130	11.27.19 17.43	



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH09A** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644603-012 Date Collected: 11.26.19 15.50 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	73.1	9.92	mg/kg	12.01.19 11.08	D	1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	11.27.19 13.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	11.27.19 13.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	11.27.19 13.25	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	11.27.19 13.25	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	11.27.19 13.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	138	%	70-135	11.27.19 13.25	**
o-Terphenyl	84-15-1	140	%	70-135	11.27.19 13.25	**



Certificate of Analytical Results 644603

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **PH09A**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644603-012

Date Collected: 11.26.19 15.50

Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00196	0.00196	mg/kg	11.27.19 18.02	U	1
Toluene	108-88-3	<0.00196	0.00196	mg/kg	11.27.19 18.02	U	1
Ethylbenzene	100-41-4	<0.00196	0.00196	mg/kg	11.27.19 18.02	U	1
m,p-Xylenes	179601-23-1	<0.00393	0.00393	mg/kg	11.27.19 18.02	U	1
o-Xylene	95-47-6	<0.00196	0.00196	mg/kg	11.27.19 18.02	U	1
Xylenes, Total	1330-20-7	<0.00196	0.00196	mg/kg	11.27.19 18.02	U	1
Total BTEX		<0.00196	0.00196	mg/kg	11.27.19 18.02	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		108	%	70-130	11.27.19 18.02	
1,4-Difluorobenzene	540-36-3		102	%	70-130	11.27.19 18.02	



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 644603

LT Environmental, Inc.

RDX Federal 17-35H

Analytical Method: Chloride by EPA 300

Seq Number: 3109010

MB Sample Id: 7691326-1-BLK

Matrix: Solid

LCS Sample Id: 7691326-1-BKS

Prep Method: E300P

Date Prep: 11.27.19

LCSD Sample Id: 7691326-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	256	102	260	104	90-110	2	20	mg/kg	11.27.19 11:59	

Analytical Method: Chloride by EPA 300

Seq Number: 3109010

Parent Sample Id: 644603-001

Matrix: Soil

MS Sample Id: 644603-001 S

Prep Method: E300P

Date Prep: 11.27.19

MSD Sample Id: 644603-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	186	199	365	90	363	89	90-110	1	20	mg/kg	11.27.19 12:16	X

Analytical Method: Chloride by EPA 300

Seq Number: 3109010

Parent Sample Id: 644603-011

Matrix: Soil

MS Sample Id: 644603-011 S

Prep Method: E300P

Date Prep: 11.27.19

MSD Sample Id: 644603-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	50.6	202	237	92	234	92	90-110	1	20	mg/kg	11.27.19 13:35	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3109024

MB Sample Id: 7691369-1-BLK

Matrix: Solid

LCS Sample Id: 7691369-1-BKS

Prep Method: SW8015P

Date Prep: 11.27.19

LCSD Sample Id: 7691369-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	1050	105	905	91	70-135	15	35	mg/kg	11.27.19 10:43	
Diesel Range Organics (DRO)	<50.0	1000	1200	120	1110	111	70-135	8	35	mg/kg	11.27.19 10:43	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	105		133		127		70-135	%	11.27.19 10:43
o-Terphenyl	112		134		130		70-135	%	11.27.19 10:43

Analytical Method: TPH by SW8015 Mod

Seq Number: 3109024

Matrix: Solid
MB Sample Id: 7691369-1-BLK

Prep Method: SW8015P

Date Prep: 11.27.19

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	11.27.19 10:24	

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 644603

LT Environmental, Inc.

RDX Federal 17-35H

Analytical Method: TPH by SW8015 Mod

Seq Number: 3109024

Parent Sample Id: 644603-001

Matrix: Soil

MS Sample Id: 644603-001 S

Prep Method: SW8015P

Date Prep: 11.27.19

MSD Sample Id: 644603-001 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)	<49.9	998	905	91	1000	100	70-135	10	35	mg/kg	11.27.19 11:03	
Diesel Range Organics (DRO)	<49.9	998	1110	111	1150	115	70-135	4	35	mg/kg	11.27.19 11:03	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	119		132		70-135	%	11.27.19 11:03
o-Terphenyl	127		131		70-135	%	11.27.19 11:03

Analytical Method: BTEX by EPA 8021B

Seq Number: 3109032

MB Sample Id: 7691377-1-BLK

Matrix: Solid

LCS Sample Id: 7691377-1-BKS

Prep Method: SW5030B

Date Prep: 11.27.19

LCSD Sample Id: 7691377-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0900	90	0.0916	92	70-130	2	35	mg/kg	11.27.19 11:09	
Toluene	<0.00200	0.100	0.0920	92	0.0930	93	70-130	1	35	mg/kg	11.27.19 11:09	
Ethylbenzene	<0.00200	0.100	0.0906	91	0.0918	92	71-129	1	35	mg/kg	11.27.19 11:09	
m,p-Xylenes	<0.00400	0.200	0.194	97	0.197	99	70-135	2	35	mg/kg	11.27.19 11:09	
o-Xylene	<0.00200	0.100	0.0987	99	0.100	100	71-133	1	35	mg/kg	11.27.19 11:09	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		100		102		70-130	%	11.27.19 11:09
4-Bromofluorobenzene	101		108		111		70-130	%	11.27.19 11:09

Analytical Method: BTEX by EPA 8021B

Seq Number: 3109032

Parent Sample Id: 644603-001

Matrix: Soil

MS Sample Id: 644603-001 S

Prep Method: SW5030B

Date Prep: 11.27.19

MSD Sample Id: 644603-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0925	92	0.102	101	70-130	10	35	mg/kg	11.27.19 11:47	
Toluene	<0.00202	0.101	0.0934	92	0.103	102	70-130	10	35	mg/kg	11.27.19 11:47	
Ethylbenzene	<0.00202	0.101	0.0918	91	0.101	100	71-129	10	35	mg/kg	11.27.19 11:47	
m,p-Xylenes	<0.00403	0.202	0.197	98	0.215	106	70-135	9	35	mg/kg	11.27.19 11:47	
o-Xylene	<0.00202	0.101	0.101	100	0.110	109	71-133	9	35	mg/kg	11.27.19 11:47	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		105		70-130	%	11.27.19 11:47
4-Bromofluorobenzene	109		113		70-130	%	11.27.19 11:47

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



Chain of Custody

Work Order No:

441603

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 Caspbad, NM (432) 704-5440
Phoenix, AZ (480) 355-0900 Atlanta, GA (770) 449-8800 Tampa, FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

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Page 1 of 2

Project Manager:	Chris McKisson	Bill to: (if different)	Chris McKisson
Company Name:	LT Environmental	Company Name:	LT Environmental
Address:	820 Megan Ave, Unit B	Address:	
City, State ZIP:	Rifle, CO 81650	City, State ZIP:	
Phone:	970 285 9985	Email:	cmckisson@ltenv.com and abays@ltenv.com

Project Name:	RDX Federal 17-554	Turn Around	
Project Number:	034819046	Routine	☐
Project Location:	Rural Eddy County	Rush:	24 Hr
Sampler's Name:	Anna Byers	Due Date:	
PO #:	220-5649	Quote #:	

SAMPLE RECEIPT		Temp Blank:	Yes ☒ No ☐	Wet Ice:	Yes ☒ No ☐
Temperature (°C):	0.6	Thermometer ID			
Received In tact:	Yes ☒ No ☐	Correction Factor:	-0.2		
Cooler Custody Seals:	Yes ☒ No ☐ N/A	Total Containers:	12		

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	ANALYSIS REQUEST	Preservative Codes	Sample Comments
SPD PH04		S	11/26/19	12:15	0.5'	1	TPH (EPA 8015)	MeOH: Me	
PH04A		S		12:25	4'	1	BTEX (EPA 8021)	None: NO	
PH05		S		12:35	0.5'	1	Chloride (EPA 300.0)	HNO3: HN	
PH05A		S		13:00	4'	1		H2SO4: H2	
PH06		S		14:25	0.5'	1		HCL: HL	
PH06A		S		14:35	4'	1		NaOH: Na	
PH07		S		14:45	0.5'	1		Zn Acetate+ NaOH: Zn	
PH07A		S		15:10	4'	1		TAT starts the day received by the lab. if received by 4:00pm	
PH08		S		15:20	0.5'	1			
PH08A		S		15:30	4'	1			

Total 200.7 / 6010 200.8 / 6020:

Circle Method(s) and Metal(s) to be analyzed

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
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
Anna Byers	Chris McKisson	11/26/19 9:10			



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
Phoenix, AZ (480) 355-0900 Atlanta, GA (770) 449-8800 Tampa, FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

Chain of Custody

Work Order No:

0441003

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Page 2 of 2

Project Manager:	Chris McKisson	Bill to: (if different)	Chris McKisson
Company Name:	LT Environmental	Company Name:	LT Environmental
Address:	820 Megan Ave, Unit B	Address:	
City, State ZIP:	Rifle, CO 81650	City, State ZIP:	
Phone:	970-285-9985	Email:	cmckisson@ltenv.com & dbyers@ltenv.com

Project Name:	RDX Federal 17-35H	Turn Around	
Project Number:	034819046	Routine	☐
Project Location:	Bural Eddy County	Rush:	24 HR
Sampler's Name:	Anna Byers	Due Date:	
PO #:	244-56490	Quote #:	

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

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	ANALYSIS REQUEST	Preservative Codes	Sample Comments
PH09		S	11/26/19	1540	0.5'	1	TPH (EPA 8015)	MeOH: Me	
PH09A		S	11/26/19	1550	4'	1	BTEX (EPA 8021)	None: NO	
							Chloride (EPA 300.0)	HNO3: HN	
								H2SO4: H2	
								HCL: HL	
								NaOH: Na	
								Zn Acetate+ NaOH: Zn	
								TAT starts the day received by the lab, if received by 4:00pm	

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Pb 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 Sp 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
Anna Byers	Chris McKisson	11/26/19 9:10			



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: LT Environmental, Inc.

Date/ Time Received: 11/27/2019 09:10:00 AM

Work Order #: 644603

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

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

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Elizabeth McClellan

Date: 11/27/2019

Checklist reviewed by:

Jessica Kramer

Date: 11/27/2019

Analytical Report 644605

**for
LT Environmental, Inc.**

Project Manager: Chris McKisson

RDX Federal 17-35H

034819046

02-DEC-19

Collected By: Client



**1089 N Canal Street
Carlsbad, NM 88220**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)

Xenco-Carlsbad (LELAP): Louisiana (05092)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)

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

Xenco-Tampa: Florida (E87429), North Carolina (483)



02-DEC-19

Project Manager: **Chris McKisson**

LT Environmental, Inc.

4600 W. 60th Avenue

Arvada, CO 80003

Reference: XENCO Report No(s): **644605**

RDX Federal 17-35H

Project Address: Rural Eddy County

Chris McKisson:

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) 644605. 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. 644605 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 644605****LT Environmental, Inc., Arvada, CO**

RDX Federal 17-35H

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
FS03	S	11-26-19 11:25	4 ft	644605-001
FS04	S	11-26-19 11:30	4 ft	644605-002
FS05	S	11-26-19 11:35	4 ft	644605-003
FS06	S	11-26-19 16:15	0.5 - 2 ft	644605-004
FS07	S	11-26-19 16:20	0.5 - 2 ft	644605-005
FS08	S	11-26-19 16:25	0.5 - 2 ft	644605-006
FS09	S	11-26-19 16:30	0.5 - 2 ft	644605-007
SW01	S	11-26-19 11:40	0.5 - 4 ft	644605-008
SW02	S	11-26-19 11:45	0.5 - 4 ft	644605-009
SW03	S	11-26-19 11:50	0.5 - 4 ft	644605-010
SW04	S	11-26-19 12:00	0.5 - 4 ft	644605-011

**CASE NARRATIVE****Client Name: LT Environmental, Inc.****Project Name: RDX Federal 17-35H**

Project ID: 034819046
Work Order Number(s): 644605

Report Date: 02-DEC-19
Date Received: 11/27/2019

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3109016 Chloride by EPA 300

Lab Sample ID 644608-006 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 644605-007, -008, -009, -010, -011.

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

Batch: LBA-3109024 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 644605-002.

Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 644605-002, 644605-007.

Batch: LBA-3109032 BTEX by EPA 8021B

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

Batch: LBA-3109033 BTEX by EPA 8021B

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



Certificate of Analysis Summary 644605

LT Environmental, Inc., Arvada, CO

Project Name: RDX Federal 17-35H

Project Id: 034819046
Contact: Chris McKisson
Project Location: Rural Eddy County

Date Received in Lab: Wed Nov-27-19 09:10 am

Report Date: 02-DEC-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	644605-001	644605-002	644605-003	644605-004	644605-005	644605-006
	<i>Field Id:</i>	FS03	FS04	FS05	FS06	FS07	FS08
	<i>Depth:</i>	4- ft	4- ft	4- ft	0.5-2 ft	0.5-2 ft	0.5-2 ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Nov-26-19 11:25	Nov-26-19 11:30	Nov-26-19 11:35	Nov-26-19 16:15	Nov-26-19 16:20	Nov-26-19 16:25
BTEX by EPA 8021B	<i>Extracted:</i>	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 10:11
	<i>Analyzed:</i>	Nov-27-19 18:21	Nov-27-19 18:40	Nov-27-19 18:59	Nov-27-19 19:18	Nov-27-19 19:38	Nov-27-19 19:57
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00197 0.00197	<0.00202 0.00202
Toluene		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00197 0.00197	<0.00202 0.00202
Ethylbenzene		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00197 0.00197	<0.00202 0.00202
m,p-Xylenes		<0.00397 0.00397	<0.00399 0.00399	<0.00398 0.00398	<0.00395 0.00395	<0.00394 0.00394	<0.00403 0.00403
o-Xylene		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00197 0.00197	<0.00202 0.00202
Xylenes, Total		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00197 0.00197	<0.00202 0.00202
Total BTEX		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00197 0.00197	<0.00202 0.00202
Chloride by EPA 300	<i>Extracted:</i>	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11	Nov-27-19 11:11
	<i>Analyzed:</i>	Nov-27-19 13:57	Nov-27-19 14:14	Nov-27-19 14:19	Nov-27-19 14:25	Nov-27-19 14:30	Nov-27-19 14:36
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		2100 200	894 100	1160 201	15800 501	9250 502	5600 200
TPH by SW8015 Mod	<i>Extracted:</i>	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 11:00
	<i>Analyzed:</i>	Nov-27-19 13:25	Nov-27-19 13:45	Nov-27-19 13:45	Nov-27-19 14:05	Nov-27-19 14:05	Nov-27-19 14:25
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0
Diesel Range Organics (DRO)		<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0
Total GRO-DRO		<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0
Total TPH		<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0

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.

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Version: 1.1%

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 644605

LT Environmental, Inc., Arvada, CO

Project Name: RDX Federal 17-35H

Project Id: 034819046
Contact: Chris McKisson
Project Location: Rural Eddy County

Date Received in Lab: Wed Nov-27-19 09:10 am

Report Date: 02-DEC-19

Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	644605-007	644605-008	644605-009	644605-010	644605-011	
	<i>Field Id:</i>	FS09	SW01	SW02	SW03	SW04	
	<i>Depth:</i>	0.5-2 ft	0.5-4 ft	0.5-4 ft	0.5-4 ft	0.5-4 ft	
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	
	<i>Sampled:</i>	Nov-26-19 16:30	Nov-26-19 11:40	Nov-26-19 11:45	Nov-26-19 11:50	Nov-26-19 12:00	
BTEX by EPA 8021B	<i>Extracted:</i>	Nov-27-19 10:11	Nov-27-19 10:11	Nov-27-19 14:11	Nov-27-19 14:11	Nov-27-19 14:11	
	<i>Analyzed:</i>	Nov-27-19 20:16	Nov-27-19 20:35	Nov-28-19 00:00	Nov-27-19 23:40	Nov-28-19 00:19	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Benzene		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	
Toluene		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	
Ethylbenzene		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	
m,p-Xylenes		<0.00402 0.00402	<0.00403 0.00403	<0.00403 0.00403	<0.00401 0.00401	<0.00402 0.00402	
o-Xylene		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	
Xylenes, Total		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	
Total BTEX		<0.00201 0.00201	<0.00202 0.00202	<0.00202 0.00202	<0.00200 0.00200	<0.00201 0.00201	
Chloride by EPA 300	<i>Extracted:</i>	Nov-27-19 13:11	Nov-27-19 13:11	Nov-27-19 13:11	Nov-27-19 13:11	Nov-27-19 13:11	
	<i>Analyzed:</i>	Nov-27-19 15:09	Nov-27-19 15:26	Nov-27-19 15:32	Nov-27-19 15:43	Nov-27-19 15:49	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Chloride		7540 499	1930 99.4	1040 50.4	103 10.1	1080 100	
TPH by SW8015 Mod	<i>Extracted:</i>	Nov-27-19 11:00	Nov-27-19 11:00	Nov-27-19 13:00	Nov-27-19 13:00	Nov-27-19 13:00	
	<i>Analyzed:</i>	Nov-27-19 14:25	Nov-27-19 14:45	Nov-27-19 15:25	Nov-27-19 16:04	Nov-27-19 16:04	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<50.2 50.2	<50.0 50.0	<50.1 50.1	<49.9 49.9	
Diesel Range Organics (DRO)		<50.0 50.0	<50.2 50.2	<50.0 50.0	<50.1 50.1	<49.9 49.9	
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<50.2 50.2	<50.0 50.0	<50.1 50.1	<49.9 49.9	
Total GRO-DRO		<50.0 50.0	<50.2 50.2	<50.0 50.0	<50.1 50.1	<49.9 49.9	
Total TPH		<50.0 50.0	<50.2 50.2	<50.0 50.0	<50.1 50.1	<49.9 49.9	

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.

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Version: 1.0%

Jessica Kramer
Project Assistant



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS03** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-001 Date Collected: 11.26.19 11.25 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2100	200	mg/kg	11.27.19 13.57		20

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	11.27.19 13.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	11.27.19 13.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	11.27.19 13.25	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	11.27.19 13.25	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	11.27.19 13.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	118	%	70-135	11.27.19 13.25	
o-Terphenyl	84-15-1	126	%	70-135	11.27.19 13.25	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS03** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-001 Date Collected: 11.26.19 11.25 Sample Depth: 4 ft
 Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 10.11 Basis: Wet Weight
 Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	11.27.19 18.21	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	11.27.19 18.21	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	11.27.19 18.21	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	11.27.19 18.21	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	11.27.19 18.21	U	1
Xylenes, Total	1330-20-7	<0.00198	0.00198	mg/kg	11.27.19 18.21	U	1
Total BTEX		<0.00198	0.00198	mg/kg	11.27.19 18.21	U	1
% Recovery							
Surrogate	Cas Number		% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		116	%	70-130	11.27.19 18.21	
1,4-Difluorobenzene	540-36-3		104	%	70-130	11.27.19 18.21	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS04** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-002 Date Collected: 11.26.19 11.30 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	894	100	mg/kg	11.27.19 14.14		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	11.27.19 13.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	11.27.19 13.45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	11.27.19 13.45	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	11.27.19 13.45	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	11.27.19 13.45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	143	%	70-135	11.27.19 13.45	**
o-Terphenyl	84-15-1	146	%	70-135	11.27.19 13.45	**



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS04**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644605-002

Date Collected: 11.26.19 11.30

Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.27.19 18.40	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	11.27.19 18.40	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	11.27.19 18.40	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	11.27.19 18.40	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	11.27.19 18.40	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	11.27.19 18.40	U	1
Total BTEX		<0.00200	0.00200	mg/kg	11.27.19 18.40	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3		103	%	70-130	11.27.19 18.40	
4-Bromofluorobenzene	460-00-4		113	%	70-130	11.27.19 18.40	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS05** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-003 Date Collected: 11.26.19 11.35 Sample Depth: 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1160	201	mg/kg	11.27.19 14.19		20

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	11.27.19 13.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	11.27.19 13.45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	11.27.19 13.45	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	11.27.19 13.45	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	11.27.19 13.45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	123	%	70-135	11.27.19 13.45	
o-Terphenyl	84-15-1	129	%	70-135	11.27.19 13.45	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS05** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-003 Date Collected: 11.26.19 11.35 Sample Depth: 4 ft
 Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 10.11 Basis: Wet Weight
 Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	11.27.19 18.59	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	11.27.19 18.59	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	11.27.19 18.59	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	11.27.19 18.59	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	11.27.19 18.59	U	1
Xylenes, Total	1330-20-7	<0.00199	0.00199	mg/kg	11.27.19 18.59	U	1
Total BTEX		<0.00199	0.00199	mg/kg	11.27.19 18.59	U	1
% Recovery							
Surrogate	Cas Number		% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		113	%	70-130	11.27.19 18.59	
1,4-Difluorobenzene	540-36-3		103	%	70-130	11.27.19 18.59	



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LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS06** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-004 Date Collected: 11.26.19 16.15 Sample Depth: 0.5 - 2 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	15800	501	mg/kg	11.27.19 14.25		50

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	11.27.19 14.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	11.27.19 14.05	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	11.27.19 14.05	U	1
Total GRO-DRO	PHC628	<49.8	49.8	mg/kg	11.27.19 14.05	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	11.27.19 14.05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	11.27.19 14.05	
o-Terphenyl	84-15-1	123	%	70-135	11.27.19 14.05	



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LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: FS06	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644605-004	Date Collected: 11.26.19 16.15	Sample Depth: 0.5 - 2 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 10.11	Basis: Wet Weight
Seq Number: 3109032		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	11.27.19 19.18	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	11.27.19 19.18	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	11.27.19 19.18	U	1
m,p-Xylenes	179601-23-1	<0.00395	0.00395	mg/kg	11.27.19 19.18	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	11.27.19 19.18	U	1
Xylenes, Total	1330-20-7	<0.00198	0.00198	mg/kg	11.27.19 19.18	U	1
Total BTEX		<0.00198	0.00198	mg/kg	11.27.19 19.18	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		114	%	70-130	11.27.19 19.18	
1,4-Difluorobenzene	540-36-3		106	%	70-130	11.27.19 19.18	



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LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: FS07	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644605-005	Date Collected: 11.26.19 16.20	Sample Depth: 0.5 - 2 ft
Analytical Method: Chloride by EPA 300		Prep Method: E300P
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 11.11	Basis: Wet Weight
Seq Number: 3109010		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	9250	502	mg/kg	11.27.19 14.30		50

Analytical Method: TPH by SW8015 Mod	Prep Method: SW8015P
Tech: DTH	% Moisture:
Analyst: DTH	Basis: Wet Weight
Seq Number: 3109024	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	11.27.19 14.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	11.27.19 14.05	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	11.27.19 14.05	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	11.27.19 14.05	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	11.27.19 14.05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	121	%	70-135	11.27.19 14.05	
o-Terphenyl	84-15-1	129	%	70-135	11.27.19 14.05	



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LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: FS07	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644605-005	Date Collected: 11.26.19 16.20	Sample Depth: 0.5 - 2 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 10.11	Basis: Wet Weight
Seq Number: 3109032		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00197	0.00197	mg/kg	11.27.19 19.38	U	1
Toluene	108-88-3	<0.00197	0.00197	mg/kg	11.27.19 19.38	U	1
Ethylbenzene	100-41-4	<0.00197	0.00197	mg/kg	11.27.19 19.38	U	1
m,p-Xylenes	179601-23-1	<0.00394	0.00394	mg/kg	11.27.19 19.38	U	1
o-Xylene	95-47-6	<0.00197	0.00197	mg/kg	11.27.19 19.38	U	1
Xylenes, Total	1330-20-7	<0.00197	0.00197	mg/kg	11.27.19 19.38	U	1
Total BTEX		<0.00197	0.00197	mg/kg	11.27.19 19.38	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		114	%	70-130	11.27.19 19.38	
1,4-Difluorobenzene	540-36-3		103	%	70-130	11.27.19 19.38	



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LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS08** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-006 Date Collected: 11.26.19 16.25 Sample Depth: 0.5 - 2 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 11.11 Basis: Wet Weight
 Seq Number: 3109010

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5600	200	mg/kg	11.27.19 14.36		20

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	11.27.19 14.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	11.27.19 14.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	11.27.19 14.25	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	11.27.19 14.25	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	11.27.19 14.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	127	%	70-135	11.27.19 14.25	
o-Terphenyl	84-15-1	129	%	70-135	11.27.19 14.25	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: FS08	Matrix: Soil	Date Received: 11.27.19 09.10
Lab Sample Id: 644605-006	Date Collected: 11.26.19 16.25	Sample Depth: 0.5 - 2 ft
Analytical Method: BTEX by EPA 8021B		Prep Method: SW5030B
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 11.27.19 10.11	Basis: Wet Weight
Seq Number: 3109032		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	11.27.19 19.57	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	11.27.19 19.57	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	11.27.19 19.57	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	11.27.19 19.57	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	11.27.19 19.57	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	11.27.19 19.57	U	1
Total BTEX		<0.00202	0.00202	mg/kg	11.27.19 19.57	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		114	%	70-130	11.27.19 19.57	
1,4-Difluorobenzene	540-36-3		103	%	70-130	11.27.19 19.57	



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RDX Federal 17-35H

Sample Id: **FS09** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-007 Date Collected: 11.26.19 16.30 Sample Depth: 0.5 - 2 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 13.11 Basis: Wet Weight
 Seq Number: 3109016

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7540	499	mg/kg	11.27.19 15.09		50

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	11.27.19 14.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	11.27.19 14.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	11.27.19 14.25	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	11.27.19 14.25	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	11.27.19 14.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	133	%	70-135	11.27.19 14.25	
o-Terphenyl	84-15-1	141	%	70-135	11.27.19 14.25	**



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **FS09**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644605-007

Date Collected: 11.26.19 16.30

Sample Depth: 0.5 - 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	11.27.19 20.16	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	11.27.19 20.16	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	11.27.19 20.16	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	11.27.19 20.16	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	11.27.19 20.16	U	1
Xylenes, Total	1330-20-7	<0.00201	0.00201	mg/kg	11.27.19 20.16	U	1
Total BTEX		<0.00201	0.00201	mg/kg	11.27.19 20.16	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3		106	%	70-130	11.27.19 20.16	
4-Bromofluorobenzene	460-00-4		113	%	70-130	11.27.19 20.16	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **SW01** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-008 Date Collected: 11.26.19 11.40 Sample Depth: 0.5 - 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 13.11 Basis: Wet Weight
 Seq Number: 3109016

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1930	99.4	mg/kg	11.27.19 15.26		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 11.00 Basis: Wet Weight
 Seq Number: 3109024

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.2	50.2	mg/kg	11.27.19 14.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.2	50.2	mg/kg	11.27.19 14.45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.2	50.2	mg/kg	11.27.19 14.45	U	1
Total GRO-DRO	PHC628	<50.2	50.2	mg/kg	11.27.19 14.45	U	1
Total TPH	PHC635	<50.2	50.2	mg/kg	11.27.19 14.45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	122	%	70-135	11.27.19 14.45	
o-Terphenyl	84-15-1	124	%	70-135	11.27.19 14.45	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **SW01**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644605-008

Date Collected: 11.26.19 11.40

Sample Depth: 0.5 - 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 10.11

Basis: Wet Weight

Seq Number: 3109032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	11.27.19 20.35	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	11.27.19 20.35	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	11.27.19 20.35	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	11.27.19 20.35	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	11.27.19 20.35	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	11.27.19 20.35	U	1
Total BTEX		<0.00202	0.00202	mg/kg	11.27.19 20.35	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3		105	%	70-130	11.27.19 20.35	
4-Bromofluorobenzene	460-00-4		114	%	70-130	11.27.19 20.35	



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LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **SW02** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-009 Date Collected: 11.26.19 11.45 Sample Depth: 0.5 - 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 13.11 Basis: Wet Weight
 Seq Number: 3109016

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1040	50.4	mg/kg	11.27.19 15.32		5

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 13.00 Basis: Wet Weight
 Seq Number: 3109042

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	11.27.19 15.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	11.27.19 15.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	11.27.19 15.25	U	1
Total GRO-DRO	PHC628	<50.0	50.0	mg/kg	11.27.19 15.25	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	11.27.19 15.25	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	115	%	70-135	11.27.19 15.25	
o-Terphenyl	84-15-1	123	%	70-135	11.27.19 15.25	



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LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **SW02**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644605-009

Date Collected: 11.26.19 11.45

Sample Depth: 0.5 - 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 14.11

Basis: Wet Weight

Seq Number: 3109033

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	11.28.19 00.00	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	11.28.19 00.00	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	11.28.19 00.00	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	11.28.19 00.00	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	11.28.19 00.00	U	1
Xylenes, Total	1330-20-7	<0.00202	0.00202	mg/kg	11.28.19 00.00	U	1
Total BTEX		<0.00202	0.00202	mg/kg	11.28.19 00.00	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4		113	%	70-130	11.28.19 00.00	
1,4-Difluorobenzene	540-36-3		104	%	70-130	11.28.19 00.00	



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RDX Federal 17-35H

Sample Id: **SW03** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-010 Date Collected: 11.26.19 11.50 Sample Depth: 0.5 - 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 13.11 Basis: Wet Weight
 Seq Number: 3109016

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	103	10.1	mg/kg	11.27.19 15.43		1

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 13.00 Basis: Wet Weight
 Seq Number: 3109042

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	11.27.19 16.04	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	11.27.19 16.04	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	11.27.19 16.04	U	1
Total GRO-DRO	PHC628	<50.1	50.1	mg/kg	11.27.19 16.04	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	11.27.19 16.04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	124	%	70-135	11.27.19 16.04	
o-Terphenyl	84-15-1	127	%	70-135	11.27.19 16.04	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **SW03**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644605-010

Date Collected: 11.26.19 11.50

Sample Depth: 0.5 - 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 14.11

Basis: Wet Weight

Seq Number: 3109033

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	11.27.19 23.40	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	11.27.19 23.40	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	11.27.19 23.40	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	11.27.19 23.40	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	11.27.19 23.40	U	1
Xylenes, Total	1330-20-7	<0.00200	0.00200	mg/kg	11.27.19 23.40	U	1
Total BTEX		<0.00200	0.00200	mg/kg	11.27.19 23.40	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3		97	%	70-130	11.27.19 23.40	
4-Bromofluorobenzene	460-00-4		105	%	70-130	11.27.19 23.40	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **SW04** Matrix: Soil Date Received: 11.27.19 09.10
 Lab Sample Id: 644605-011 Date Collected: 11.26.19 12.00 Sample Depth: 0.5 - 4 ft
 Analytical Method: Chloride by EPA 300 Prep Method: E300P
 Tech: MAB % Moisture:
 Analyst: MAB Date Prep: 11.27.19 13.11 Basis: Wet Weight
 Seq Number: 3109016

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1080	100	mg/kg	11.27.19 15.49		10

Analytical Method: TPH by SW8015 Mod Prep Method: SW8015P
 Tech: DTH % Moisture:
 Analyst: DTH Date Prep: 11.27.19 13.00 Basis: Wet Weight
 Seq Number: 3109042

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	11.27.19 16.04	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	11.27.19 16.04	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	11.27.19 16.04	U	1
Total GRO-DRO	PHC628	<49.9	49.9	mg/kg	11.27.19 16.04	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	11.27.19 16.04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	117	%	70-135	11.27.19 16.04	
o-Terphenyl	84-15-1	126	%	70-135	11.27.19 16.04	



Certificate of Analytical Results 644605

LT Environmental, Inc., Arvada, CO

RDX Federal 17-35H

Sample Id: **SW04**

Matrix: Soil

Date Received: 11.27.19 09.10

Lab Sample Id: 644605-011

Date Collected: 11.26.19 12.00

Sample Depth: 0.5 - 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 11.27.19 14.11

Basis: Wet Weight

Seq Number: 3109033

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	11.28.19 00.19	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	11.28.19 00.19	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	11.28.19 00.19	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	11.28.19 00.19	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	11.28.19 00.19	U	1
Xylenes, Total	1330-20-7	<0.00201	0.00201	mg/kg	11.28.19 00.19	U	1
Total BTEX		<0.00201	0.00201	mg/kg	11.28.19 00.19	U	1
% Recovery							
Surrogate	Cas Number			Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3		104	%	70-130	11.28.19 00.19	
4-Bromofluorobenzene	460-00-4		115	%	70-130	11.28.19 00.19	



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 644605

LT Environmental, Inc.
RDX Federal 17-35H

Analytical Method: Chloride by EPA 300

Seq Number: 3109010

MB Sample Id: 7691326-1-BLK

Matrix: Solid

LCS Sample Id: 7691326-1-BKS

Prep Method: E300P

Date Prep: 11.27.19

LCSD Sample Id: 7691326-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	250	256	102	260	104	90-110	2	20	mg/kg	11.27.19 11:59	

Analytical Method: Chloride by EPA 300

Seq Number: 3109016

MB Sample Id: 7691384-1-BLK

Matrix: Solid

LCS Sample Id: 7691384-1-BKS

Prep Method: E300P

Date Prep: 11.27.19

LCSD Sample Id: 7691384-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	9.72	250	260	104	264	106	90-110	2	20	mg/kg	11.27.19 14:58	

Analytical Method: Chloride by EPA 300

Seq Number: 3109010

Parent Sample Id: 644603-001

Matrix: Soil

MS Sample Id: 644603-001 S

Prep Method: E300P

Date Prep: 11.27.19

MSD Sample Id: 644603-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	186	199	365	90	363	89	90-110	1	20	mg/kg	11.27.19 12:16	X

Analytical Method: Chloride by EPA 300

Seq Number: 3109010

Parent Sample Id: 644603-011

Matrix: Soil

MS Sample Id: 644603-011 S

Prep Method: E300P

Date Prep: 11.27.19

MSD Sample Id: 644603-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	50.6	202	237	92	234	92	90-110	1	20	mg/kg	11.27.19 13:35	

Analytical Method: Chloride by EPA 300

Seq Number: 3109016

Parent Sample Id: 644605-007

Matrix: Soil

MS Sample Id: 644605-007 S

Prep Method: E300P

Date Prep: 11.27.19

MSD Sample Id: 644605-007 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	7540	200	7700	80	7690	76	90-110	0	20	mg/kg	11.27.19 15:15	X

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 644605

LT Environmental, Inc.

RDX Federal 17-35H

Analytical Method: Chloride by EPA 300

Seq Number: 3109016

Parent Sample Id: 644608-006

Matrix: Soil

MS Sample Id: 644608-006 S

Prep Method: E300P

Date Prep: 11.27.19

MSD Sample Id: 644608-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2830	200	3040	105	3030	101	90-110	0	20	mg/kg	11.27.19 16:41	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3109024

MB Sample Id: 7691369-1-BLK

Matrix: Solid

LCS Sample Id: 7691369-1-BKS

Prep Method: SW8015P

Date Prep: 11.27.19

LCSD Sample Id: 7691369-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	1050	105	905	91	70-135	15	35	mg/kg	11.27.19 10:43	
Diesel Range Organics (DRO)	<50.0	1000	1200	120	1110	111	70-135	8	35	mg/kg	11.27.19 10:43	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	105		133		127		70-135	%	11.27.19 10:43
o-Terphenyl	112		134		130		70-135	%	11.27.19 10:43

Analytical Method: TPH by SW8015 Mod

Seq Number: 3109042

MB Sample Id: 7691370-1-BLK

Matrix: Solid

LCS Sample Id: 7691370-1-BKS

Prep Method: SW8015P

Date Prep: 11.27.19

LCSD Sample Id: 7691370-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	897	90	1120	112	70-135	22	35	mg/kg	11.27.19 15:05	
Diesel Range Organics (DRO)	<50.0	1000	1110	111	1290	129	70-135	15	35	mg/kg	11.27.19 15:05	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	113		122		134		70-135	%	11.27.19 15:05
o-Terphenyl	114		129		126		70-135	%	11.27.19 15:05

Analytical Method: TPH by SW8015 Mod

Seq Number: 3109024

Matrix: Solid
MB Sample Id: 7691369-1-BLK

Prep Method: SW8015P

Date Prep: 11.27.19

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	11.27.19 10:24	

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. = $\text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

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



QC Summary 644605

LT Environmental, Inc.
RDX Federal 17-35H

Analytical Method: TPH by SW8015 Mod

Seq Number: 3109042

Matrix: Solid

Prep Method: SW8015P

Date Prep: 11.27.19

MB Sample Id: 7691370-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	11.27.19 15:05	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3109024

Matrix: Soil

Prep Method: SW8015P

Date Prep: 11.27.19

Parent Sample Id: 644603-001

MS Sample Id: 644603-001 S

MSD Sample Id: 644603-001 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)	<49.9	998	905	91	1000	100	70-135	10	35	mg/kg	11.27.19 11:03	
Diesel Range Organics (DRO)	<49.9	998	1110	111	1150	115	70-135	4	35	mg/kg	11.27.19 11:03	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	119		132		70-135	%	11.27.19 11:03
o-Terphenyl	127		131		70-135	%	11.27.19 11:03

Analytical Method: TPH by SW8015 Mod

Seq Number: 3109042

Matrix: Soil

Prep Method: SW8015P

Date Prep: 11.27.19

Parent Sample Id: 644605-009

MS Sample Id: 644605-009 S

MSD Sample Id: 644605-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.2	1000	1050	105	895	90	70-135	16	35	mg/kg	11.27.19 15:45	
Diesel Range Organics (DRO)	<50.2	1000	1080	108	1280	128	70-135	17	35	mg/kg	11.27.19 15:45	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	84		104		70-135	%	11.27.19 15:45
o-Terphenyl	90		124		70-135	%	11.27.19 15:45

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 644605

LT Environmental, Inc.

RDX Federal 17-35H

Analytical Method: BTEX by EPA 8021B

Seq Number: 3109032

Matrix: Solid

Prep Method: SW5030B

MB Sample Id: 7691377-1-BLK

LCS Sample Id: 7691377-1-BKS

Date Prep: 11.27.19

LCSD Sample Id: 7691377-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0900	90	0.0916	92	70-130	2	35	mg/kg	11.27.19 11:09	
Toluene	<0.00200	0.100	0.0920	92	0.0930	93	70-130	1	35	mg/kg	11.27.19 11:09	
Ethylbenzene	<0.00200	0.100	0.0906	91	0.0918	92	71-129	1	35	mg/kg	11.27.19 11:09	
m,p-Xylenes	<0.00400	0.200	0.194	97	0.197	99	70-135	2	35	mg/kg	11.27.19 11:09	
o-Xylene	<0.00200	0.100	0.0987	99	0.100	100	71-133	1	35	mg/kg	11.27.19 11:09	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		100		102		70-130	%	11.27.19 11:09
4-Bromofluorobenzene	101		108		111		70-130	%	11.27.19 11:09

Analytical Method: BTEX by EPA 8021B

Seq Number: 3109033

Matrix: Solid

Prep Method: SW5030B

MB Sample Id: 7691378-1-BLK

LCS Sample Id: 7691378-1-BKS

Date Prep: 11.27.19

LCSD Sample Id: 7691378-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0782	78	0.0900	90	70-130	14	35	mg/kg	11.27.19 21:58	
Toluene	<0.00200	0.100	0.0801	80	0.0920	92	70-130	14	35	mg/kg	11.27.19 21:58	
Ethylbenzene	<0.00200	0.100	0.0784	78	0.0902	90	71-129	14	35	mg/kg	11.27.19 21:58	
m,p-Xylenes	<0.00400	0.200	0.168	84	0.193	97	70-135	14	35	mg/kg	11.27.19 21:58	
o-Xylene	<0.00200	0.100	0.0869	87	0.0999	100	71-133	14	35	mg/kg	11.27.19 21:58	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		98		101		70-130	%	11.27.19 21:58
4-Bromofluorobenzene	104		107		109		70-130	%	11.27.19 21:58

Analytical Method: BTEX by EPA 8021B

Seq Number: 3109032

Matrix: Soil

Prep Method: SW5030B

Parent Sample Id: 644603-001

MS Sample Id: 644603-001 S

Date Prep: 11.27.19

MSD Sample Id: 644603-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00202	0.101	0.0925	92	0.102	101	70-130	10	35	mg/kg	11.27.19 11:47	
Toluene	<0.00202	0.101	0.0934	92	0.103	102	70-130	10	35	mg/kg	11.27.19 11:47	
Ethylbenzene	<0.00202	0.101	0.0918	91	0.101	100	71-129	10	35	mg/kg	11.27.19 11:47	
m,p-Xylenes	<0.00403	0.202	0.197	98	0.215	106	70-135	9	35	mg/kg	11.27.19 11:47	
o-Xylene	<0.00202	0.101	0.101	100	0.110	109	71-133	9	35	mg/kg	11.27.19 11:47	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		105		70-130	%	11.27.19 11:47
4-Bromofluorobenzene	109		113		70-130	%	11.27.19 11:47

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. = $\text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

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



QC Summary 644605

LT Environmental, Inc.

RDX Federal 17-35H

Analytical Method: BTEX by EPA 8021B

Seq Number: 3109033

Parent Sample Id: 644605-010

Matrix: Soil

MS Sample Id: 644605-010 S

Prep Method: SW5030B

Date Prep: 11.27.19

MSD Sample Id: 644605-010 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.0836	84	0.0880	88	70-130	5	35	mg/kg	11.27.19 22:36	
Toluene	<0.00200	0.0998	0.0832	83	0.0856	86	70-130	3	35	mg/kg	11.27.19 22:36	
Ethylbenzene	<0.00200	0.0998	0.0810	81	0.0823	82	71-129	2	35	mg/kg	11.27.19 22:36	
m,p-Xylenes	<0.00399	0.200	0.173	87	0.175	87	70-135	1	35	mg/kg	11.27.19 22:36	
o-Xylene	<0.00200	0.0998	0.0898	90	0.0915	92	71-133	2	35	mg/kg	11.27.19 22:36	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	104		104		70-130	%	11.27.19 22:36
4-Bromofluorobenzene	115		114		70-130	%	11.27.19 22:36

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



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 Midland, TX (432) 704-5440 El Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296
 Phoenix, AZ (480) 355-0900 Atlanta, GA (770) 449-8800 Tampa, FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

Chain of Custody

Work Order No: 164465

Project Manager:	Chris McKisson	Bill to: (if different)	Chris McKisson
Company Name:	LT Environmental	Company Name:	LT Environmental
Address:	820 Megan Ave, Unit B	Address:	
City, State ZIP:	Rifle, CO 81650	City, State ZIP:	
Phone:	970-285-9985	Email:	cmckisson@ltenv.com, labys@ltenv.com

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

Project Name:	RDX Federal 17-35H	Turn Around	☐
Project Number:	034819046	Route:	24 HR
Project Location:	Rural Eddy County	Rush:	24 HR
Sampler's Name:	Anna Byers	Due Date:	
PO #:	280-5649	Quote #:	

SAMPLE RECEIPT	Temp Blank:	Yes ☒ No ☐	Wet Ice:	Yes ☒ No ☐
Temperature (°C):	0.0	Thermometer ID	1-NM-007	
Received Intact:	Yes ☒ No ☐	Correction Factor:	-0.2	
Cooler Custody Seals:	Yes ☒ No ☐	Total Containers:	1	
Sample Custody Seals:	Yes ☒ No ☐			

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	ANALYSIS REQUEST	Preservative Codes
FS03		S	11/26/19	1125	4'	1	TPH (EPA 8015)	MeOH: Me
FS04		S		1130	4'	1	BTEX (EPA 8021)	None: NO
FS05		S		1135	4'	1	Chloride (EPA 800.0)	HNO3: HN
FS06		S		1615	0.5-2'	1		H2SO4: H2
FS07		S		1620	0.5-2'	1		HCL: HL
FS08		S		1625	0.5-2'	1		NaOH: Na
FS09		S		1630	0.5-2'	1		Zn Acetate+ NaOH: Zn
SW01		S		1140	0.5-4'	1		
SW02		S		1145	0.5-4'	1		
SW03		S		1150	0.5-4'	1		

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

Note: 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
Anna Byers		11/26/19 4:10			

Work Order No:

24/6/05

Midland, TX (432) 704-5440 EL Paso, TX (915) 585-3443 Lubbock, TX (806) 794-1296 Crystalad, NM (432) 704-5440

Phoenix, AZ (480) 355-0900 Atlanta, GA (770) 449-8800 Tampa, FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

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Page 2 of 2

Project Manager:		Chris McKisson		Bill to: (if different)		Chris McKisson	
Company Name:		LT Environmental		Company Name:		LT Environmental	
Address:		820 Megan Ave, Unit B		Address:			
City, State ZIP:		Rifle, CO 81650		City, State ZIP:			
Phone:		970-285-9985		Email:		cmckisson@ltenv.com & abyers@ltenv.com	

Work Order Comments	
Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐ State of Project: Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐ Deliverables: EDD ☐ ADAPT ☐ Other:	

ANALYSIS REQUEST										Preservative Codes	
Project Name:	Rox Federal 17-354	Turn Around									MeOH: Me
Project Number:	034819046	Routine	☐								None: NO
Project Location	Rural Eddy County	Rush:	24HR								HNO3: HN
Sampler's Name:	Anna Ryers	Due Date:									H2SO4: H2
PO #:	28P-5649	Quote #:									HCL: HL
SAMPLE RECEIPT		Temp Blank:	Yes	No	Wet Ice:	Yes	No	TAT starts the day received by the lab. If received by 4:00pm			NaOH: Na
Temperature (°C):		Received Intact:	Yes	No	Correction Factor:						Zn Acetate+ NaOH: Zn
Cooler Custody Seals:	Yes	No	N/A								
Sample Custody Seals:	Yes	No	N/A								
		Total Containers:									

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number	TPH	BTE	Chloride	Sample Comments
SW04		S	11/24/19	1200	0.5-4'	1	X	X	X	

1001 1011 1021 1031 1041 1051 1061 1071 1081 1091 1101 1111 1121 1131 1141 1151 1161 1171 1181 1191 1201 1211 1221 1231 1241 1251 1261 1271 1281 1291 1301 1311 1321 1331 1341 1351 1361 1371 1381 1391 1401 1411 1421 1431 1441 1451 1461 1471 1481 1491 1501 1511 1521 1531 1541 1551 1561 1571 1581 1591 1601 1611 1621 1631 1641 1651 1661 1671 1681 1691 1701 1711 1721 1731 1741 1751 1761 1771 1781 1791 1801 1811 1821 1831 1841 1851 1861 1871 1881 1891 1901 1911 1921 1931 1941 1951 1961 1971 1981 1991 2001 2011 2021 2031 2041 2051 2061 2071 2081 2091 2101 2111 2121 2131 2141 2151 2161 2171 2181 2191 2201 2211 2221 2231 2241 2251 2261 2271 2281 2291 2301 2311 2321 2331 2341 2351 2361 2371 2381 2391 2401 2411 2421 2431 2441 2451 2461 2471 2481 2491 2501 2511 2521 2531 2541 2551 2561 2571 2581 2591 2601 2611 2621 2631 2641 2651 2661 2671 2681 2691 2701 2711 2721 2731 2741 2751 2761 2771 2781 2791 2801 2811 2821 2831 2841 2851 2861 2871 2881 2891 2901 2911 2921 2931 2941 2951 2961 2971 2981 2991 3001 3011 3021 3031 3041 3051 3061 3071 3081 3091 3101 3111 3121 3131 3141 3151 3161 3171 3181 3191 3201 3211 3221 3231 3241 3251 3261 3271 3281 3291 3301 3311 3321 3331 3341 3351 3361 3371 3381 3391 3401 3411 3421 3431 3441 3451 3461 3471 3481 3491 3501 3511 3521 3531 3541 3551 3561 3571 3581 3591 3601 3611 3621 3631 3641 3651 3661 3671 3681 3691 3701 3711 3721 3731 3741 3751 3761 3771 3781 3791 3801 3811 3821 3831 3841 3851 3861 3871 3881 3891 3901 3911 3921 3931 3941 3951 3961 3971 3981 3991 4001 4011 4021 4031 4041 4051 4061 4071 4081 4091 4101 4111 4121 4131 4141 4151 4161 4171 4181 4191 4201 4211 4221 4231 4241 4251 4261 4271 4281 4291 4301 4311 4321 4331 4341 4351 4361 4371 4381 4391 4401 4411 4421 4431 4441 4451 4461 4471 4481 4491 4501 4511 4521 4531 4541 4551 4561 4571 4581 4591 4601 4611 4621 4631 4641 4651 4661 4671 4681 4691 4701 4711 4721 4731 4741 4751 4761 4771 4781 4791 4801 4811 4821 4831 4841 4851 4861 4871 4881 4891 4901 4911 4921 4931 4941 4951 4961 4971 4981 4991 5001 5011 5021 5031 5041 5051 5061 5071 5081 5091 5101 5111 5121 5131 5141 5151 5161 5171 5181 5191 5201 5211 5221 5231 5241 5251 5261 5271 5281 5291 5301 5311 5321 5331 5341 5351 5361 5371 5381 5391 5401 5411 5421 5431 5441 5451 5461 5471 5481 5491 5501 5511 5521 5531 5541 5551 5561 5571 5581 5591 5601 5611 5621 5631 5641 5651 5661 5671 5681 5691 5701 5711 5721 5731 5741 5751 5761 5771 5781 5791 5801 5811 5821 5831 5841 5851 5861 5871 5881 5891 5901 5911 5921 5931 5941 5951 5961 5971 5981 5991 6001 6011 6021 6031 6041 6051 6061 6071 6081 6091 6101 6111 6121 6131 6141 6151 6161 6171 6181 6191 6201 6211 6221 6231 6241 6251 6261 6271 6281 6291 6301 6311 6321 6331 6341 6351 6361 6371 6381 6391 6401 6411 6421 6431 6441 6451 6461 6471 6481 6491 6501 6511 6521 6531 6541 6551 6561 6571 6581 6591 6601 6611 6621 6631 6641 6651 6661 6671 6681 6691 6701 6711 6721 6731 6741 6751 6761 6771 6781 6791 6801 6811 6821 6831 6841 6851 6861 6871 6881 6891 6901 6911 6921 6931 6941 6951 6961 6971 6981 6991 7001 7011 7021 7031 7041 7051 7061 7071 7081 7091 7101 7111 7121 7131 7141 7151 7161 7171 7181 7191 7201 7211 7221 7231 7241 7251 7261 7271 7281 7291 7301 7311 7321 7331 7341 7351 7361 7371 7381 7391 7401 7411 7421 7431 7441 7451 7461 7471 7481 7491 7501 7511 7521 7531 7541 7551 7561 7571 7581 7591 7601 7611 7621 7631 7641 7651 7661 7671 7681 7691 7701 7711 7721 7731 7741 7751 7761 7771 7781 7791 7801 7811 7821 7831 7841 7851 7861 7871 7881 7891 7901 7911 7921 7931 7941 7951 7961 7971 7981 7991 8001 8011 8021 8031 8041 8051 8061 8071 8081 8091 8101 8111 8121 8131 8141 8151 8161 8171 8181 8191 8201 8211 8221 8231 8241 8251 8261 8271 8281 8291 8301 8311 8321 8331 8341 8351 8361 8371 8381 8391 8401 8411 8421 8431 8441 8451 8461 8471 8481 8491 8501 8511 8521 8531 8541 8551 8561 8571 8581 8591 8601 8611 8621 8631 8641 8651 8661 8671 8681 8691 8701 8711 8721 8731 8741 8751 8761 8771 8781 8791 8801 8811 8821 8831 8841 8851 8861 8871 8881 8891 8901 8911 8921 8931 8941 8951 8961 8971 8981 8991 9001 9011 9021 9031 9041 9051 9061 9071 9081 9091 9101 9111 9121 9131 9141 9151 9161 9171 9181

1031 / 243.1 / 1410 / 1411 : Hg

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Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1 <i>Chris Byers</i>	<i>[Signature]</i>	11/26/19 9:10 a.m.	2		
3			4		
5			6		

Revised DMC-022619 Rev. 2013.9



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In



Client: LT Environmental, Inc.

Date/ Time Received: 11/27/2019 09:10:00 AM

Work Order #: 644605

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

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

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

Analyst:

PH Device/Lot#:

Checklist completed by:

Elizabeth McClellan

Date: 11/27/2019

Checklist reviewed by:

Jessica Kramer

Date: 11/27/2019