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TALON LPE

Deferment Request

Devon Energy RDX 15-11
Eddy County, New Mexico
API No. 30-015-37093
Incident #s NAB1634938164 and NAB1800557573

Prepared For:

Devon Energy Production Company
333 W. Sheridan Ave.
Oklahoma City, Oklahoma 73102

Prepared By:

Talon/LPE
408 W. Texas Avenue
Artesia, New Mexico 88210

December 30, 2022

December 30, 2022

NMOCD District 2
506 W. Texas Ave.
Artesia, New Mexico 88210

Subject: **Deferment Request**
Devon Energy RDX 15-11
Eddy County, New Mexico
Incident #s NAB1634938164 and NAB1800557573

New Mexico Oil Conservation Division,

Devon Energy Production Company (Devon) contracted Talon/LPE (Talon) to perform a review of the closure report at the above referenced location to ensure compliance with the Spill Rule 19.15.29 of the New Mexico Administrative Code (NMAC) and Procedures for Implementation of the Spill Rule dated September 6, 2019.

Initially, the New Mexico Oil Conservation Division (NMOCD) Table 1 Closure Criteria utilized for the site was based upon published groundwater depth greater than 100 feet below ground surface (bgs). This was based upon a United States Geological Survey (USGS) groundwater well (320355103524001) which is approximately 8,015 feet north of the release. Because the distance from the subject location is greater than ½ mile, this groundwater depth is no longer acceptable.

On July 28, 2022, boring C-4655, was completed within 0.5 miles from the site to a depth of 55 feet bgs. No groundwater was encountered during the drilling activities and the boring was confirmed to be dry on August 2, 2022. The boring log and plugging report are included with this addendum.

Because the release occurred in a production area (well pad) and the verified depth to groundwater is greater than 55 feet bgs, the cleanup criteria for this site is as follows.

Table I Closure Criteria for Soils Impacted by a Release			
Depth below horizontal extents of release to ground water less than 10,000 mg/l TDS	Constituent	Method	Limit
50-100 feet	Total Chlorides	EPA 300.0 or SM4500 Cl B	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	TPH (GRO/DRO)	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

Upon review of the previously submitted analytical data by another consultant, and comparing the data to the Table 1 standards for groundwater depth between 50 to 100 feet bgs, all analytical data is acceptable except for sidewall sample SW01 which exceeded the chloride limit with a concentration of 14,300 mg/kg. However, this sidewall sample is located against existing infrastructure and could not be advanced further due to safety concerns. As such, it will remain in place until decommission of the facility.

Based on this site characterization, verified minimum depth to groundwater greater than 55 feet bgs, and soil analytical results, we request deferment of further activites until facility closure. Final C-141 forms for the included incidents are attached in addition to the original Closure Report dated March 13, 2020.

Should you have any questions or if further information is required, please do not hesitate to contact our office at 575-746-8768.

Respectfully submitted,

Talon/LPE

Kayla Taylor
Project Manager

Attachments:
Appendix I Boring Log and Plugging Report
Appendix II 0.5 Mile Radius Map
Appendix III Final C-141 Forms
Appendix IV Closure Request Report for RDX15-11, Incident ID NAB1634938164 & NAB1800557573 date March 13, 2020

Appendix I

Boring Log and Plugging Report

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD 1 (TW-1)	N/A	C-4655

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Devon Energy	575-748-1838

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
6488 7 Rivers Hwy	Artesia	NM	88210

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	2	58.26	N
	LONGITUDE	103	52	48.37	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

NW NE NE Sec.16 T26S R30E, NMPM

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1249	Jackie D. Atkins	Atkins Engineering Associates, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
7/28/2022	7/28/2022	Temporary Well	±55	N/A

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): N/A

DATE STATIC MEASURED: 7/28/22, 8/2/22

DRILLING FLUID: ☐ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

CHECK HERE IF PITLESS ADAPTER IS INSTALLED ☐

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	55	±6.5	Boring-HSA	--	--	--	--

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 01/28/2022)

FILE NO.	POD NO.	TRN NO.
LOCATION	WELL TAG ID NO.	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	4	4	Sand, Fine-grained, poorly graded, Brown	Y ✓ N	
4	48	44	Sand, Fine-grained, poorly graded, with caliche Tan and white	Y ✓ N	
48	55	7	Sand, Fine-grained, poorly graded, Tan Brown	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: Temporary well material removed and soil boring backfilled using drill cuttings from total depth to ten feet below ground surface(bgs), then hydrated bentonite chips ten feet bgs to surface.

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Shane Eldridge, Cameron Pruitt

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 30 DAYS AFTER COMPLETION OF WELL DRILLING:

Jack Atkins — Jackie D. Atkins — 8/4/2022

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 01/28/2022)

FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: C-4655

Well owner: Devon Energy Phone No.: 575-748-1838

Mailing address: 6488 7 Rivers Hwy

City: Artesia State: New Mexico Zip code: 88210

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Jackie D. Atkins (Atkins Engineering Associates Inc.)

2) New Mexico Well Driller License No.: 1249 Expiration Date: 04/30/23

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Shane Eldridge, Cameron Pruitt

4) Date well plugging began: 8/2/2022 Date well plugging concluded: 8/2/2022

5) GPS Well Location: Latitude: 32 deg, 2 min, 58.26 sec
Longitude: 103 deg, 52 min, 48.37 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 55 ft below ground level (bgl), by the following manner: water level probe

7) Static water level measured at initiation of plugging: n/a ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 7/8/2022

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	0-10' Hydrated Bentonite	Approx. 15 gallons	15 gallons	Augers	
	10'-55' Drill Cuttings	Approx. 71 gallons	71 gallons	Boring	

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Jackie D. Atkins, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Jack Atkins

Signature of Well Driller

8/4/2022

Date

Version: September 8, 2009
Page 2 of 2

31_C-4655_WR-20 Well Record and Log-forsign

Final Audit Report 2022-08-04

Created:	2022-08-04
By:	Lucas Middleton (lucas@atkinseng.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAA_5o4o-wmvWNvta5TAYYJLKwG9RHyq1i5

"31_C-4655_WR-20 Well Record and Log-forsign" History

Document created by Lucas Middleton (lucas@atkinseng.com)
2022-08-04 - 9:48:16 PM GMT- IP address: 64.17.71.25

Document emailed to Jack Atkins (jack@atkinseng.com) for signature
2022-08-04 - 9:48:44 PM GMT

Email viewed by Jack Atkins (jack@atkinseng.com)
2022-08-04 - 9:48:57 PM GMT- IP address: 64.90.153.232

Document e-signed by Jack Atkins (jack@atkinseng.com)
Signature Date: 2022-08-04 - 9:49:29 PM GMT - Time Source: server- IP address: 64.90.153.232

Agreement completed.
2022-08-04 - 9:49:29 PM GMT

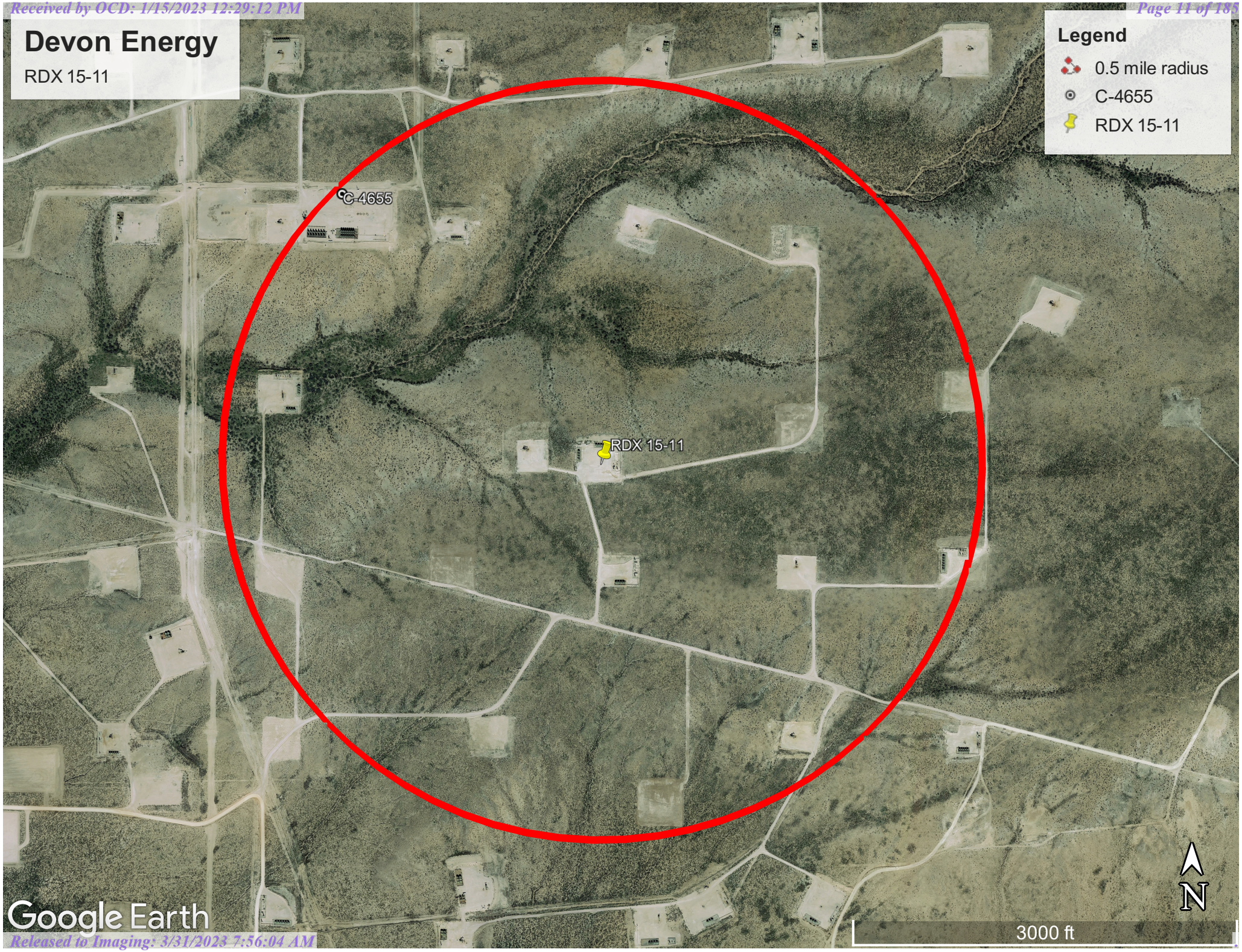
Adobe Acrobat Sign

Appendix II

0.5 Mile Radius Map

Devon Energy

RDX 15-11



Appendix III

Final C-141 Forms

State of New Mexico
Oil Conservation Division

Incident ID	NAB1634938164
District RP	
Facility ID	30-025-37093
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 Professional

Signature: Jim Raley
Date: 11/9/22

email: Jim.Raley@dvn.com
Telephone: 575.689.7597

OCD Only

Received by: Jocelyn Harimon
Date: 01/17/2023

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

Signature: _____
Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NAB1634938164
District RP	
Facility ID	30-025-37093
Application ID	

Closure

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

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

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

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

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

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Jim Raley
Title: Environmental Professional

Signature: Jim Raley
Date: 11/9/2022

email: Jim.Raley@dvn.com
Telephone: 575.689.7597

OCD Only

Received by: Jocelyn Harimon
Date: 01/17/2023

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

State of New Mexico
Oil Conservation Division

Incident ID	NAB1800557573
District RP	
Facility ID	30-025-37093
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 Professional

Signature: Jim Raley
Date: 11/9/22

email: Jim.Raley@dvn.com
Telephone: 575.689.7597

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NAB1800557573
District RP	
Facility ID	30-025-37093
Application ID	

Closure

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

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

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

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

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

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Jim Raley
Title: Environmental Professional

Signature: Jim Raley
Date: 11/9/2022

email: Jim.Raley@dvn.com
Telephone: 575.689.7597

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

Appendix IV

Closure Request Report for RDX 15-11, Incident ID NAB1634938164 & NAB1800557573 date March 13, 2020

A proud member of WSP

LT Environmental, Inc.
3300 North "A" Street
Building 1, Unit 103
Midland, Texas 79705
432.704.5178

March 13, 2020

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

RE: Closure Request
WPX Energy Permian, LLC.
RDX 15-11 (2RP-4032 & 2RP-4545)
Incident ID NAB1634938164 & NAB1800557573
Eddy County, New Mexico

Dear Mr. Bratcher:

LT Environmental, Inc. (LTE), on behalf of WPX Energy Permian, LLC. (WPX), presents the following Closure Request detailing soil sampling and excavation activities at the RDX 15-11 (Site) in Unit F, Section 15, 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 two separate events that resulted in the release of produced water and crude oil onto the pad surface. Based on the excavation activities and results of the soil sampling events, WPX is submitting this Closure Request.

BACKGROUND

2RP-4032

On December 4, 2016, the malfunction of a heater treater caused the heater treater and neighboring separator to catch fire, which resulted in the release of 120 barrels (bbls) of produced water, including less than one bbl of crude oil. Production fluids were contained within the earthen berm containment except an estimated one to two bbls of produced water misting on to the adjacent pad surface.

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) which was received by the NMOCD on December 13, 2016 and was assigned Remediation Permit (RP) Number 2RP-4032 and Incident ID NAB1634938164 (Attachment 1).

2RP-4545

On December 21, 2017, the gasket on a man cover for a water knockout failed resulting in the release of 75 bbls of produced water into the earthen berm containment and lightly misted nearby vegetation to the east. A vacuum truck was dispatched to collect all free-standing fluids.

WPX reported the release to the NMOCD on a Form C-141 which was received by the NMOCD on January 3, 2018 and was assigned RP Number 2RP-4545 and Incident ID NAB1800557573 (Attachment 1).

SITE CHARACTERIZATION

LTE characterized the Site according to Table 1, *Closure Criteria for Soils Impacted by a Release*, of Title 19, Chapter 15, Part 29, Section 12 (19.15.29.12) of the New Mexico Administrative Code (NMAC). Depth to groundwater at the Site is estimated to be greater than 100 feet bgs based on known aquifer properties and the elevation difference between the Site and an identified groundwater well. The nearest permitted groundwater well with depth to groundwater data is United States Geological Survey (USGS) groundwater well 320355103524001, located approximately 8,015 feet north of the Site. Groundwater well 320355103524001 has a reported depth to groundwater of 164 feet bgs and is approximately 30 feet higher in elevation than the Site. The closest significant watercourse to the Site is an unnamed dry wash located approximately 1,470 feet north to northwest of the Site. The Site is greater than 300 feet from any occupied residence, school, hospital, institution, church, or wetland and greater than 1,000 feet to a freshwater well or spring. The Site is not within a 100-year floodplain or overlying a subsurface mine and is overlying an unstable area. The Site is located in a medium-potential karst area.

On January 30, 2020, LTE contracted Southwest Geophysical Consulting, LLC (SGC) to determine the location, description, and boundaries of any karst-related features within a 200-meter boundary surrounding the Site. The survey concluded that no surface karst features were located within the survey area and that the Site is located in a medium-potential karst area. The survey was conducting after the excavation detailed below and soil sampling activities that removed approximately 90 cubic yards of impacted soil from the release area. The Cave and Karst Resource Inventory Report is included as Attachment 2.

Based on the findings of the karst survey, the following NMOCD Table 1 Closure Criteria (Closure Criteria) apply:

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

PRELIMINARY SOIL SAMPLING

On December 7, 2016, WPX personnel inspected the Site to evaluate impacts following Incident ID NAB1634938164 (2RP-4032). Surface soil samples RDX 15-11-1 and RDX 15-11-2 were collected from the release area to characterize soil impacts. The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were shipped at or below 4 degrees Celsius (°C) under strict chain-of-custody (COC) procedures to ALS Environmental in Holland, Michigan, for analysis of BTEX following United States Environmental Protection Agency (EPA) Method 8260C; TPH-GRO, TPH-DRO, and TPH-motor oil range organics (MRO) following EPA Method SW8015D and SW8270; and chloride following Standard Methods for Examination of Water and Wastewater Method A4500-CL E-11.

On March 2, 2017, WPX personnel returned to the Site to continue characterization in the area of samples RDX 15-11-1 and RDX 15-11-2. Soil samples were collected every one-foot interval to a depth of three feet bgs. A total of three samples were collected at each location. Soil samples were collected, handled, and analyzed as previously described.

On January 23, 2018, WPX personnel inspected the Site to evaluate impacts following Incident ID NAB1800557573 (2RP-4545). Soil samples S1 though S5 were collected at depths ranging from zero ft bgs to six ft bgs per sample location. Soil confirmation samples were collected, handled, and analyzed as previously described. Soil sample locations are depicted on Figure 2. Laboratory analytical results from all preliminary samples are summarized in Table 1.

DELINEATION SOIL SAMPLING

On November 14, 2018, LTE personnel returned to the Site to further evaluate the release extent and soil impacts. LTE field screened soil within the release area for volatile aromatic hydrocarbons using a photoionization detector (PID) and chloride using Hach® chloride QuanTab® test strips and collected soil samples SS01 through SS05 for laboratory analysis. Soil sample locations are presented on Figure 2. Two samples were collected at each sample location at approximately 0.5 ft and 1 ft bgs using a hand auger. 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 Laboratories (Xenco) in Midland, Texas, for analysis of BTEX following EPA Method 8021B; TPH- GRO, TPH- DRO, and TPH- ORO following EPA Method 8015M/D; and chloride following EPA Method 300.0. Photographic documentation was conducted during the Site visit. Photographic Logs are included in Attachment 3. Lithologic/Soil Sampling Logs are included in Attachment 4.

EXCAVATION SOIL SAMPLING

On February 2, 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 PID and chloride using Hach® chloride QuanTab® test strips. 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 area. Each soil sample represented at most 200 square feet. Approximately 90 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 area measured a total of approximately 855 square feet in area and ranged in depth from zero feet bgs to three feet bgs. Soil confirmation samples were collected, handled, and analyzed as previously described. The excavation area and soil sample locations are depicted on Figure 3. Photographic documentation was conducted during the site visit. The Photographic Logs are included in Attachment 2.

ANALYTICAL RESULTS

Laboratory analytical results of all final excavation confirmation soil samples indicate compliance with the Closure Criteria. Laboratory analytical results are summarized in Table 1 and the complete laboratory analytical reports are included as Attachment 5.

CONCLUSIONS

A total of approximately 90 cubic yards of impacted soil were excavated from the Site. Following excavation and sampling activities, SGC's karst survey determined the Site to be in a medium-potential karst area. Laboratory analytical results of final excavation confirmation soil samples indicate compliance with Closure Criteria. WPX is requesting closure of 2RP-4032 and 2RP-4545 corresponding to Incident ID NAB1634938164 & NAB1800557573, respectively. Upon approval of this Closure 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 cmkisson@ltenv.com.

Sincerely,

LT ENVIRONMENTAL, INC.

Chris McKisson
Project Environmental Scientist

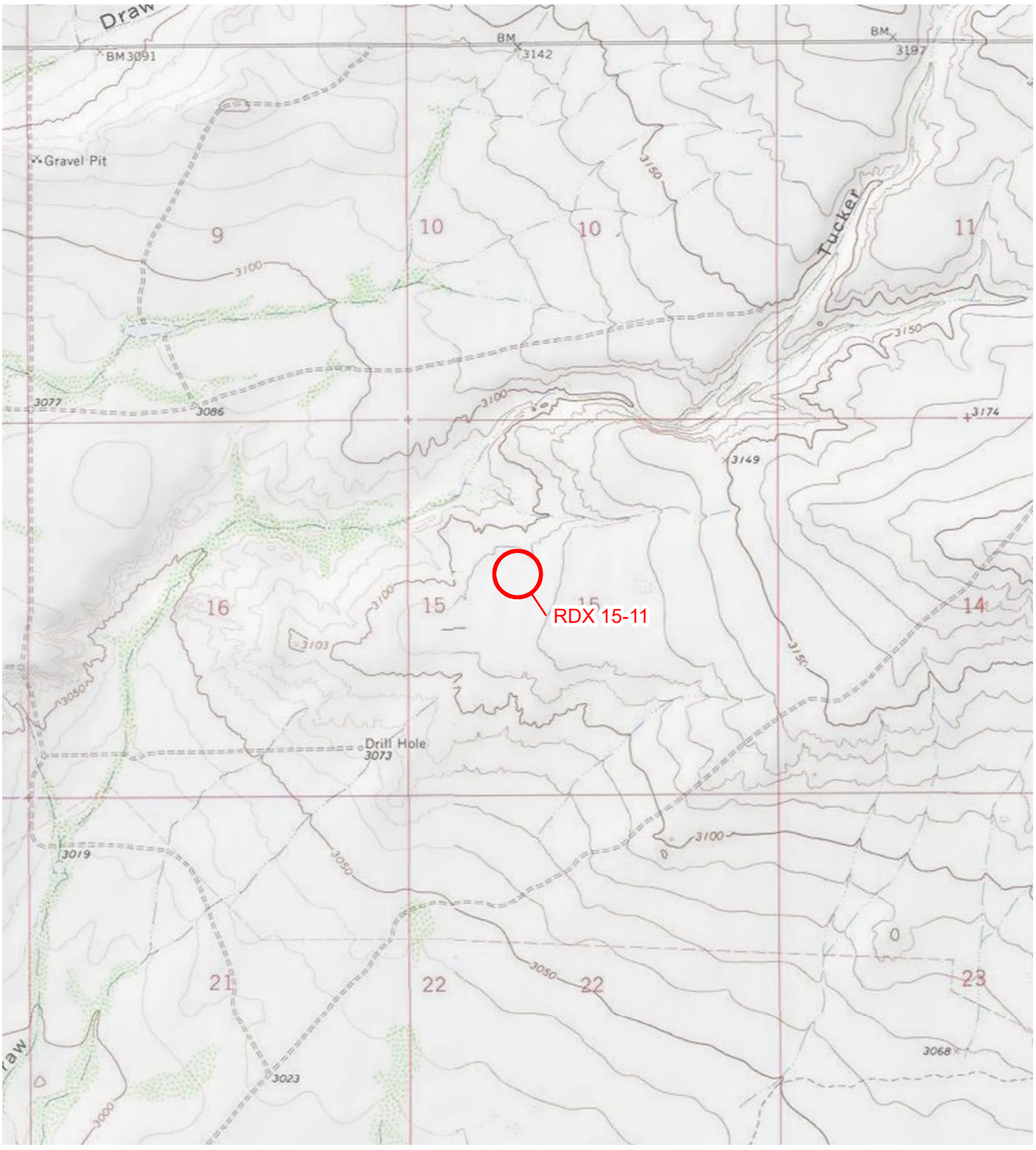
Ashley L. Ager, M.S., P.G.
Senior Geologist

cc: Jim Raley, WPX
Robert Hamlet, NMOCD
Victoria Venegas, NMOCD
Jim Amos, BLM

Appendices:

Figure 1	Site Location Map
Figure 2	Delineation Map
Figure 3	Excavation Soil Sample Locations
Table 1	Soil Analytical Results
Attachment 1	Form C-141
Attachment 2	Cave and Karst Resource Inventory Report
Attachment 3	Photographic Log
Attachment 4	Lithologic/Soil Sampling Logs
Attachment 5	Laboratory Analytical Reports

FIGURES



LEGEND

IMAGE COURTESY OF ESRI/USGS

SITE LOCATION

0 2,000 4,000

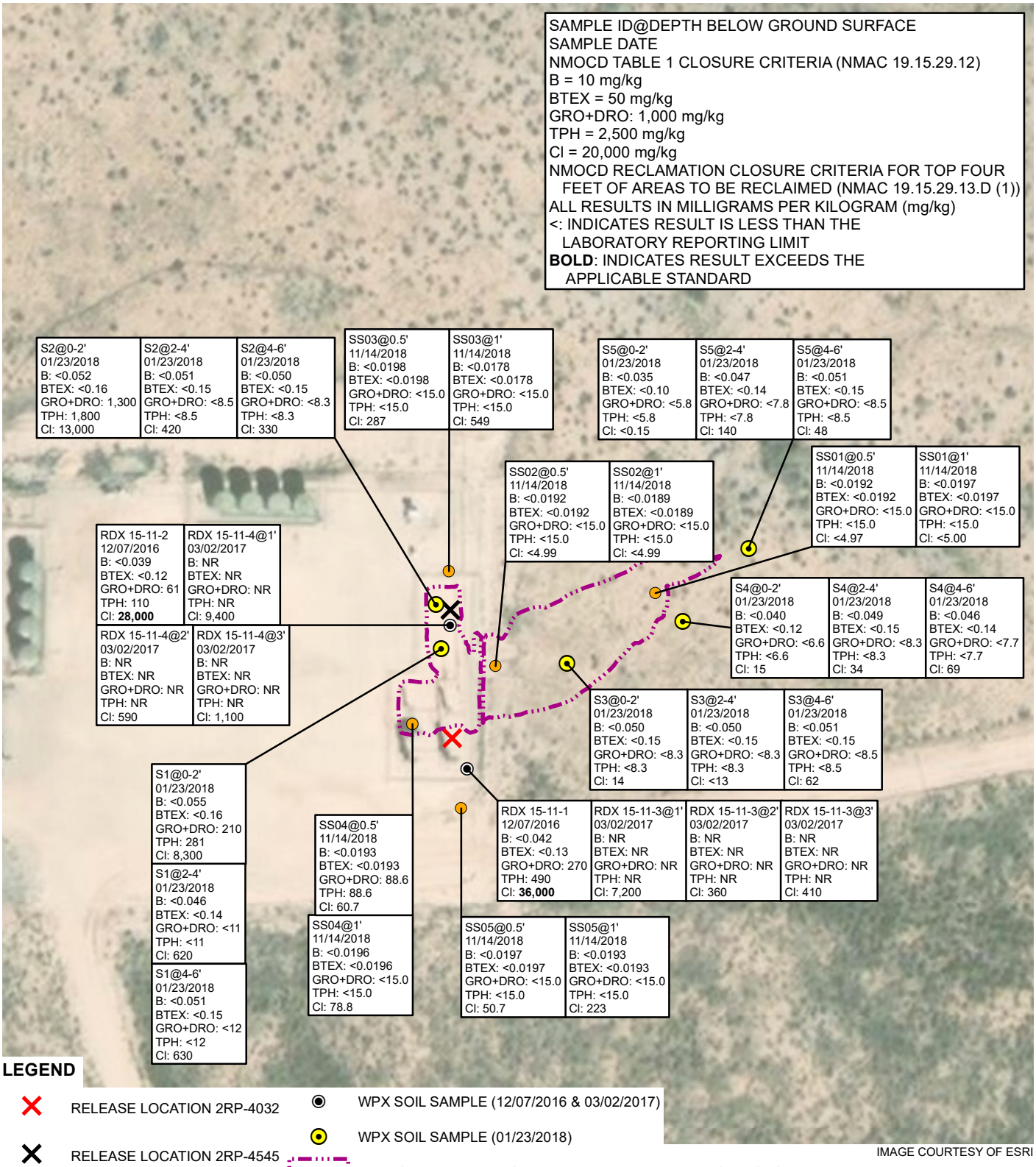
Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
RDX 15-11
UNIT F SEC 15 T26S R30E
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.

P:\WPX\GIS\MXD\034820007_RDX 15-11\034820007_FIG01_SL_2020.mxd



B: BENZENE
BTEX: TOTAL BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES
GRO: GASOLINE RANGE ORGANICS
DRO: DIESEL RANGE ORGANICS
TPH – TOTAL PETROLEUM HYDROCARBONS
Cl - CHLORIDE
NMAC – NEW MEXICO ADMINISTRATIVE CODE
NMOCD – NEW MEXICO OIL CONSERVATION DIVISION

FIGURE 2
DELINEATION SOIL SAMPLE LOCATIONS
RDX 15-11
UNIT F SEC 15 T26S R30E
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.

P:\WPX\GIS\MXD\034820007_RDX 15-11\034820007_FIG02_DELINEATION SS_2020.mxd

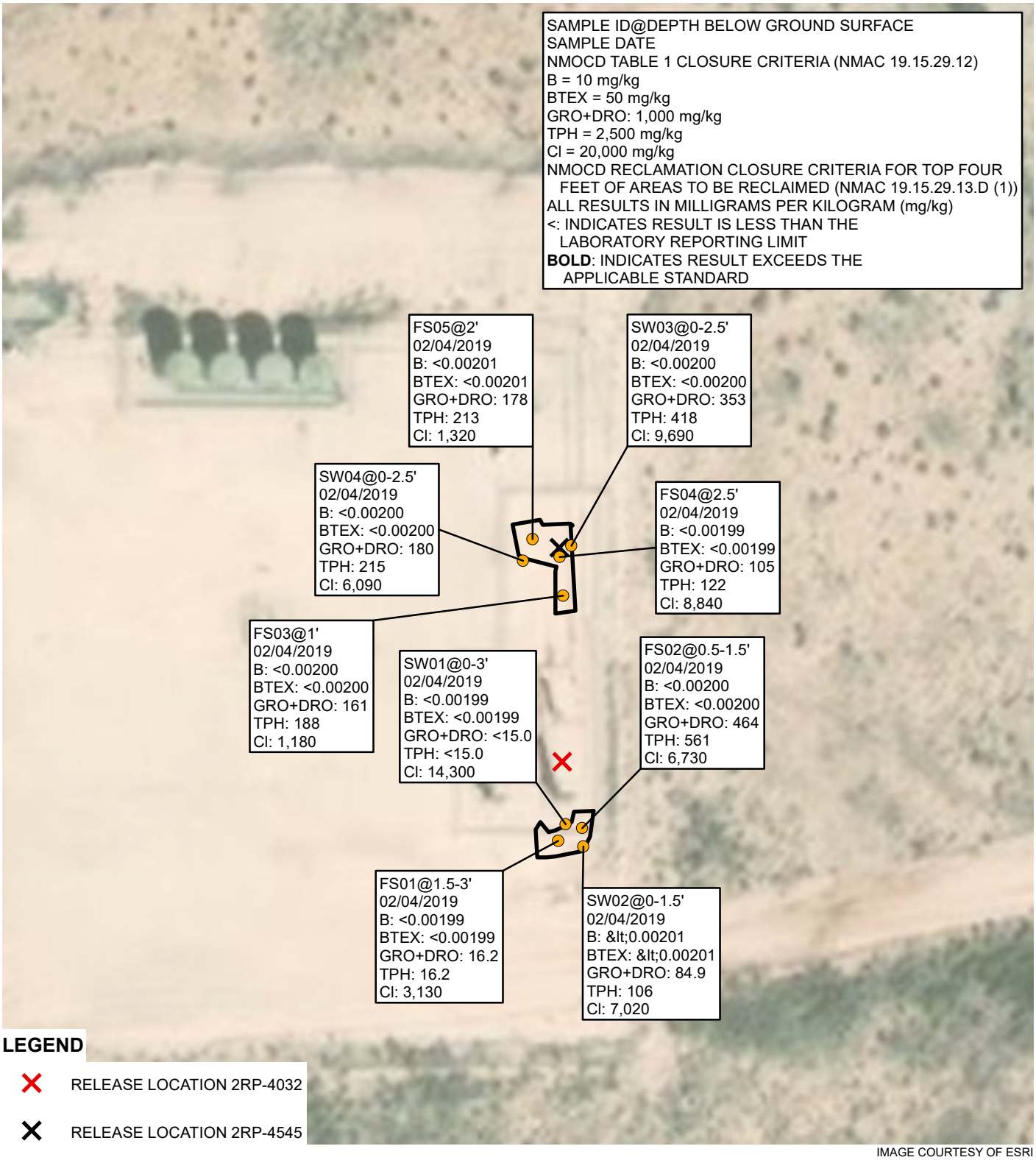


FIGURE 3
EXCAVATION SOIL SAMPLE LOCATIONS
RDX 15-11
UNIT F SEC 15 T26S R30E
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.

P:\WPX\GIS\MXD\034820007_RDX 15-11\034820007_FIG03_EXCAVATION SS_2020.mxd

TABLE

TABLE 1
SOIL ANALYTICAL RESULTS

RDX 15-11
REMEDIATION PERMIT NUMBERS 2RP-4032 AND 2RP-4545
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.

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)
NMOCD Table 1 Closure Criteria			**10**	NE	NE	NE	**50**	NE	NE	NE	**1,000**	**2,500**	**20,000**
On-Pad Site Soil Samples													
RDX 15-11-1*	Surface	12/07/2016	<0.042	<0.042	<0.042	<0.13	<0.13	<3.5	270	220	270	490	**36,000**
RDX 15-11-2*	Surface	12/07/2016	<0.039	<0.039	<0.039	<0.12	<0.12	<3.2	61	49	61	110	**28,000**
RDX 15-11-3*	1	03/02/2017	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	7,200
RDX 15-11-3*	2	03/02/2017	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	360
RDX 15-11-3*	3	03/02/2017	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	410
RDX 15-11-4*	1	03/02/2017	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	9,400
RDX 15-11-4*	2	03/02/2017	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	590
RDX 15-11-4*	3	03/02/2017	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,100
S1*	0-2	01/23/2018	<0.055	<0.055	<0.055	<0.16	<0.16	<9.1	210	71	210	281	8,300
S1*	2-4	01/23/2018	<0.046	<0.046	<0.046	<0.14	<0.14	<7.7	<11	<11	<11	<11	620
S1*	4-6	01/23/2018	<0.051	<0.051	<0.051	<0.15	<0.15	<8.5	<12	<12	<12	<12	630
S2*	0-2	01/23/2018	<0.052	<0.052	<0.052	<0.16	<0.16	<8.7	1,300	500	1,300	1,800	13,000
S2*	2-4	01/23/2018	<0.051	<0.051	<0.051	<0.15	<0.15	<8.5	<6.5	<6.5	<8.5	<8.5	420
S2*	4-6	01/23/2018	<0.050	<0.050	<0.050	<0.15	<0.15	<8.3	<6.6	<6.6	<8.3	<8.3	330
SS02	0.5	11/14/2018	<0.0192	<0.0192	<0.0192	<0.0192	<0.0192	<15.0	<15.0	<15.0	<15.0	<15.0	<4.99
SS02	1	11/14/2018	<0.0189	<0.0189	<0.0189	<0.0189	<0.0189	<15.0	<15.0	<15.0	<15.0	<15.0	<4.99
SS03	0.5	11/14/2018	<0.0198	<0.0198	<0.0198	<0.0198	<0.0198	<15.0	<15.0	<15.0	<15.0	<15.0	287
SS03	1	11/14/2018	<0.0178	<0.0178	<0.0178	<0.0178	<0.0178	<15.0	<15.0	<15.0	<15.0	<15.0	549
SS04	0.5	11/14/2018	<0.0193	<0.0193	<0.0193	<0.0193	<0.0193	<14.9	88.6	<14.9	88.6	88.6	60.7
SS04	1	11/14/2018	<0.0196	<0.0196	<0.0196	<0.0196	<0.0196	<15.0	<15.0	<15.0	<15.0	<15.0	78.8
SS05	0.5	11/14/2018	<0.0197	<0.0197	<0.0197	<0.0197	<0.0197	<15.0	<15.0	<15.0	<15.0	<15.0	50.7
SS05	1	11/14/2018	<0.0193	<0.0193	<0.0193	<0.0193	<0.0193	<15.0	<15.0	<15.0	<15.0	<15.0	223

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TABLE 1
SOIL ANALYTICAL RESULTS

RDX 15-11
REMEDIATION PERMIT NUMBERS 2RP-4032 AND 2RP-4545
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.

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)
NMOCD Table 1 Closure Criteria			**10**	NE	NE	NE	**50**	NE	NE	NE	**1,000**	**2,500**	**20,000**
FS01	1.5-3	02/04/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<15.0	16.2	<15.0	16.2	16.2	3,130
FS02	0.5-1.5	02/04/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	464	96.8	464	561	6,730
FS03	1	02/04/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	161	27.4	161	188	1,180
FS04	2.5	02/04/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<14.9	105	17.0	105	122	8,840
FS05	2	02/04/2019	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<15.0	178	35.4	178	213	1,320
SW01	0-3	02/04/2019	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199	<15.0	<15.0	<15.0	<15.0	<15.0	14,300
SW02	0-1.5	02/04/2019	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201	<15.0	84.9	21.5	84.9	106	7,020
SW03	0-2.5	02/04/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	353	65.3	353	418	9,690
SW04	0-2.5	02/04/2019	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<15.0	180	35.1	180	215	6,090
Off-Pad Site Soil Samples													
S3*	0-2	01/23/2018	<0.050	<0.050	<0.050	<0.15	<0.15	<8.3	<6.6	<6.6	<8.3	<8.3	14
S3*	2-4	01/23/2018	<0.050	<0.050	<0.050	<0.15	<0.15	<8.3	<6.4	<6.4	<8.3	<8.3	<13
S3*	4-6	01/23/2018	<0.051	<0.051	<0.051	<0.15	<0.15	<8.5	<6.6	<6.6	<8.5	<8.5	62
S4*	0-2	01/23/2018	<0.040	<0.040	<0.040	<0.12	<0.12	<6.6	<5.7	<5.7	<6.6	<6.6	15
S4*	2-4	01/23/2018	<0.049	<0.049	<0.049	<0.15	<0.15	<8.2	<8.3	<8.3	<8.3	<8.3	34
S4*	4-6	01/23/2018	<0.046	<0.046	<0.046	<0.14	<0.14	<7.7	<7.5	<7.5	<7.7	<7.7	69
S5*	0-2	01/23/2018	<0.035	<0.035	<0.035	<0.10	<0.10	<5.8	<5.3	<5.3	<5.8	<5.8	<11
S5*	2-4	01/23/2018	<0.047	<0.047	<0.047	<0.14	<0.14	<7.8	<6.3	<6.3	<7.8	<7.8	140
S5*	4-6	01/23/2018	<0.051	<0.051	<0.051	<0.15	<0.15	<8.5	<6.7	<6.7	<8.5	<8.5	48
SS01	0.5	11/14/2018	<0.0192	<0.0192	<0.0192	<0.0192	<0.0192	<15.0	<15.0	<15.0	<15.0	<15.0	<4.97
SS01	1	11/14/2018	<0.0197	<0.0197	<0.0197	<0.0197	<0.0197	<15.0	<15.0	<15.0	<15.0	<15.0	<5.00

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TABLE 1
SOIL ANALYTICAL RESULTS

RDX 15-11
REMEDIATION PERMIT NUMBERS 2RP-4032 AND 2RP-4545
EDDY COUNTY, NEW MEXICO
WPX ENERGY PERMIAN, LLC.

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)
NMOCD Table 1 Closure Criteria			**10**	NE	NE	NE	**50**	NE	NE	NE	**1,000**	**2,500**	**20,000**

Notes:

bgs - below ground surface

BTEX - benzene, toluene, ethylbenzene, and total xylenes

DRO - diesel range organics

GRO - gasoline range organics

NR - not requested

mg/kg - milligrams per kilogram

MRO - motor oil range organics

NMAC - New Mexico Administrative Code

NMOCD - New Mexico Oil Conservation Division

NE - not established

Table 1 - Closure Criteria for Soils Impacted by a Release per NMAC 19.15.29 August 2018

TPH - total petroleum hydrocarbons

< - indicates result is below laboratory detection limit

Bold indicates result exceeds the applicable regulatory standard

* - indicates sample collected and submitted by WPX

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ATTACHMENT 1: FORM C-141

NM OIL CONSERVATION
ARTESIA DISTRICT
DEC 13 2016
RECEIVED

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

nAB1634938164 246289

OPERATOR

☒ Initial Report ☒ Final Report

Name of Company WPX Energy Inc/RKI	Contact Karolina Blaney
Address 5315 Buena Vista Dr.	Telephone No. 970 589 0743
Facility Name: RDX 15-11	Facility Type: Well Pad

Surface Owner: Federal	Mineral Owner: Federal	API No. 30- 015-37093

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	15	26S	30E	2200	FNL	1500	FWL	Eddy

Latitude: 32.043733284 N **Longitude:** -103.872277755 W

NATURE OF RELEASE

Type of Release. Produced Water and Oil	Volume of Release: 120 Bbls	Volume Recovered: 0 Bbls
Source of Release Heater Treater	Date and Hour of Occurrence 12/4/2016	Date and Hour of Discovery 12/4/2016 – 9:45 hrs MT
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? NMOCD Heather Patterson & Michael Bratcher, BLM Shelly Tucker	
By Whom? Karolina Blaney	Date and Hour: 12/05/16 – 3:40 hrs MT	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

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

Describe Cause of Problem and Remedial Action Taken.*

The cause of this spill is malfunction of the heater treater. The treater and separator caught on fire which resulted in a produced water and oil spill (less than 1 bbl of oil). The majority of the spill was contained inside the SPCC containment berm; approximately 1-2 bbls of water misted outside of the containment. The impacted area was mapped with Trimble.

Describe Area Affected and Cleanup Action Taken.*

The damaged equipment, which was located on the north side of the containment, was removed. Two grab surface samples were collected from the impacted area and are being analyzed for TPH, BTEX and chlorides in accordance with NM OCD Guidelines for Remediation of Leaks, Spills, and Releases. Further remediation will be based on these results.

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

Signature: Karolina Blaney	OIL CONSERVATION DIVISION Signed By Mike Bratcher Approved by Environmental Specialist:
Printed Name: Karolina Blaney	
Title: Environmental Specialist	Approval Date: 12/13/16 Expiration Date: N/A
E-mail Address: Karolina.blaney@wpxenergy.com	Conditions of Approval: Attached ☒
Date: 12/13/2016 Phone: 970-589-0743	

* Attach Additional Sheets If Necessary

2RP-4033

State of New Mexico
Oil Conservation Division

Incident ID	NAB1634938164
District RP	2RP-4032
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

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

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

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NAB1634938164
District RP	2RP-4032
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: Lynda Laumbach Title: Environmental Specialist

Signature: Lynda Laumbach Date: 03/26/2020

email: Lynda.Laumbach@wpxenergy.com Telephone: (575)725-1647

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NAB1634938164
District RP	2RP-4032
Facility ID	
Application ID	

Closure

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

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

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

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

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

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Lynda Laumbach Title: Environmental Specialist

Signature: Lynda Laumbach Date: 03/26/2020

email: Lynda.Laumbach@wpxenergy.com Telephone: (575)725-1647

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

NM OIL CONSERVATION
ARTESIA DISTRICT
JAN 03 2018
RECEIVED

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

nAB1800557573 * 246289

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: RKI Exploration / WPX Energy	Contact: James Raley
Address: 5315 Buena Vista Dr.	Telephone No: 575-689-7597
Facility Name: RDX 15-11	Facility Type: Well Pad

Surface Owner: Federal	Mineral Owner: Federal	API No. 30- 015-37093

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	15	26S	30E	220	FNL	1500	FWL	Eddy

Latitude 32.043733284 N **Longitude** -103.872277755 W

NATURE OF RELEASE

Type of Release: Produced Water ~~and Oil~~	Volume of Release: 75 bbls	Volume Recovered 65 bbls
Source of Release; Water Knockout	Date and Hour of Occurrence 12/21/2017	Date and Hour of Discovery 12/21/2017 at 10:15 AM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? C. Weaver, M. Bratcher	
By Whom? Karolina Blaney	Date and Hour 12/21/2017 3:33 PM	
Was a Watercourse Reached? ☒ Yes ☐ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
The cause of this spill is equipment failure; a gasket on a man cover for a water knockout failed which resulted in a 75 bbls spill of produced water into a dirt SPCC containment. 65 bbls were recovered with a vac truck. Flow to the water knockout vessel was immediately stopped and repairs were made to the damaged gasket.

Describe Area Affected and Cleanup Action Taken.*
Impacts were limited to fluids inside of SPCC containment and light misting on some vegetation along east edge of containment. Free liquids were immediately recovered, a one call was placed and affected soils removed. Samples to be collected from the affected area and will be analyzed for TPH, BTEX and chlorides in accordance with NM OCD Guidelines. Any additional remediation to be determined based on sample results.

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

Signature:	OIL CONSERVATION DIVISION
Printed Name: James Raley	Approved by Environmental Specialist: Signed By
Title: Environmental Specialist	Approval Date: 1/5/18 Expiration Date: N/A
E-mail Address: james.raley@wpxenergy.com	Conditions of Approval: See attached Attached ☐ 2RP-4545
Date: 1/3/2018 Phone: 575-689-7597	

* Attach Additional Sheets If Necessary

1/4/18 AB

State of New Mexico
Oil Conservation Division

Incident ID	NAB1800557573
District RP	2RP-4545
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

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

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

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NAB1800557573
District RP	2RP-4545
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: Lynda Laumbach Title: Environmental Specialist

Signature: Lynda Laumbach Date: 03/26/2020

OCD Only

Received by: _____ Date: _____

Incident ID	NAB1800557573
District RP	2RP-4545
Facility ID	
Application ID	

Closure

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

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

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

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

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

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Lynda Laumbach Title: Environmental Specialist

Signature: Lynda Laumbach Date: 03/26/2020

email: Lynda.Laumbach@wpxenergy.com Telephone: (575)725-1647

OCD Only

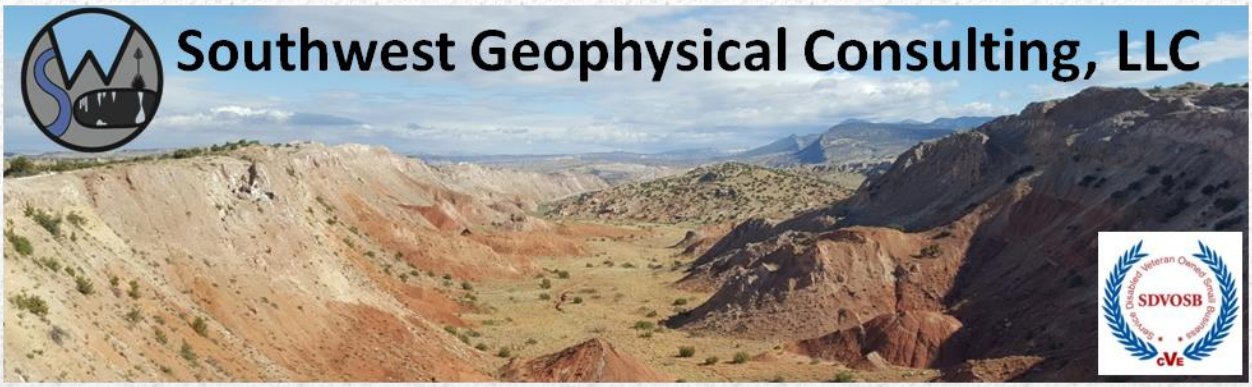
Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

ATTACHMENT 2: CAVE AND KARST RESOURCE INVENTORY REPORT



Cave and Karst Resource Inventory Report
RDX 15-11 Central Tank Battery
Eddy County, New Mexico

Prepared for:

LT Environmental, Inc.
820 Megan Avenue, Unit B
Rifle, CO 81650

☐ **Positive for Karst Features – HKOZ remediation process required**

☑ **Negative for Karst Features – MKOZ remediation process may be approved by the Oil Conservation Division**

February 10, 2019

LTE-004-20200123

Published by:

Southwest Geophysical Consulting, LLC
5117 Fairfax Dr. NW
Albuquerque, NM 87114
(505) 585-2550
www.swgeophys.com

Prepared by:

David D. Decker, Ph.D.
Principal, Chief Executive Officer
dave@swgeophys.com

Prepared for:

LT Environmental, Inc.
820 Megan Avenue, Unit B
Rifle, CO 81650

Point of Contact:

Chris McKisson
(970) 285-9985
cmckisson@ltenv.com

MMXX

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1.0 INTRODUCTION

This report was commissioned by LT Environmental, Inc. (hereinafter referred to as "the client") on January 23, 2020 for the purpose of determining what, if any, karst-related surface features are present near the RDX 15-11 Central Tank Battery (hereinafter termed “RDX”, **Figure 1**) and to provide guidance on the level of remediation required. This study does not include subsurface features, which would require a geophysical survey. The study area that this report covers is in a **MEDIUM** karst occurrence zone and entirely located within Bureau of Land Management – Carlsbad Field Office managed lands (**Figure 2**).

As indicated in section ***1.3 Affected Environment***, the bedrock and overlying soil at the survey site are susceptible to sinkhole development and karst features may be hidden beneath the existing soil stratum. Risk associated with sinkhole formation can be minimized during development with proper foundation design and construction, and the control of site hydrology. The Owner/Developer must recognize, however, that a risk of sinkhole-induced damage to infrastructure does exist. The Owner/Developer must evaluate the risks and attendant costs of performing a geophysical survey prior to development, versus no geophysical survey, and must be willing to accept these risks if it is decided that a surface karst survey is sufficient. Southwest Geophysical Consulting, LLC can provide a geophysical survey. If the decision is made to conduct a geophysical survey, a cost estimate and timeline will be provided upon request.

1.1 Goals of this Study

To provide the client with the location, description, photos, and boundaries of any surface karst-related features within a 200-meter boundary surrounding the RDX 15-11 pad as provided by the client via e-mail on January 23, 2020.

1.2 Summary of Findings

No surface karst features were located within the pedestrian survey area. However, unknown hidden features may still exist beneath the surface. Caution should be exercised during remediation.

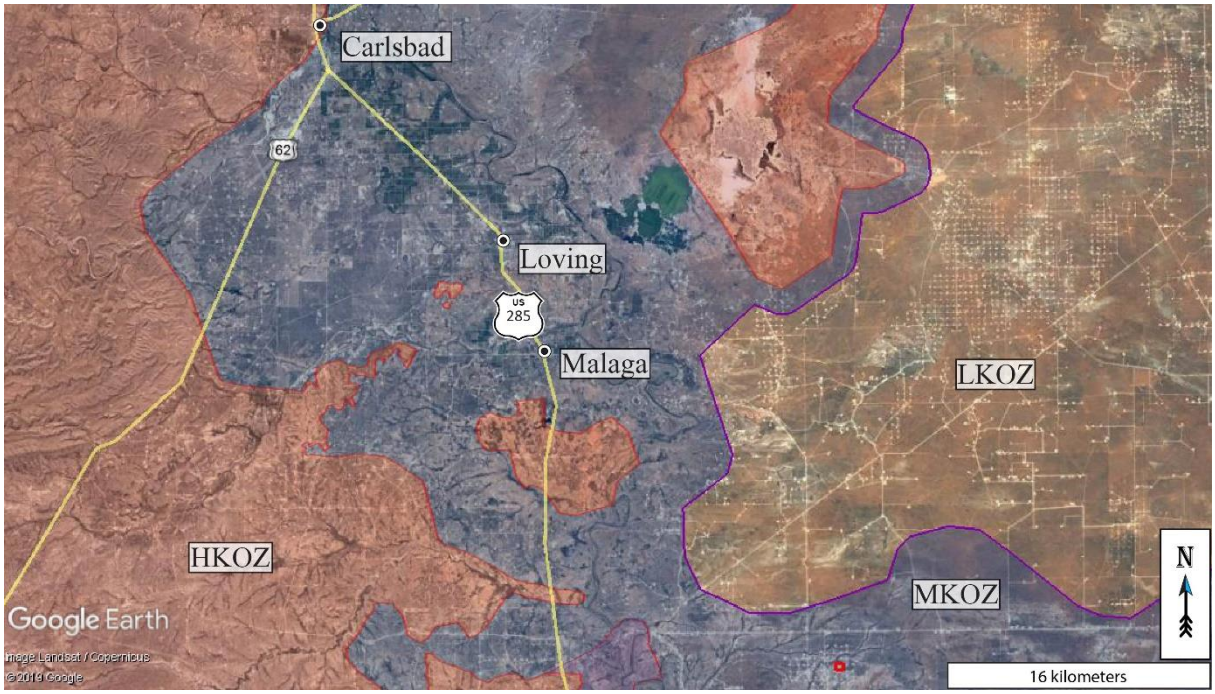

Figure 1: Karst occurrence overview. Red transparent area is a high karst occurrence zone; blue transparent area is a medium karst occurrence zone; no color indicates a low karst occurrence zone. Study area is the red outlined area in the lower-right portion of the image. Background image credit: Google Earth. Image date: February 21, 2019. Datum: WGS-84.

1.3 Affected Environment

The RDX project site is located in evaporite karst terrain, a landform that is characterized by underground drainage through solutionally enlarged conduits. Evaporite karst terrain may contain sinkholes, sinking streams, caves, and springs. Sinkholes leading to underground drainages and voids are common. These karst features, as well as occasional fissures and discontinuities in the bedrock, provide the primary sources for rapid recharge of the groundwater aquifers of the region.

The Bureau of Land Management (BLM) categorizes all areas within the Carlsbad Field Office (CFO) zone of responsibility as having either low, medium, or high cave potential based on geology, occurrence of known caves, density of karst features, and potential impacts to freshwater aquifers. This project occurs within a **MEDIUM** karst occurrence zone[1] (MKOZ, **Figure 1**). A medium karst occurrence zone is defined as an area in known soluble rock types that may have a shallow insoluble overburden. These areas may contain isolated karst features such as caves and sinkholes. Groundwater recharge may not be wholly dependent on karst features, but the karst features still provide the most rapid aquifer recharge in response to surface runoff[2].

An on-site inspection revealed that there are no surface karst features within the pedestrian survey area. However, unknown buried features may exist; therefore, this action is subject to mitigation measures designed to adequately protect known and potential cave/karst resources.

2.0 LOCATION AND DESCRIPTION OF STUDY AREA

2.1 Description of Site

The RDX project site is located in Eddy County, New Mexico, 50 kilometers (31 miles) southeast of Carlsbad, New Mexico; 18 kilometers (11 miles) east of US-285, and 5 kilometers (3 miles) north of the New Mexico-Texas Border (**Figure 1** and **Figure 2**). The site is located within section 15 of NM T26S R30E. This area is within the Chihuahuan Desert Thornscrub defined by the Southwestern Regional ReGAP Vegetation map[5] and the vegetation consists mostly of areas of grass, sparse creosote, and sparse yucca with very good visibility in most locations. See section ***2.3 Local Geology*** for the geology of the area. The pad and surrounding survey boundary are entirely within a medium karst occurrence zone (**Figure 1**) and are located entirely within BLM-CFO managed lands (**Figure 2**).

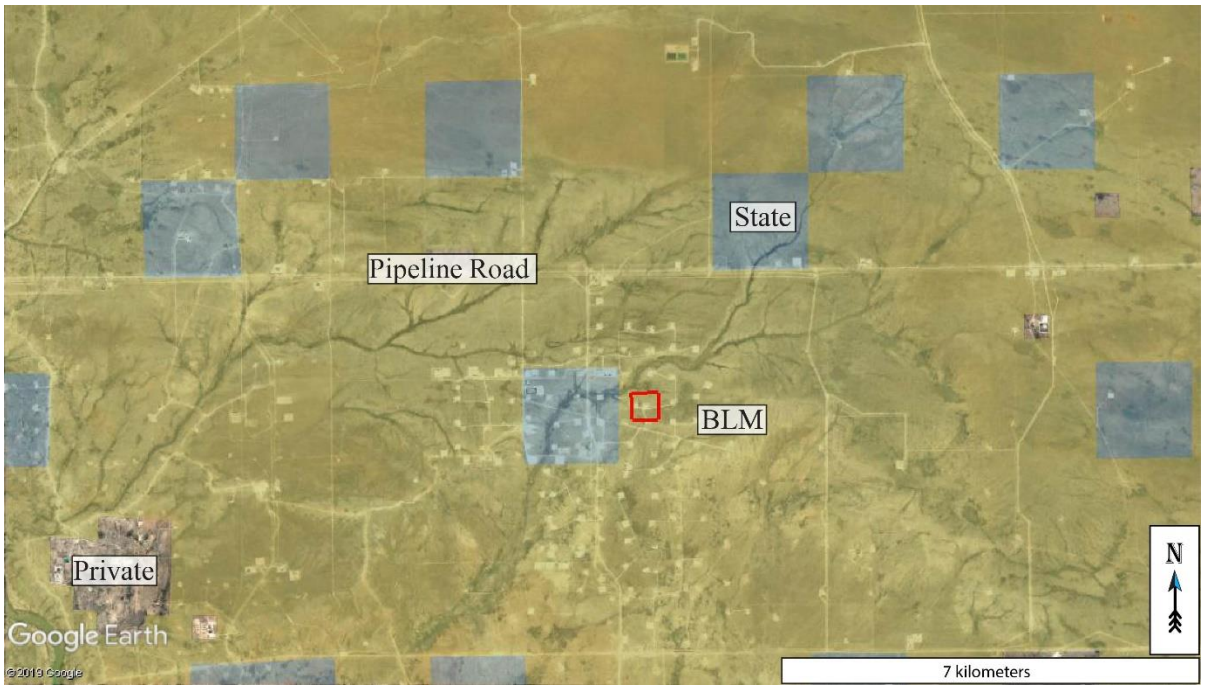

Figure 2: Land ownership overview. Yellow transparent area: BLM-CFO managed land. Blue transparent area: New Mexico State Land Office managed land. No color: Private land. Background image credit: Google Earth. Image date: February 21, 2019. Datum: WGS-84.

2.2 Description of Survey

For this survey 10 lines were walked in a raster pattern at 50-meter (165 feet) intervals in the designated area, providing 90 to 100% coverage for features greater than 50 centimeters (20 inches) in diameter (**Table 1**).

The survey was completed by Garrett Jorgensen on January 31, 2020. The total distance walked was 4.7 kilometers (2.9 miles) and the total area covered was 0.2 square kilometers (47.0 acres).

Table 1: Survey Track Data Files.

File Name	Surveyor	Date	Length (km/miles)	Area (km^2/Ac)
RDXSRV_D1S1.kmz	Jorgensen	01/31/2020	4.72/2.93	0.19/47.0

Figure 3: Survey overview. Light blue wavy lines are the actual survey lines walked. Yellow polygon is the pad site. Red polygon is the 200-meter buffer study area. Background image credit: Google Earth. Image date: November 02, 2017. Datum: WGS-84.

2.3 Local Geology

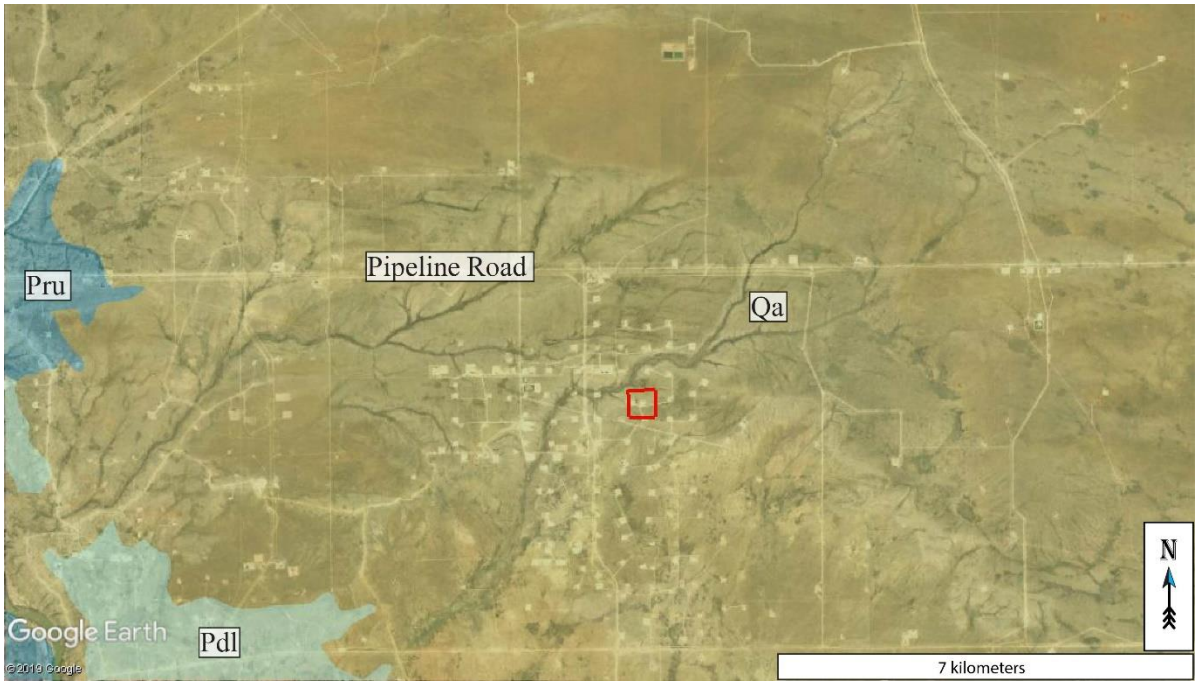

Figure 4: Geology overview. Red polygon highlights the survey area. Pru: Permian Rustler Formation. Pdl: Permian Dewey Lake Formation. Qa: Quaternary units, locally includes both Qg: Quaternary Gatuna Formation and Qs: Quaternary windblown sand. Map credit: Geologic Map of New Mexico, scale: 1:500,000 (2003), and Google Earth. Image date: February 21, 2019. Datum: WGS-84.

The area surveyed for the RDX project is located at an elevation of 950 meters (3,115 feet), plus or minus 3 meters (9 feet), within the Quaternary Gatuna Formation (Qg – not shown. Within Qa on map) and Quaternary windblown sand (Qs – not shown. Within Qa on map). The Gatuna Formation is a conglomerate composed of calcite cemented limestone and sandstone cobble derived from the Guadalupe Mountains. The large proportion of calcite that makes up the matrix for this formation allows limited karst formation to occur. The entirety of the survey area is underlain by the Permian Dewey Lake Formation (Pdl), which outcrops in the southernmost section of the survey area, and Permian Rustler (Pru) Formation (which does not outcrop within the survey area). The Dewey Lake Formation is composed of calcite cemented, hematite stained quartz sand grains and is not known for forming karst. The Rustler Formation is composed of alternating layers of gypsum and dolomite, both of which are easily dissolved to form karst features[3, 4]. Two easily accessible geologic maps that cover the survey area are the Geologic Map of New Mexico (2003) at 1:500,000 scale[2], and the Geologic Atlas of Texas - Hobbs Sheet (1976) at 1:250,000 scale.

2.4 Description of Karst Features

No surface karst features were located within the 200-meter boundary of the pedestrian survey area for the RDX project.

3.0 RECOMMENDATIONS

No surface karst features were located during this survey. Based on the above findings, allowing use of medium karst occurrence zone spill remediation procedures may be considered by the Oil Conservation Division within the 200-meter survey area. Confirmation to use a lower remediation level should be received from the Oil Conservation Division before proceeding.

Vigilance during remediation is paramount. If voids are encountered during trenching or digging contact the New Mexico State Oil Conservation Division if on State land, and the Bureau of Land Management – Carlsbad Field Office at (575) 234-5972 if on BLM land and request an onsite investigation from a karst expert. A karst consultant can generally be onsite in Eddy County within five hours.

4.0 REFERENCES

1. Rybacki, K., *Karst Potential Map.* CFO Basemap, 2019.
2. Scholle, P.A., *Geologic Map of New Mexico.* 2003. (1:500,000).
3. Johnson, K.S., *Evaporite Karst in the United States.* Carbonates and Evaporites, 1997. **12(1)**: p. 2-14.
4. Martinez, J.D., K.S. Johnson, and J.T. Neal, *Sinkholes in Evaporite Rocks.* American Scientist, 1998. **86(1-2)**: p. 38-51.
5. Whitehead, W. and C. Flynn, *Plant Utilization in Southeastern New Mexico: Botany, Ethnobotany, and Archaeology.* 2017, Carlsbad, NM: Bureau of Land Management, Carlsbad Field Office.

5.0 GLOSSARY OF TERMS

BLM	Bureau of Land Management
CFO	Carlsbad Field Office
cave	A natural opening at the surface, large enough for a person to enter.
GPS	Global Positioning System
NMSLO	New Mexico State Land Office
playa lake	A natural depression on the surface that collects rainwater. Some contain swallets and/or caves, others do not.
pseudokarst	Karst-like terrain that forms through processes other than dissolution.
swallet	A natural opening in the surface, too small for a person, that drains water to an aquifer. Some are "open," meaning a void can be seen below; some are "closed," meaning they are full of sediment.
WGS	World Geodetic System

ATTACHMENT 3: PHOTOGRAPHIC LOG

PHOTOGRAPHIC LOG

Photograph 1: View of southern excavation facing east.

Photograph 2: View of southern excavation facing southwest.

Photograph 3: View of northern excavation facing north.

Photograph 4: View of northern excavation facing southwest.

RDX 15-11
32.043733284, -103.87227775
Photographs Taken: February 20, 2019

A proud member of WSP

ATTACHMENT 4: LITHOLOGIC/SOIL SAMPLING LOGS

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

BH or PH Name: SS01	Date: 11/14/18
Site Name: ROX 15-11	
RP or Incident Number:	
LTE Job Number: 03482000Z	
Logged By: LL	Method:
Lat/Long:	Field Screening: Chloride, PID
Hole Diameter:	Total Depth: 2'

LITHOLOGIC / SOIL SAMPLING LOG

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
D (1026)	492	48.5	N		0.5'	0		gravel, top soil, odor
D (1036)	720	5.5	N		1'	1		Same as above (S&A)
D (1040)	548	15.2	N		2'	2		S&A
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						10		
						11		
						12		

LT Environmental, Inc.
508 West Stevens Street
Carlsbad, New Mexico 88220
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BH or PH Name: SS02	Date: 11/14/18
Site Name: RDX 15-11	
RP or Incident Number:	
LTE Job Number: 034820007	
Logged By: Lynda	Method:
Hole Diameter:	Total Depth: 2' EN 1'
Lat/Long:	Field Screening: Chloride, PID

LITHOLOGIC / SOIL SAMPLING LOG

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
1050 D	<120	4.4	N		0.5'	0		topsoil, sandy loam, no odor, no staining
1055 D	<120	2.3	N		1'	1		same as above
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						10		
						11		
						12		

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

BH or PH Name: SS03	Date: 11/14/18
Site Name: RDX 15-11	
RP or Incident Number:	
LTE Job Number: 034820007	
Logged By: LL	Method:
Hole Diameter:	Total Depth:

LITHOLOGIC / SOIL SAMPLING LOG

Lat/Long:

Field Screening: Chloride, PID

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
1105 D	<120	1.3	N		0.5'	0		topsoil, sandy loam, no odor
1110 D	<120	0.9	N		1'	1		Same as above
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						10		
						11		
						12		

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

BH or PH Name: SS04	Date: 11/14/18
Site Name: RDX 15-11	
RP or Incident Number:	
LTE Job Number: 08482007	
Logged By: LL	Method:
Hole Diameter:	Total Depth:

LITHOLOGIC / SOIL SAMPLING LOG

Lat/Long:
Field Screening: Chloride, PID
Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
1130 D	248	1.4	N		0.5'	0		top soil, sandy loam, no odor
1145 D	916	1.8	N		1'	1		Same as above (SAA)
1320 D	988	2.1	N		1.5'	2		SAA
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						10		
						11		
						12		

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

BH or PH Name: SS05	Date: 11/14/18
Site Name: RDX 15-11	
RP or Incident Number:	
LTE Job Number: 034820007	
Logged By: LL	Method:
Hole Diameter:	Total Depth:

LITHOLOGIC / SOIL SAMPLING LOG

Lat/Long:

Field Screening: Chloride, PID

Comments:

Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
1240 D	2,607	1.9	N		0.5'	0		topsoil, sandy loam, no odor
1250 D	1,140	2.2	N		1'	1		Same as above
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						10		
						11		
						12		

ATTACHMENT 5: LABORATORY ANALYTICAL REPORTS

21-Dec-2016

Karolina Blaney
WPX Energy
5315 Buena Vista Dr.
Carlsbad, NM 88220

Re: **RDX 15-11** Work Order: **1612637**

Dear Karolina,

ALS Environmental received 2 samples on 10-Dec-2016 10:15 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 15.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ALS Group, USA

Date: 21-Dec-16

Client: WPX Energy
Project: RDX 15-11
Work Order: **1612637**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1612637-01	RDX 15-11-1	Soil		12/7/2016 10:00	12/10/2016 10:15	☐
1612637-02	RDX 15-11-2	Soil		12/7/2016 10:20	12/10/2016 10:15	☐

ALS Group, USA

Date: 21-Dec-16

Client: WPX Energy
Project: RDX 15-11
Work Order: 1612637

Case Narrative

Batch 95757, Method DRO_8015_S, Sample 1612637-02B MSD: The RPD between the MS and MSD was outside the control limit for DRO/ORO. The corresponding result in the parent sample should be considered estimated.

ALS Group, USA

Date: 21-Dec-16

Client: WPX Energy
Project: RDX 15-11
WorkOrder: **1612637**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group, USA

Date: *21-Dec-16*

Client: WPX Energy
Project: RDX 15-11 **Work Order:** 1612637
Sample ID: RDX 15-11-1 **Lab ID:** 1612637-01
Collection Date: 12/7/2016 10:00 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3541 / 12/13/16	Analyst: **IT**
DRO (C10-C28)	**270**		**5.7**	**mg/Kg-dry**	1	12/16/2016 01:50 PM
ORO (C28-C40)	**220**		**5.7**	**mg/Kg-dry**	1	12/16/2016 01:50 PM
Surr: 4-Terphenyl-d14	*66.0*		*39-133*	*%REC*	1	12/16/2016 01:50 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**		Prep: SW5035 / 12/12/16	Analyst: **IT**
GRO (C6-C10)	ND		3.5	mg/Kg-dry	1	12/12/2016 04:20 PM
Surr: Toluene-d8	*102*		*50-150*	*%REC*	1	12/12/2016 04:20 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/12/16	Analyst: **LSY**
Benzene	ND		0.042	mg/Kg-dry	1	12/13/2016 05:36 AM
Ethylbenzene	ND		0.042	mg/Kg-dry	1	12/13/2016 05:36 AM
m,p-Xylene	ND		0.085	mg/Kg-dry	1	12/13/2016 05:36 AM
o-Xylene	ND		0.042	mg/Kg-dry	1	12/13/2016 05:36 AM
Toluene	ND		0.042	mg/Kg-dry	1	12/13/2016 05:36 AM
Xylenes, Total	ND		0.13	mg/Kg-dry	1	12/13/2016 05:36 AM
Surr: 1,2-Dichloroethane-d4	*98.4*		*70-130*	*%REC*	1	12/13/2016 05:36 AM
Surr: 4-Bromofluorobenzene	*98.3*		*70-130*	*%REC*	1	12/13/2016 05:36 AM
Surr: Dibromofluoromethane	*84.2*		*70-130*	*%REC*	1	12/13/2016 05:36 AM
Surr: Toluene-d8	*99.4*		*70-130*	*%REC*	1	12/13/2016 05:36 AM
CHLORIDE			**A4500-CL E-97**		Prep: EXTRACT / 12/14/16	Analyst: **EVB**
Chloride	**36,000**		**1,200**	**mg/Kg-dry**	100	12/20/2016 04:18 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**17**		**0.050**	**% of sample**	1	12/13/2016 06:17 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *21-Dec-16*

Client: WPX Energy
Project: RDX 15-11
Sample ID: RDX 15-11-2
Collection Date: 12/7/2016 10:20 AM

Work Order: 1612637
Lab ID: 1612637-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3541 / 12/13/16	Analyst: **IT**
DRO (C10-C28)	**61**		**5.6**	**mg/Kg-dry**	1	12/16/2016 11:51 AM
ORO (C28-C40)	**49**		**5.6**	**mg/Kg-dry**	1	12/16/2016 11:51 AM
Surr: 4-Terphenyl-d14	*62.5*		*39-133*	*%REC*	1	12/16/2016 11:51 AM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**		Prep: SW5035 / 12/12/16	Analyst: **IT**
GRO (C6-C10)	ND		3.2	mg/Kg-dry	1	12/12/2016 04:45 PM
Surr: Toluene-d8	*106*		*50-150*	*%REC*	1	12/12/2016 04:45 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 12/12/16	Analyst: **LSY**
Benzene	ND		0.039	mg/Kg-dry	1	12/13/2016 06:01 AM
Ethylbenzene	ND		0.039	mg/Kg-dry	1	12/13/2016 06:01 AM
m,p-Xylene	ND		0.078	mg/Kg-dry	1	12/13/2016 06:01 AM
o-Xylene	ND		0.039	mg/Kg-dry	1	12/13/2016 06:01 AM
Toluene	ND		0.039	mg/Kg-dry	1	12/13/2016 06:01 AM
Xylenes, Total	ND		0.12	mg/Kg-dry	1	12/13/2016 06:01 AM
Surr: 1,2-Dichloroethane-d4	*98.4*		*70-130*	*%REC*	1	12/13/2016 06:01 AM
Surr: 4-Bromofluorobenzene	*98.6*		*70-130*	*%REC*	1	12/13/2016 06:01 AM
Surr: Dibromofluoromethane	*90.6*		*70-130*	*%REC*	1	12/13/2016 06:01 AM
Surr: Toluene-d8	*99.6*		*70-130*	*%REC*	1	12/13/2016 06:01 AM
CHLORIDE			**A4500-CL E-97**		Prep: EXTRACT / 12/14/16	Analyst: **EVB**
Chloride	**28,000**		**340**	**mg/Kg-dry**	30	12/20/2016 04:18 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**13**		**0.050**	**% of sample**	1	12/13/2016 06:17 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 21-Dec-16

Client: WPX Energy
Work Order: 1612637
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **95757** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-95757-95757** Units: **mg/Kg** Analysis Date: **12/14/2016 09:17 PM**
Client ID: Run ID: **GC8_161214A** SeqNo: **4205701** Prep Date: **12/13/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
ORO (C28-C40)	ND	5.0								
Surr: 4-Terphenyl-d14	*2.339*	0	*3.33*	0	*70.3*	*39-133*	0			

LCS Sample ID: **DLCSS1-95757-95757** Units: **mg/Kg** Analysis Date: **12/14/2016 09:46 PM**
Client ID: Run ID: **GC8_161214A** SeqNo: **4205702** Prep Date: **12/13/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	284	5.0	333	0	85.3	61-109	0			
ORO (C28-C40)	309.2	5.0	333	0	92.8	61-119	0			
Surr: 4-Terphenyl-d14	*1.978*	0	*3.33*	0	*59.4*	*39-133*	0			

MS Sample ID: **1612637-02B MS** Units: **mg/Kg** Analysis Date: **12/16/2016 10:52 A**
Client ID: **RDX 15-11-2** Run ID: **GC8_161216A** SeqNo: **4206579** Prep Date: **12/13/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	167.7	5.0	330.4	53.12	34.7	48-110	0			S
ORO (C28-C40)	183.9	5.0	330.4	42.25	42.9	39-140	0			
Surr: 4-Terphenyl-d14	*1.483*	0	*3.304*	0	*44.9*	*39-133*	0			

MSD Sample ID: **1612637-02B MSD** Units: **mg/Kg** Analysis Date: **12/16/2016 11:22 A**
Client ID: **RDX 15-11-2** Run ID: **GC8_161216A** SeqNo: **4206580** Prep Date: **12/13/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	281.2	4.9	325	53.12	70.2	48-110	167.7	50.5	30	R
ORO (C28-C40)	296	4.9	325	42.25	78.1	39-140	183.9	46.7	30	R
Surr: 4-Terphenyl-d14	*1.851*	0	*3.25*	0	*57*	*39-133*	1.483	*22.1*	*30*	

The following samples were analyzed in this batch: 1612637-01B 1612637-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 1612637
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **95709** Instrument ID **GC9** Method: **SW8015D**

MBLK Sample ID: **MBLK-95709-95709** Units: **µg/Kg-dry** Analysis Date: **12/12/2016 03:55 PM**
Client ID: Run ID: **GC9_161212A** SeqNo: **4199282** Prep Date: **12/12/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	2,500								
Surr: Toluene-d8	*4869*	0	*5000*	0	*97.4*	*50-150*	0			

LCS Sample ID: **LCS-95709-95709** Units: **µg/Kg-dry** Analysis Date: **12/12/2016 03:30 PM**
Client ID: Run ID: **GC9_161212A** SeqNo: **4199281** Prep Date: **12/12/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	514600	2,500	500000	0	103	70-130	0			
Surr: Toluene-d8	*5502*	0	*5000*	0	*110*	*50-150*	0			

MS Sample ID: **1612637-01A MS** Units: **µg/Kg-dry** Analysis Date: **12/12/2016 06:50 PM**
Client ID: **RDX 15-11-1** Run ID: **GC9_161212A** SeqNo: **4199289** Prep Date: **12/12/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	762900	3,500	704800	0	108	70-130	0			
Surr: Toluene-d8	*7995*	0	*7048*	0	*113*	*50-150*	0			

MSD Sample ID: **1612637-01A MSD** Units: **µg/Kg-dry** Analysis Date: **12/12/2016 07:15 PM**
Client ID: **RDX 15-11-1** Run ID: **GC9_161212A** SeqNo: **4199290** Prep Date: **12/12/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	826200	3,500	704800	0	117	70-130	762900	7.96	30	
Surr: Toluene-d8	*8262*	0	*7048*	0	*117*	*50-150*	7995	*3.29*	*30*	

The following samples were analyzed in this batch: 1612637-01A 1612637-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 1612637
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **95696** Instrument ID **VMS9** Method: **SW8260B**

MBLK Sample ID: **MBLK-95696-95696** Units: **µg/Kg-dry** Analysis Date: **12/12/2016 01:39 PM**
Client ID: Run ID: **VMS9_161212A** SeqNo: **4199496** Prep Date: **12/12/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30	0	0	0	0-0	0			
Ethylbenzene	ND	30	0	0	0	0-0	0			
m,p-Xylene	ND	60	0	0	0	0-0	0			
o-Xylene	ND	30	0	0	0	0-0	0			
Toluene	ND	30	0	0	0	0-0	0			
Xylenes, Total	ND	90	0	0	0	0-0	0			
Surr: 1,2-Dichloroethane-d4	*980.5*	0	*1000*	0	*98*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*971.5*	0	*1000*	0	*97.2*	*70-130*	0			
Surr: Dibromofluoromethane	*933.5*	0	*1000*	0	*93.4*	*70-130*	0			
Surr: Toluene-d8	*989.5*	0	*1000*	0	*99*	*70-130*	0			

LCS Sample ID: **LCS-95696-95696** Units: **µg/Kg-dry** Analysis Date: **12/12/2016 12:01 PM**
Client ID: Run ID: **VMS9_161212A** SeqNo: **4199491** Prep Date: **12/12/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1093	30	1000	0	109	75-125	0			
Ethylbenzene	1140	30	1000	0	114	75-125	0			
m,p-Xylene	2326	60	2000	0	116	80-125	0			
o-Xylene	1146	30	1000	0	115	75-125	0			
Toluene	1076	30	1000	0	108	70-125	0			
Xylenes, Total	3472	90	3000	0	116	75-125	0			
Surr: 1,2-Dichloroethane-d4	*964.5*	0	*1000*	0	*96.4*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1026*	0	*1000*	0	*103*	*70-130*	0			
Surr: Dibromofluoromethane	*1034*	0	*1000*	0	*103*	*70-130*	0			
Surr: Toluene-d8	*994*	0	*1000*	0	*99.4*	*70-130*	0			

MS Sample ID: **1612637-01A MS** Units: **µg/Kg-dry** Analysis Date: **12/13/2016 09:41 A**
Client ID: **RDX 15-11-1** Run ID: **VMS9_161212B** SeqNo: **4198991** Prep Date: **12/12/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1414	42	1410	0	100	75-125	0			
Ethylbenzene	1527	42	1410	0	108	75-125	0			
m,p-Xylene	3086	85	2819	0	109	80-125	0			
o-Xylene	1547	42	1410	0	110	75-125	0			
Toluene	1430	42	1410	0	101	70-125	0			
Xylenes, Total	4633	130	4229	0	110	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1337*	0	*1410*	0	*94.8*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1453*	0	*1410*	0	*103*	*70-130*	0			
Surr: Dibromofluoromethane	*1336*	0	*1410*	0	*94.8*	*70-130*	0			
Surr: Toluene-d8	*1411*	0	*1410*	0	*100*	*70-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 1612637
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **95696** Instrument ID **VMS9** Method: **SW8260B**

MSD Sample ID: **1612637-01A MSD** Units: **µg/Kg-dry** Analysis Date: **12/13/2016 10:06 A**
Client ID: **RDX 15-11-1** Run ID: **VMS9_161212B** SeqNo: **4198992** Prep Date: **12/12/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1420	42	1410	0	101	75-125	1414	0.448	30	
Ethylbenzene	1510	42	1410	0	107	75-125	1527	1.16	30	
m,p-Xylene	3081	85	2819	0	109	80-125	3086	0.16	30	
o-Xylene	1563	42	1410	0	111	75-125	1547	1.04	30	
Toluene	1446	42	1410	0	103	70-125	1430	1.08	30	
Xylenes, Total	4645	130	4229	0	110	75-125	4633	0.243	30	
Surr: 1,2-Dichloroethane-d4	*1357*	0	*1410*	0	*96.3*	*70-130*	1337	*1.52*	*30*	
Surr: 4-Bromofluorobenzene	*1460*	0	*1410*	0	*104*	*70-130*	1453	*0.484*	*30*	
Surr: Dibromofluoromethane	*1370*	0	*1410*	0	*97.2*	*70-130*	1336	*2.55*	*30*	
Surr: Toluene-d8	*1411*	0	*1410*	0	*100*	*70-130*	1411	*0*	*30*	

The following samples were analyzed in this batch: 1612637-01A 1612637-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 1612637
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **95849** Instrument ID **GALLERY** Method: **A4500-Cl E-97**

MBLK Sample ID: **MBLK-95849-95849** Units: **mg/Kg** Analysis Date: **12/20/2016 04:18 PM**
Client ID: Run ID: **GALLERY_161220B** SeqNo: **4213301** Prep Date: **12/14/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	10								

MS Sample ID: **1612543-01A MS** Units: **mg/Kg** Analysis Date: **12/20/2016 04:18 PM**
Client ID: Run ID: **GALLERY_161220B** SeqNo: **4213303** Prep Date: **12/14/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	777.1	9.8	492.1	307.7	95.4	75-125	0			

MSD Sample ID: **1612543-01A MSD** Units: **mg/Kg** Analysis Date: **12/20/2016 04:18 PM**
Client ID: Run ID: **GALLERY_161220B** SeqNo: **4213304** Prep Date: **12/14/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	765.2	9.9	495	307.7	92.4	75-125	777.1	1.53	25	

LCS1 Sample ID: **LCS1-95849-95849** Units: **mg/Kg** Analysis Date: **12/20/2016 04:18 PM**
Client ID: Run ID: **GALLERY_161220B** SeqNo: **4213307** Prep Date: **12/14/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	104.9	10	100	0	105	80-120	0			

LCS2 Sample ID: **LCS2-95849-95849** Units: **mg/Kg** Analysis Date: **12/20/2016 04:18 PM**
Client ID: Run ID: **GALLERY_161220B** SeqNo: **4213308** Prep Date: **12/14/2016** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	508.9	10	500	0	102	80-120	0			

The following samples were analyzed in this batch: 1612637-01B 1612637-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 1612637
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **R202468** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R202468** Units: **% of sample** Analysis Date: **12/13/2016 06:17 PM**
Client ID: Run ID: **MOIST_161213D** SeqNo: **4201379** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R202468** Units: **% of sample** Analysis Date: **12/13/2016 06:17 PM**
Client ID: Run ID: **MOIST_161213D** SeqNo: **4201377** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1612654-01B DUP** Units: **% of sample** Analysis Date: **12/13/2016 06:17 PM**
Client ID: Run ID: **MOIST_161213D** SeqNo: **4201371** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	15.21	0.050	0	0	0		15.59	2.47	20	

DUP Sample ID: **1612656-01B DUP** Units: **% of sample** Analysis Date: **12/13/2016 06:17 PM**
Client ID: Run ID: **MOIST_161213D** SeqNo: **4201373** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	19.94	0.050	0	0	0		20.22	1.39	20	

The following samples were analyzed in this batch: 1612637-01B 1612637-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Laboratory Group

HOLLAND, Michigan 49424

Chain-of-Custody

Form 202r6

WORKORDER #	1612637				
SAMPLER		DATE	12/7/2016	PAGE	1 of 1
PROJECT NAME	RDX 15-11	SITE ID	RDX 15-11	TURNAROUND	5 day
DISPOSAL	By Lab or Return to Client				
PROJECT No.		EDD FORMAT			
		PURCHASE ORDER			
COMPANY NAME	WPX Energy	BILL TO COMPANY	WPX Energy		
SEND REPORT TO	Blaney	INVOICE ATTN TO	Karolina Blaney		
ADDRESS		ADDRESS	5315 Buena Vista Dr		
CITY / STATE / ZIP		CITY / STATE / ZIP	Carlsbad, NM 88220		
PHONE		PHONE	970 589 0743		
FAX		FAX			
E-MAIL	Karolina.blaney@wpxenergy.com;	E-MAIL	Karolina.blaney@wpxenergy.com		

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	TPH DRO GRO ORO	BTEX 8260	Chloride
	RDX 15-11-1	S	12/7/2016	10:00	1	8	x	x	x	x
	RDX 15-11-2	S	12/7/2016	10:20	1	8	x	x	x	x

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:

3.8

QC PACKAGE (check below)	
X	LEVEL II (Standard QC)
	LEVEL III (Std QC + forms)
	LEVEL IV (Std QC + forms + raw data)

Pre[illegible] SO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	Karolina Blaney	Karolina Blaney	12/7/2016	15:00
RECEIVED BY	[signature]	JoE R. BAR	12/10/16	1015
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

FedEx® Sa
SDR
Delivery
151956 10/04 MWI

00037
00252
23476
1.800.GoFedEx 1.800.463.3339

FedEx. Express Package US Airbill

FedEx Tracking Number 8108 0927 4102 75

1 From
Date 12-7-16 [redacted]
Sender's Name KAROLINA BLANEY Phone 970 [redacted]
Company WPX ENERGY
Address 5315 BUENA VISTA
City CARLSBAD State NM

2 Your Internal Billing Reference

3 To
Recipient's Name SAMPLE RECEIVING Phone
Company ALS ENVIRONMENTAL HOLLAND LAB
Address 3352 128TH AVE
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City HOLLAND

Express Package Service
Next Business Day
FedEx First Overnight
FedEx Priority Overnight
FedEx Standard Overnight
2 or 3 Business Days
FedEx 2Day A.M.
FedEx 2Day
FedEx Express Saver

5 Packaging
FedEx Envelope* FedEx Pak* FedEx Box FedEx Tube Other

6 Special Handling and Delivery Signature Options
X Saturday Delivery
No Signature Required
Direct Signature
Indirect Signature
Does this shipment contain dangerous goods?
No / Yes As per attached Shipper's Declaration / Yes Shipper's Declaration not required / Dry Ice / Cargo Aircraft Only

7 Payment Bill to:
Sender [redacted]
X Recipient
Third Party
Credit Card
Cash/Check
Total Packages Total Weight 18 lbs.

Recipient's Copy
Packages up to 150 lbs.
fedex.com 1.800.GoFedEx 1.800.463.3339
MUR4

FedEx TRK# 0215 8108 0927 4102
SATURDAY
FIRST OVERNIGHT
X0 HLMA
49424
MI-US
GRR
611

FO
10:30
12 10
4102

06222047

ALS Group, USA

Sample Receipt Checklist

Client Name: **WPX - NM** Date/Time Received: **10-Dec-16 10:15**

Work Order: **1612637** Received by: **JR**

Checklist completed by Joseph Ribar 10-Dec-16 Reviewed by: Joseph Ribar 10-Dec-16
eSignature Date eSignature Date

Matrices: soil
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.8C/3.8C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/10/2016 10:26:44 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

15-Mar-2017

Karolina Blaney
WPX Energy
5315 Buena Vista Dr.
Carlsbad, NM 88220

Re: **RDX 15-11** Work Order: **1703438**

Dear Karolina,

ALS Environmental received 6 samples on 08-Mar-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 13.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ALS Group, USA

Date: 15-Mar-17

Client: WPX Energy
Project: RDX 15-11
Work Order: **1703438**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1703438-01	RDX 15-11-3 1'	Soil		3/2/2017 09:30	3/8/2017 09:30	☐
1703438-02	RDX 15-11-3 2'	Soil		3/2/2017 09:35	3/8/2017 09:30	☐
1703438-03	RDX 15-11-3 3'	Soil		3/2/2017 09:40	3/8/2017 09:30	☐
1703438-04	RDX 15-11-4 1'	Soil		3/2/2017 09:45	3/8/2017 09:30	☐
1703438-05	RDX 15-11-4 2'	Soil		3/2/2017 09:50	3/8/2017 09:30	☐
1703438-06	RDX 15-11-4 3'	Soil		3/2/2017 09:55	3/8/2017 09:30	☐

ALS Group, USA

Date: 15-Mar-17

Client: WPX Energy
Project: RDX 15-11
WorkOrder: **1703438**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group, USA

Date: *15-Mar-17*

Client: WPX Energy
Project: RDX 15-11 **Work Order:** 1703438
Sample ID: RDX 15-11-3 1' **Lab ID:** 1703438-01
Collection Date: 3/2/2017 09:30 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CHLORIDE			**A4500-CL E-97**		Prep: EXTRACT / 3/14/17	Analyst: **EVB**
Chloride	**7,200**		**120**	**mg/Kg-dry**	10	3/14/2017 02:21 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**16**		**0.050**	**% of sample**	1	3/8/2017 04:24 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *15-Mar-17*

Client: WPX Energy
Project: RDX 15-11 **Work Order:** 1703438
Sample ID: RDX 15-11-3 2' **Lab ID:** 1703438-02
Collection Date: 3/2/2017 09:35 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CHLORIDE			**A4500-CL E-97**		Prep: EXTRACT / 3/14/17	Analyst: **EVB**
Chloride	**360**		**11**	**mg/Kg-dry**	1	3/14/2017 02:21 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**13**		**0.050**	**% of sample**	1	3/8/2017 04:24 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *15-Mar-17*

Client: WPX Energy
Project: RDX 15-11 **Work Order:** 1703438
Sample ID: RDX 15-11-3 3' **Lab ID:** 1703438-03
Collection Date: 3/2/2017 09:40 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CHLORIDE			**A4500-CL E-97**		Prep: EXTRACT / 3/14/17	Analyst: **EVB**
Chloride	**410**		**13**	**mg/Kg-dry**	1	3/14/2017 02:21 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**24**		**0.050**	**% of sample**	1	3/8/2017 04:24 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *15-Mar-17*

Client: WPX Energy
Project: RDX 15-11 **Work Order:** 1703438
Sample ID: RDX 15-11-4 1' **Lab ID:** 1703438-04
Collection Date: 3/2/2017 09:45 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CHLORIDE			**A4500-CL E-97**	Prep: EXTRACT / 3/14/17		Analyst: **EVB**
Chloride	**9,400**		**120**	**mg/Kg-dry**	10	3/14/2017 02:21 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**17**		**0.050**	**% of sample**	1	3/8/2017 04:24 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *15-Mar-17*

Client: WPX Energy
Project: RDX 15-11 **Work Order:** 1703438
Sample ID: RDX 15-11-4 2' **Lab ID:** 1703438-05
Collection Date: 3/2/2017 09:50 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CHLORIDE			**A4500-CL E-97**		Prep: EXTRACT / 3/14/17	Analyst: **EVB**
Chloride	**590**		**12**	**mg/Kg-dry**	1	3/14/2017 02:21 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**14**		**0.050**	**% of sample**	1	3/8/2017 04:24 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *15-Mar-17*

Client: WPX Energy
Project: RDX 15-11 **Work Order:** 1703438
Sample ID: RDX 15-11-4 3' **Lab ID:** 1703438-06
Collection Date: 3/2/2017 09:55 AM **Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CHLORIDE			**A4500-CL E-97**		Prep: EXTRACT / 3/14/17	Analyst: **EVB**
Chloride	**1,100**		**46**	**mg/Kg-dry**	4	3/14/2017 02:21 PM
MOISTURE			**SW3550C**			Analyst: **EDL**
Moisture	**13**		**0.050**	**% of sample**	1	3/8/2017 04:24 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Mar-17

Client: WPX Energy
Work Order: 1703438
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **99239** Instrument ID **GALLERY** Method: **A4500-Cl E-97**

MBLK Sample ID: **MBLK-99239-99239** Units: **mg/Kg** Analysis Date: **3/14/2017 02:21 PM**
Client ID: Run ID: **GALLERY_170314A** SeqNo: **4325471** Prep Date: **3/14/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	10								

MS Sample ID: **1703431-02A MS** Units: **mg/Kg** Analysis Date: **3/14/2017 02:21 PM**
Client ID: Run ID: **GALLERY_170314A** SeqNo: **4325529** Prep Date: **3/14/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	610.2	10	499	76.74	107	75-125	0			

MSD Sample ID: **1703431-02A MSD** Units: **mg/Kg** Analysis Date: **3/14/2017 02:21 PM**
Client ID: Run ID: **GALLERY_170314A** SeqNo: **4325530** Prep Date: **3/14/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	618.1	10	499	76.74	108	75-125	610.2	1.28	25	

LCS1 Sample ID: **LCS1-99239-99239** Units: **mg/Kg** Analysis Date: **3/14/2017 02:21 PM**
Client ID: Run ID: **GALLERY_170314A** SeqNo: **4325472** Prep Date: **3/14/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	96.55	10	100	0	96.6	80-120	0			

LCS2 Sample ID: **LCS2-99239-99239** Units: **mg/Kg** Analysis Date: **3/14/2017 02:21 PM**
Client ID: Run ID: **GALLERY_170314A** SeqNo: **4325517** Prep Date: **3/14/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	483	10	500	0	96.6	80-120	0			

The following samples were analyzed in this batch:

1703438-01A	1703438-02A	1703438-03A
1703438-04A	1703438-05A	1703438-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 1703438
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **R207349** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R207349** Units: **% of sample** Analysis Date: **3/8/2017 04:24 PM**
Client ID: Run ID: **MOIST_170308C** SeqNo: **4316737** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R207349** Units: **% of sample** Analysis Date: **3/8/2017 04:24 PM**
Client ID: Run ID: **MOIST_170308C** SeqNo: **4316736** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1703431-02A DUP** Units: **% of sample** Analysis Date: **3/8/2017 04:24 PM**
Client ID: Run ID: **MOIST_170308C** SeqNo: **4316715** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	7.99	0.050	0	0	0		7.95	0.502	5	

DUP Sample ID: **1703438-05A DUP** Units: **% of sample** Analysis Date: **3/8/2017 04:24 PM**
Client ID: **RDX 15-11-4 2'** Run ID: **MOIST_170308C** SeqNo: **4316727** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	14.06	0.050	0	0	0		14.09	0.213	5	

The following samples were analyzed in this batch:

1703438-01A	1703438-02A	1703438-03A
1703438-04A	1703438-05A	1703438-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Laboratory Group

HOLLAND, Michigan 49424

Chain-of-Custody

Form 202r6

WORKORDER # 1703438

		SAMPLER		DATE	3/7/2017
PROJECT NAME	RDX 15-11	SITE ID	RDX 15-11	TURNAROUND	5 day
PROJECT No.		EDD FORMAT			
		PURCHASE ORDER			
COMPANY NAME	WPX Energy	BILL TO COMPANY	WPX Energy		
SEND REPORT TO	Blaney	INVOICE ATTN TO	Karolina Blaney		
ADDRESS		ADDRESS	5315 Buena Vista Dr		
CITY / STATE / ZIP		CITY / STATE / ZIP	Carlsbad, NM 88220		
PHONE		PHONE	970 589 0743		
FAX		FAX			
E-MAIL	Karolina.blaney@wpxenergy.com;	E-MAIL	Karolina.blaney@wpxenergy.com		

PAGE 1 of 1

DISPOSAL By Lab or Return to Client

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	Chloride
1	RDX 15-11-3 1'	S	3/2/2017	9:30	1	8	x	x
2	RDX 15-11-3 2'	S	3/2/2017	9:35	1	8	x	x
3	RDX 15-11-3 3'	S	3/2/2017	9:40	1	8	x	x
4	RDX 15-11-4 1'	S	3/2/2017	9:45	1	8	x	x
5	RDX 15-11-4 2'	S	3/2/2017	9:50	1	8	x	x
6	RDX 15-11-4 3'	S	3/2/2017	9:55	1	8	x	x

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:

QC PACKAGE (check below)	
X	LEVEL II (Standard QC)
	LEVEL III (Std QC + forms)
	LEVEL IV (Std QC + forms + raw data)

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	Karolina Blaney	Karolina Blaney	3/7/2017	15:00
RECEIVED BY	MBroadbent	MBroadbent	3/8/17	950
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

ALS Group, USA

Sample Receipt Checklist

Client Name: **WPX - NM** Date/Time Received: **08-Mar-17 09:30**

Work Order: **1703438** Received by: **MBB**

Checklist completed by Meghan Broadbent eSignature 08-Mar-17 Date Reviewed by: Chad Whelton eSignature 08-Mar-17 Date

Matrices: soil
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0/3.0	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/8/2017 11:39:50 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	_		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

SRC Page 1 of 1

02-Feb-2018

James Raley
WPX Energy
5315 Buena Vista Dr.
Carlsbad, NM 88220

Re: **RDX 15-11** Work Order: **18011341**

Dear James,

ALS Environmental received 15 samples on 26-Jan-2018 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 32.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ALS Group, USA

Date: 02-Feb-18

Client: WPX Energy
Project: RDX 15-11
Work Order: **18011341**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
18011341-01	S1 (0-2 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-02	S1 (2-4 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-03	S1 (4-6 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-04	S2 (0-2 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-05	S2 (2-4 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-06	S2 (4-6 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-07	S3 (0-2 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-08	S3 (2-4 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-09	S3 (4-6 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-10	S4 (0-2 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-11	S4 (2-4 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-12	S4 (4-6 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-13	S5 (0-2 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-14	S5 (2-4 ft)	Soil		1/23/2018	1/26/2018 09:30	☐
18011341-15	S5 (4-6 ft)	Soil		1/23/2018	1/26/2018 09:30	☐

ALS Group, USA

Date: 02-Feb-18

Client: WPX Energy
Project: RDX 15-11
Work Order: 18011341

Case Narrative

Batch 113626, Method DRLVI_8015_S, Sample 18011341-13A MS/MSD: The MS/MSD recovery was below the lower control limit for DRO/ORO. The corresponding result in the parent sample may be biased low.

Batch R229228, Method MOISTURE, Sample 18011341-01A DUP: RPD is outside of test defined limits for moisture. Results should be considered estimated.

ALS Group, USA

Date: 02-Feb-18

Client: WPX Energy
Project: RDX 15-11
WorkOrder: **18011341**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S1 (0-2 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/30/18 13:46		Analyst: **MEB**
DRO (C10-C28)	**210**		**7.0**	**mg/Kg-dry**	1	1/31/2018 02:26 AM
ORO (C28-C40)	**71**		**7.0**	**mg/Kg-dry**	1	1/31/2018 02:26 AM
Surr: 4-Terphenyl-d14	*95.6*		*34-130*	*%REC*	1	1/31/2018 02:26 AM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		9.1	mg/Kg-dry	1	1/30/2018 05:05 AM
Surr: Toluene-d8	*102*		*71-123*	*%REC*	1	1/30/2018 05:05 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **BG**
Benzene	ND		0.055	mg/Kg-dry	1	1/30/2018 12:06 PM
Ethylbenzene	ND		0.055	mg/Kg-dry	1	1/30/2018 12:06 PM
m,p-Xylene	ND		0.11	mg/Kg-dry	1	1/30/2018 12:06 PM
o-Xylene	ND		0.055	mg/Kg-dry	1	1/30/2018 12:06 PM
Toluene	ND		0.055	mg/Kg-dry	1	1/30/2018 12:06 PM
Xylenes, Total	ND		0.16	mg/Kg-dry	1	1/30/2018 12:06 PM
Surr: 1,2-Dichloroethane-d4	*102*		*70-130*	*%REC*	1	1/30/2018 12:06 PM
Surr: 4-Bromofluorobenzene	*98.0*		*70-130*	*%REC*	1	1/30/2018 12:06 PM
Surr: Dibromofluoromethane	*95.7*		*70-130*	*%REC*	1	1/30/2018 12:06 PM
Surr: Toluene-d8	*97.6*		*70-130*	*%REC*	1	1/30/2018 12:06 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**8,300**		**140**	**mg/Kg-dry**	10	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**29**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S1 (2-4 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/30/18 13:46		Analyst: **MEB**
DRO (C10-C28)	ND		11	mg/Kg-dry	1	1/31/2018 02:55 AM
ORO (C28-C40)	ND		11	mg/Kg-dry	1	1/31/2018 02:55 AM
Surr: 4-Terphenyl-d14	*77.6*		*34-130*	*%REC*	1	1/31/2018 02:55 AM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		7.7	mg/Kg-dry	1	1/30/2018 06:33 AM
Surr: Toluene-d8	*101*		*71-123*	*%REC*	1	1/30/2018 06:33 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **BG**
Benzene	ND		0.046	mg/Kg-dry	1	1/30/2018 12:21 PM
Ethylbenzene	ND		0.046	mg/Kg-dry	1	1/30/2018 12:21 PM
m,p-Xylene	ND		0.092	mg/Kg-dry	1	1/30/2018 12:21 PM
o-Xylene	ND		0.046	mg/Kg-dry	1	1/30/2018 12:21 PM
Toluene	ND		0.046	mg/Kg-dry	1	1/30/2018 12:21 PM
Xylenes, Total	ND		0.14	mg/Kg-dry	1	1/30/2018 12:21 PM
Surr: 1,2-Dichloroethane-d4	*100*		*70-130*	*%REC*	1	1/30/2018 12:21 PM
Surr: 4-Bromofluorobenzene	*97.4*		*70-130*	*%REC*	1	1/30/2018 12:21 PM
Surr: Dibromofluoromethane	*98.0*		*70-130*	*%REC*	1	1/30/2018 12:21 PM
Surr: Toluene-d8	*95.8*		*70-130*	*%REC*	1	1/30/2018 12:21 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**620**		**12**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**21**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S1 (4-6 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-03
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/30/18 13:46		Analyst: **MEB**
DRO (C10-C28)	ND		12	mg/Kg-dry	1	1/31/2018 03:24 AM
ORO (C28-C40)	ND		12	mg/Kg-dry	1	1/31/2018 03:24 AM
Surr: 4-Terphenyl-d14	*79.1*		*34-130*	*%REC*	1	1/31/2018 03:24 AM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		8.5	mg/Kg-dry	1	1/30/2018 07:02 AM
Surr: Toluene-d8	*101*		*71-123*	*%REC*	1	1/30/2018 07:02 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **BG**
Benzene	ND		0.051	mg/Kg-dry	1	1/30/2018 12:37 PM
Ethylbenzene	ND		0.051	mg/Kg-dry	1	1/30/2018 12:37 PM
m,p-Xylene	ND		0.10	mg/Kg-dry	1	1/30/2018 12:37 PM
o-Xylene	ND		0.051	mg/Kg-dry	1	1/30/2018 12:37 PM
Toluene	ND		0.051	mg/Kg-dry	1	1/30/2018 12:37 PM
Xylenes, Total	ND		0.15	mg/Kg-dry	1	1/30/2018 12:37 PM
Surr: 1,2-Dichloroethane-d4	*100*		*70-130*	*%REC*	1	1/30/2018 12:37 PM
Surr: 4-Bromofluorobenzene	*97.4*		*70-130*	*%REC*	1	1/30/2018 12:37 PM
Surr: Dibromofluoromethane	*95.9*		*70-130*	*%REC*	1	1/30/2018 12:37 PM
Surr: Toluene-d8	*97.2*		*70-130*	*%REC*	1	1/30/2018 12:37 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**630**		**13**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**26**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S2 (0-2 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-04
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	**1,300**		**6.8**	**mg/Kg-dry**	1	1/31/2018 09:21 PM
ORO (C28-C40)	**500**		**6.8**	**mg/Kg-dry**	1	1/31/2018 09:21 PM
Surr: 4-Terphenyl-d14	*67.1*		*34-130*	*%REC*	1	1/31/2018 09:21 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		8.7	mg/Kg-dry	1	1/30/2018 07:32 AM
Surr: Toluene-d8	*100*		*71-123*	*%REC*	1	1/30/2018 07:32 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **BG**
Benzene	ND		0.052	mg/Kg-dry	1	1/30/2018 12:52 PM
Ethylbenzene	ND		0.052	mg/Kg-dry	1	1/30/2018 12:52 PM
m,p-Xylene	ND		0.10	mg/Kg-dry	1	1/30/2018 12:52 PM
o-Xylene	ND		0.052	mg/Kg-dry	1	1/30/2018 12:52 PM
Toluene	ND		0.052	mg/Kg-dry	1	1/30/2018 12:52 PM
Xylenes, Total	ND		0.16	mg/Kg-dry	1	1/30/2018 12:52 PM
Surr: 1,2-Dichloroethane-d4	*102*		*70-130*	*%REC*	1	1/30/2018 12:52 PM
Surr: 4-Bromofluorobenzene	*97.0*		*70-130*	*%REC*	1	1/30/2018 12:52 PM
Surr: Dibromofluoromethane	*99.6*		*70-130*	*%REC*	1	1/30/2018 12:52 PM
Surr: Toluene-d8	*95.1*		*70-130*	*%REC*	1	1/30/2018 12:52 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**13,000**		**140**	**mg/Kg-dry**	10	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**27**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S2 (2-4 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-05
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		6.5	mg/Kg-dry	1	1/31/2018 09:50 PM
ORO (C28-C40)	ND		6.5	mg/Kg-dry	1	1/31/2018 09:50 PM
Surr: 4-Terphenyl-d14	*57.6*		*34-130*	*%REC*	1	1/31/2018 09:50 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		8.5	mg/Kg-dry	1	1/30/2018 08:01 AM
Surr: Toluene-d8	*100*		*71-123*	*%REC*	1	1/30/2018 08:01 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **BG**
Benzene	ND		0.051	mg/Kg-dry	1	1/30/2018 01:07 AM
Ethylbenzene	ND		0.051	mg/Kg-dry	1	1/30/2018 01:07 AM
m,p-Xylene	ND		0.10	mg/Kg-dry	1	1/30/2018 01:07 AM
o-Xylene	ND		0.051	mg/Kg-dry	1	1/30/2018 01:07 AM
Toluene	ND		0.051	mg/Kg-dry	1	1/30/2018 01:07 AM
Xylenes, Total	ND		0.15	mg/Kg-dry	1	1/30/2018 01:07 AM
Surr: 1,2-Dichloroethane-d4	*104*		*70-130*	*%REC*	1	1/30/2018 01:07 AM
Surr: 4-Bromofluorobenzene	*99.0*		*70-130*	*%REC*	1	1/30/2018 01:07 AM
Surr: Dibromofluoromethane	*99.0*		*70-130*	*%REC*	1	1/30/2018 01:07 AM
Surr: Toluene-d8	*98.8*		*70-130*	*%REC*	1	1/30/2018 01:07 AM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**420**		**14**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**26**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S2 (4-6 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-06
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		6.6	mg/Kg-dry	1	1/31/2018 10:19 PM
ORO (C28-C40)	ND		6.6	mg/Kg-dry	1	1/31/2018 10:19 PM
Surr: 4-Terphenyl-d14	*59.1*		*34-130*	*%REC*	1	1/31/2018 10:19 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		8.3	mg/Kg-dry	1	1/30/2018 08:30 AM
Surr: Toluene-d8	*101*		*71-123*	*%REC*	1	1/30/2018 08:30 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.050	mg/Kg-dry	1	1/29/2018 09:35 PM
Ethylbenzene	ND		0.050	mg/Kg-dry	1	1/29/2018 09:35 PM
m,p-Xylene	ND		0.10	mg/Kg-dry	1	1/29/2018 09:35 PM
o-Xylene	ND		0.050	mg/Kg-dry	1	1/29/2018 09:35 PM
Toluene	ND		0.050	mg/Kg-dry	1	1/29/2018 09:35 PM
Xylenes, Total	ND		0.15	mg/Kg-dry	1	1/29/2018 09:35 PM
Surr: 1,2-Dichloroethane-d4	*100*		*70-130*	*%REC*	1	1/29/2018 09:35 PM
Surr: 4-Bromofluorobenzene	*95.1*		*70-130*	*%REC*	1	1/29/2018 09:35 PM
Surr: Dibromofluoromethane	*99.4*		*70-130*	*%REC*	1	1/29/2018 09:35 PM
Surr: Toluene-d8	*97.4*		*70-130*	*%REC*	1	1/29/2018 09:35 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**330**		**13**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**25**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S3 (0-2 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-07
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		6.6	mg/Kg-dry	1	1/31/2018 10:48 PM
ORO (C28-C40)	ND		6.6	mg/Kg-dry	1	1/31/2018 10:48 PM
Surr: 4-Terphenyl-d14	*52.6*		*34-130*	*%REC*	1	1/31/2018 10:48 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		8.3	mg/Kg-dry	1	1/30/2018 09:00 AM
Surr: Toluene-d8	*101*		*71-123*	*%REC*	1	1/30/2018 09:00 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.050	mg/Kg-dry	1	1/29/2018 09:51 PM
Ethylbenzene	ND		0.050	mg/Kg-dry	1	1/29/2018 09:51 PM
m,p-Xylene	ND		0.10	mg/Kg-dry	1	1/29/2018 09:51 PM
o-Xylene	ND		0.050	mg/Kg-dry	1	1/29/2018 09:51 PM
Toluene	ND		0.050	mg/Kg-dry	1	1/29/2018 09:51 PM
Xylenes, Total	ND		0.15	mg/Kg-dry	1	1/29/2018 09:51 PM
Surr: 1,2-Dichloroethane-d4	*102*		*70-130*	*%REC*	1	1/29/2018 09:51 PM
Surr: 4-Bromofluorobenzene	*97.2*		*70-130*	*%REC*	1	1/29/2018 09:51 PM
Surr: Dibromofluoromethane	*98.7*		*70-130*	*%REC*	1	1/29/2018 09:51 PM
Surr: Toluene-d8	*98.2*		*70-130*	*%REC*	1	1/29/2018 09:51 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**14**		**13**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**25**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S3 (2-4 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-08
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		6.4	mg/Kg-dry	1	1/31/2018 11:17 PM
ORO (C28-C40)	ND		6.4	mg/Kg-dry	1	1/31/2018 11:17 PM
Surr: 4-Terphenyl-d14	*56.6*		*34-130*	*%REC*	1	1/31/2018 11:17 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		8.3	mg/Kg-dry	1	1/30/2018 09:29 AM
Surr: Toluene-d8	*102*		*71-123*	*%REC*	1	1/30/2018 09:29 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.050	mg/Kg-dry	1	1/29/2018 10:06 PM
Ethylbenzene	ND		0.050	mg/Kg-dry	1	1/29/2018 10:06 PM
m,p-Xylene	ND		0.10	mg/Kg-dry	1	1/29/2018 10:06 PM
o-Xylene	ND		0.050	mg/Kg-dry	1	1/29/2018 10:06 PM
Toluene	ND		0.050	mg/Kg-dry	1	1/29/2018 10:06 PM
Xylenes, Total	ND		0.15	mg/Kg-dry	1	1/29/2018 10:06 PM
Surr: 1,2-Dichloroethane-d4	*103*		*70-130*	*%REC*	1	1/29/2018 10:06 PM
Surr: 4-Bromofluorobenzene	*91.8*		*70-130*	*%REC*	1	1/29/2018 10:06 PM
Surr: Dibromofluoromethane	*101*		*70-130*	*%REC*	1	1/29/2018 10:06 PM
Surr: Toluene-d8	*98.8*		*70-130*	*%REC*	1	1/29/2018 10:06 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	ND		13	mg/Kg-dry	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**25**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S3 (4-6 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-09
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		6.6	mg/Kg-dry	1	1/31/2018 11:46 PM
ORO (C28-C40)	ND		6.6	mg/Kg-dry	1	1/31/2018 11:46 PM
Surr: 4-Terphenyl-d14	*69.6*		*34-130*	*%REC*	1	1/31/2018 11:46 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		8.5	mg/Kg-dry	1	1/30/2018 09:59 AM
Surr: Toluene-d8	*101*		*71-123*	*%REC*	1	1/30/2018 09:59 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.051	mg/Kg-dry	1	1/29/2018 10:22 PM
Ethylbenzene	ND		0.051	mg/Kg-dry	1	1/29/2018 10:22 PM
m,p-Xylene	ND		0.10	mg/Kg-dry	1	1/29/2018 10:22 PM
o-Xylene	ND		0.051	mg/Kg-dry	1	1/29/2018 10:22 PM
Toluene	ND		0.051	mg/Kg-dry	1	1/29/2018 10:22 PM
Xylenes, Total	ND		0.15	mg/Kg-dry	1	1/29/2018 10:22 PM
Surr: 1,2-Dichloroethane-d4	*103*		*70-130*	*%REC*	1	1/29/2018 10:22 PM
Surr: 4-Bromofluorobenzene	*93.4*		*70-130*	*%REC*	1	1/29/2018 10:22 PM
Surr: Dibromofluoromethane	*100*		*70-130*	*%REC*	1	1/29/2018 10:22 PM
Surr: Toluene-d8	*97.4*		*70-130*	*%REC*	1	1/29/2018 10:22 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**62**		**14**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**26**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S4 (0-2 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-10
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		5.7	mg/Kg-dry	1	2/1/2018 12:15 PM
ORO (C28-C40)	ND		5.7	mg/Kg-dry	1	2/1/2018 12:15 PM
Surr: 4-Terphenyl-d14	*65.1*		*34-130*	*%REC*	1	2/1/2018 12:15 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		6.6	mg/Kg-dry	1	1/30/2018 10:28 AM
Surr: Toluene-d8	*100*		*71-123*	*%REC*	1	1/30/2018 10:28 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.040	mg/Kg-dry	1	1/29/2018 10:37 PM
Ethylbenzene	ND		0.040	mg/Kg-dry	1	1/29/2018 10:37 PM
m,p-Xylene	ND		0.080	mg/Kg-dry	1	1/29/2018 10:37 PM
o-Xylene	ND		0.040	mg/Kg-dry	1	1/29/2018 10:37 PM
Toluene	ND		0.040	mg/Kg-dry	1	1/29/2018 10:37 PM
Xylenes, Total	ND		0.12	mg/Kg-dry	1	1/29/2018 10:37 PM
Surr: 1,2-Dichloroethane-d4	*104*		*70-130*	*%REC*	1	1/29/2018 10:37 PM
Surr: 4-Bromofluorobenzene	*94.2*		*70-130*	*%REC*	1	1/29/2018 10:37 PM
Surr: Dibromofluoromethane	*98.8*		*70-130*	*%REC*	1	1/29/2018 10:37 PM
Surr: Toluene-d8	*98.4*		*70-130*	*%REC*	1	1/29/2018 10:37 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**15**		**12**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**14**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S4 (2-4 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-11
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		8.3	mg/Kg-dry	1	2/1/2018 01:14 AM
ORO (C28-C40)	ND		8.3	mg/Kg-dry	1	2/1/2018 01:14 AM
Surr: 4-Terphenyl-d14	*70.1*		*34-130*	*%REC*	1	2/1/2018 01:14 AM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		8.2	mg/Kg-dry	1	1/30/2018 10:57 AM
Surr: Toluene-d8	*99.7*		*71-123*	*%REC*	1	1/30/2018 10:57 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.049	mg/Kg-dry	1	1/29/2018 10:53 PM
Ethylbenzene	ND		0.049	mg/Kg-dry	1	1/29/2018 10:53 PM
m,p-Xylene	ND		0.098	mg/Kg-dry	1	1/29/2018 10:53 PM
o-Xylene	ND		0.049	mg/Kg-dry	1	1/29/2018 10:53 PM
Toluene	ND		0.049	mg/Kg-dry	1	1/29/2018 10:53 PM
Xylenes, Total	ND		0.15	mg/Kg-dry	1	1/29/2018 10:53 PM
Surr: 1,2-Dichloroethane-d4	*103*		*70-130*	*%REC*	1	1/29/2018 10:53 PM
Surr: 4-Bromofluorobenzene	*95.3*		*70-130*	*%REC*	1	1/29/2018 10:53 PM
Surr: Dibromofluoromethane	*98.4*		*70-130*	*%REC*	1	1/29/2018 10:53 PM
Surr: Toluene-d8	*97.6*		*70-130*	*%REC*	1	1/29/2018 10:53 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**34**		**13**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**24**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S4 (4-6 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-12
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		7.5	mg/Kg-dry	1	2/1/2018 01:43 AM
ORO (C28-C40)	ND		7.5	mg/Kg-dry	1	2/1/2018 01:43 AM
Surr: 4-Terphenyl-d14	*69.1*		*34-130*	*%REC*	1	2/1/2018 01:43 AM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		7.7	mg/Kg-dry	1	1/30/2018 12:25 PM
Surr: Toluene-d8	*100*		*71-123*	*%REC*	1	1/30/2018 12:25 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.046	mg/Kg-dry	1	1/29/2018 11:09 PM
Ethylbenzene	ND		0.046	mg/Kg-dry	1	1/29/2018 11:09 PM
m,p-Xylene	ND		0.092	mg/Kg-dry	1	1/29/2018 11:09 PM
o-Xylene	ND		0.046	mg/Kg-dry	1	1/29/2018 11:09 PM
Toluene	ND		0.046	mg/Kg-dry	1	1/29/2018 11:09 PM
Xylenes, Total	ND		0.14	mg/Kg-dry	1	1/29/2018 11:09 PM
Surr: 1,2-Dichloroethane-d4	*104*		*70-130*	*%REC*	1	1/29/2018 11:09 PM
Surr: 4-Bromofluorobenzene	*92.8*		*70-130*	*%REC*	1	1/29/2018 11:09 PM
Surr: Dibromofluoromethane	*100*		*70-130*	*%REC*	1	1/29/2018 11:09 PM
Surr: Toluene-d8	*96.6*		*70-130*	*%REC*	1	1/29/2018 11:09 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**69**		**12**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**21**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S5 (0-2 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-13
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		5.3	mg/Kg-dry	1	1/31/2018 07:53 PM
ORO (C28-C40)	ND		5.3	mg/Kg-dry	1	1/31/2018 07:53 PM
Surr: 4-Terphenyl-d14	*46.0*		*34-130*	*%REC*	1	1/31/2018 07:53 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		5.8	mg/Kg-dry	1	1/30/2018 12:55 PM
Surr: Toluene-d8	*101*		*71-123*	*%REC*	1	1/30/2018 12:55 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.035	mg/Kg-dry	1	1/29/2018 11:24 PM
Ethylbenzene	ND		0.035	mg/Kg-dry	1	1/29/2018 11:24 PM
m,p-Xylene	ND		0.070	mg/Kg-dry	1	1/29/2018 11:24 PM
o-Xylene	ND		0.035	mg/Kg-dry	1	1/29/2018 11:24 PM
Toluene	ND		0.035	mg/Kg-dry	1	1/29/2018 11:24 PM
Xylenes, Total	ND		0.10	mg/Kg-dry	1	1/29/2018 11:24 PM
Surr: 1,2-Dichloroethane-d4	*104*		*70-130*	*%REC*	1	1/29/2018 11:24 PM
Surr: 4-Bromofluorobenzene	*94.5*		*70-130*	*%REC*	1	1/29/2018 11:24 PM
Surr: Dibromofluoromethane	*97.6*		*70-130*	*%REC*	1	1/29/2018 11:24 PM
Surr: Toluene-d8	*99.2*		*70-130*	*%REC*	1	1/29/2018 11:24 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	ND		11	mg/Kg-dry	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**7.5**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S5 (2-4 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-14
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		6.3	mg/Kg-dry	1	2/1/2018 02:12 AM
ORO (C28-C40)	ND		6.3	mg/Kg-dry	1	2/1/2018 02:12 AM
Surr: 4-Terphenyl-d14	*58.6*		*34-130*	*%REC*	1	2/1/2018 02:12 AM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		7.8	mg/Kg-dry	1	1/30/2018 01:24 PM
Surr: Toluene-d8	*101*		*71-123*	*%REC*	1	1/30/2018 01:24 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.047	mg/Kg-dry	1	1/29/2018 11:40 PM
Ethylbenzene	ND		0.047	mg/Kg-dry	1	1/29/2018 11:40 PM
m,p-Xylene	ND		0.094	mg/Kg-dry	1	1/29/2018 11:40 PM
o-Xylene	ND		0.047	mg/Kg-dry	1	1/29/2018 11:40 PM
Toluene	ND		0.047	mg/Kg-dry	1	1/29/2018 11:40 PM
Xylenes, Total	ND		0.14	mg/Kg-dry	1	1/29/2018 11:40 PM
Surr: 1,2-Dichloroethane-d4	*107*		*70-130*	*%REC*	1	1/29/2018 11:40 PM
Surr: 4-Bromofluorobenzene	*92.3*		*70-130*	*%REC*	1	1/29/2018 11:40 PM
Surr: Dibromofluoromethane	*99.7*		*70-130*	*%REC*	1	1/29/2018 11:40 PM
Surr: Toluene-d8	*96.6*		*70-130*	*%REC*	1	1/29/2018 11:40 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**140**		**13**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**22**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *02-Feb-18*

Client: WPX Energy
Project: RDX 15-11
Sample ID: S5 (4-6 ft)
Collection Date: 1/23/2018

Work Order: 18011341
Lab ID: 18011341-15
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015C**	Prep: SW3546 1/31/18 12:25		Analyst: **MEB**
DRO (C10-C28)	ND		6.7	mg/Kg-dry	1	2/1/2018 02:41 AM
ORO (C28-C40)	ND		6.7	mg/Kg-dry	1	2/1/2018 02:41 AM
Surr: 4-Terphenyl-d14	*65.6*		*34-130*	*%REC*	1	2/1/2018 02:41 AM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**	Prep: SW5035 1/29/18 16:08		Analyst: **MEB**
GRO (C6-C10)	ND		8.5	mg/Kg-dry	1	1/30/2018 01:54 PM
Surr: Toluene-d8	*101*		*71-123*	*%REC*	1	1/30/2018 01:54 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**	Prep: SW5035 1/29/18 14:02		Analyst: **WH**
Benzene	ND		0.051	mg/Kg-dry	1	1/29/2018 11:55 PM
Ethylbenzene	ND		0.051	mg/Kg-dry	1	1/29/2018 11:55 PM
m,p-Xylene	ND		0.10	mg/Kg-dry	1	1/29/2018 11:55 PM
o-Xylene	ND		0.051	mg/Kg-dry	1	1/29/2018 11:55 PM
Toluene	ND		0.051	mg/Kg-dry	1	1/29/2018 11:55 PM
Xylenes, Total	ND		0.15	mg/Kg-dry	1	1/29/2018 11:55 PM
Surr: 1,2-Dichloroethane-d4	*106*		*70-130*	*%REC*	1	1/29/2018 11:55 PM
Surr: 4-Bromofluorobenzene	*92.2*		*70-130*	*%REC*	1	1/29/2018 11:55 PM
Surr: Dibromofluoromethane	*101*		*70-130*	*%REC*	1	1/29/2018 11:55 PM
Surr: Toluene-d8	*98.7*		*70-130*	*%REC*	1	1/29/2018 11:55 PM
CHLORIDE			**A4500-CL E-11**	Prep: EXTRACT 1/29/18 17:45		Analyst: **STP**
Chloride	**48**		**13**	**mg/Kg-dry**	1	1/30/2018 06:30 PM
MOISTURE			**SW3550C**			Analyst: **NW**
Moisture	**26**		**0.050**	**% of sample**	1	1/31/2018 07:15 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 02-Feb-18

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **113563** Instrument ID **GC8** Method: **SW8015C**

MBLK Sample ID: **DBLKS1-113563-113563** Units: **mg/Kg** Analysis Date: **1/30/2018 03:18 PM**
Client ID: Run ID: **GC8_180130A** SeqNo: **4870238** Prep Date: **1/30/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
ORO (C28-C40)	ND	5.0								
Surr: 4-Terphenyl-d14	*2.582*	0	*3.328*	0	*77.6*	*34-130*	0			

LCS Sample ID: **DLCSS1-113563-113563** Units: **mg/Kg** Analysis Date: **1/30/2018 03:47 PM**
Client ID: Run ID: **GC8_180130A** SeqNo: **4870240** Prep Date: **1/30/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	297.8	5.0	330.6	0	90.1	65-122	0			
ORO (C28-C40)	304.7	5.0	330.6	0	92.1	81-116	0			
Surr: 4-Terphenyl-d14	*2.482*	0	*3.306*	0	*75.1*	*34-130*	0			

MS Sample ID: **18011336-02A MS** Units: **mg/Kg** Analysis Date: **1/30/2018 04:45 PM**
Client ID: Run ID: **GC8_180130A** SeqNo: **4870254** Prep Date: **1/30/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	224.6	4.9	329	0	68.3	65-122	0			
ORO (C28-C40)	219.9	4.9	329	0	66.8	81-116	0			S
Surr: 4-Terphenyl-d14	*1.96*	0	*3.29*	0	*59.6*	*34-130*	0			

MSD Sample ID: **18011336-02A MSD** Units: **mg/Kg** Analysis Date: **1/30/2018 05:14 PM**
Client ID: Run ID: **GC8_180130A** SeqNo: **4870256** Prep Date: **1/30/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	218.2	5.0	332	0	65.7	65-122	224.6	2.91	30	
ORO (C28-C40)	196.9	5.0	332	0	59.3	81-116	219.9	11	30	S
Surr: 4-Terphenyl-d14	*1.678*	0	*3.32*	0	*50.6*	*34-130*	1.96	*15.5*	*30*	

The following samples were analyzed in this batch:

18011341-01A	18011341-02A	18011341-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **113626** Instrument ID **GC8** Method: **SW8015C**

MBLK Sample ID: **DBLKS1-113626-113626** Units: **mg/Kg** Analysis Date: **1/31/2018 06:26 PM**
Client ID: Run ID: **GC8_180131A** SeqNo: **4873503** Prep Date: **1/31/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
ORO (C28-C40)	ND	5.0								
Surr: 4-Terphenyl-d14	*2.467*	0	*3.33*	0	*74.1*	*34-130*	0			

LCS Sample ID: **DLCSS1-113626-113626** Units: **mg/Kg** Analysis Date: **1/31/2018 06:55 PM**
Client ID: Run ID: **GC8_180131A** SeqNo: **4873504** Prep Date: **1/31/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	300	5.0	333	0	90.1	65-122	0			
ORO (C28-C40)	283.6	5.0	333	0	85.2	81-116	0			
Surr: 4-Terphenyl-d14	*2.417*	0	*3.33*	0	*72.6*	*34-130*	0			

MS Sample ID: **18011341-13A MS** Units: **mg/Kg** Analysis Date: **1/31/2018 08:23 PM**
Client ID: **S5 (0-2 ft)** Run ID: **GC8_180131A** SeqNo: **4873506** Prep Date: **1/31/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	197.4	4.9	324.3	0	60.9	65-122	0			S
ORO (C28-C40)	172	4.9	324.3	1.539	52.5	81-116	0			S
Surr: 4-Terphenyl-d14	*1.688*	0	*3.243*	0	*52.1*	*34-130*	0			

MSD Sample ID: **18011341-13A MSD** Units: **mg/Kg** Analysis Date: **1/31/2018 08:52 PM**
Client ID: **S5 (0-2 ft)** Run ID: **GC8_180131A** SeqNo: **4873507** Prep Date: **1/31/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	197	4.9	329.2	0	59.8	65-122	197.4	0.204	30	S
ORO (C28-C40)	205.2	4.9	329.2	1.539	61.9	81-116	172	17.7	30	S
Surr: 4-Terphenyl-d14	*1.714*	0	*3.292*	0	*52.1*	*34-130*	1.688	*1.5*	*30*	

The following samples were analyzed in this batch:

18011341-04A	18011341-05A	18011341-06A
18011341-07A	18011341-08A	18011341-09A
18011341-10A	18011341-11A	18011341-12A
18011341-13A	18011341-14A	18011341-15A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **113516** Instrument ID **GC9** Method: **SW8015D**

MBLK Sample ID: **MBLK-113516-113516** Units: **µg/Kg-dry** Analysis Date: **1/29/2018 07:45 PM**
Client ID: Run ID: **GC9_180129A** SeqNo: **4870430** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	5,000								
Surr: Toluene-d8	*5205*	0	*5000*	0	*104*	*71-123*	0			

LCS Sample ID: **LCS-113516-113516** Units: **µg/Kg-dry** Analysis Date: **1/29/2018 06:17 PM**
Client ID: Run ID: **GC9_180129A** SeqNo: **4870428** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	516500	5,000	500000	0	103	71-123	0			
Surr: Toluene-d8	*4512*	0	*5000*	0	*90.2*	*71-123*	0			

MS Sample ID: **18011336-01A MS** Units: **µg/Kg-dry** Analysis Date: **1/30/2018 09:24 PM**
Client ID: Run ID: **GC9_180130A** SeqNo: **4871482** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	921200	5,900	585800	0	157	71-123	0			S
Surr: Toluene-d8	*5546*	0	*5858*	0	*94.7*	*71-123*	0			

MSD Sample ID: **18011336-01A MSD** Units: **µg/Kg-dry** Analysis Date: **1/30/2018 09:53 PM**
Client ID: Run ID: **GC9_180130A** SeqNo: **4871483** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	698800	5,900	585800	0	119	71-123	921200	27.5	30	
Surr: Toluene-d8	*5391*	0	*5858*	0	*92*	*71-123*	5546	*2.82*	*30*	

The following samples were analyzed in this batch:

18011341-01A	18011341-02A	18011341-03A
18011341-04A	18011341-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **113527** Instrument ID **GC9** Method: **SW8015D**

MBLK Sample ID: **MBLK-113527-113527** Units: **µg/Kg-dry** Analysis Date: **1/29/2018 08:15 PM**
Client ID: Run ID: **GC9_180129A** SeqNo: **4870431** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	5,000								
Surr: Toluene-d8	*5022*	0	*5000*	0	*100*	*71-123*	0			

LCS Sample ID: **LCS-113527-113527** Units: **µg/Kg-dry** Analysis Date: **1/29/2018 06:46 PM**
Client ID: Run ID: **GC9_180129A** SeqNo: **4870429** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	484900	5,000	500000	0	97	71-123	0			
Surr: Toluene-d8	*4458*	0	*5000*	0	*89.2*	*71-123*	0			

MS Sample ID: **18011339-01A MS** Units: **µg/Kg-dry** Analysis Date: **1/30/2018 10:23 PM**
Client ID: Run ID: **GC9_180130A** SeqNo: **4871484** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	649000	6,200	623600	0	104	71-123	0			
Surr: Toluene-d8	*5676*	0	*6236*	0	*91*	*71-123*	0			

MSD Sample ID: **18011339-01A MSD** Units: **µg/Kg-dry** Analysis Date: **1/30/2018 10:52 PM**
Client ID: Run ID: **GC9_180130A** SeqNo: **4871485** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	652800	6,200	623600	0	105	71-123	649000	0.58	30	
Surr: Toluene-d8	*5941*	0	*6236*	0	*95.3*	*71-123*	5676	*4.56*	*30*	

The following samples were analyzed in this batch:

18011341-06A	18011341-07A	18011341-08A
18011341-09A	18011341-10A	18011341-11A
18011341-12A	18011341-13A	18011341-14A
18011341-15A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **113514** Instrument ID **VMS8** Method: **SW8260B**

MBLK Sample ID: **MBLK-113514-113514** Units: **µg/Kg-dry** Analysis Date: **1/29/2018 08:00 PM**
Client ID: Run ID: **VMS8_180129B** SeqNo: **4868373** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30								
Ethylbenzene	ND	30								
m,p-Xylene	ND	60								
o-Xylene	ND	30								
Toluene	ND	30								
Xylenes, Total	ND	90								
Surr: 1,2-Dichloroethane-d4	*955.5*	0	*1000*	0	*95.6*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*968*	0	*1000*	0	*96.8*	*70-130*	0			
Surr: Dibromofluoromethane	*974*	0	*1000*	0	*97.4*	*70-130*	0			
Surr: Toluene-d8	*962*	0	*1000*	0	*96.2*	*70-130*	0			

LCS Sample ID: **LCS-113514-113514** Units: **µg/Kg-dry** Analysis Date: **1/29/2018 07:14 PM**
Client ID: Run ID: **VMS8_180129B** SeqNo: **4868372** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1102	30	1000	0	110	75-125	0			
Ethylbenzene	1101	30	1000	0	110	75-125	0			
m,p-Xylene	2225	60	2000	0	111	80-125	0			
o-Xylene	1078	30	1000	0	108	75-125	0			
Toluene	1098	30	1000	0	110	70-125	0			
Xylenes, Total	3304	90	3000	0	110	75-125	0			
Surr: 1,2-Dichloroethane-d4	*973*	0	*1000*	0	*97.3*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*986*	0	*1000*	0	*98.6*	*70-130*	0			
Surr: Dibromofluoromethane	*1010*	0	*1000*	0	*101*	*70-130*	0			
Surr: Toluene-d8	*965*	0	*1000*	0	*96.5*	*70-130*	0			

MS Sample ID: **18011336-01A MS** Units: **µg/Kg-dry** Analysis Date: **1/30/2018 05:28 PM**
Client ID: Run ID: **VMS8_180130A** SeqNo: **4869515** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1343	35	1172	0	115	75-125	0			
Ethylbenzene	1317	35	1172	0	112	75-125	0			
m,p-Xylene	2648	70	2343	0	113	80-125	0			
o-Xylene	1306	35	1172	0	111	75-125	0			
Toluene	1282	35	1172	0	109	70-125	0			
Xylenes, Total	3953	110	3515	0	112	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1223*	0	*1172*	0	*104*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1209*	0	*1172*	0	*103*	*70-130*	0			
Surr: Dibromofluoromethane	*1140*	0	*1172*	0	*97.3*	*70-130*	0			
Surr: Toluene-d8	*1141*	0	*1172*	0	*97.4*	*70-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **113514** Instrument ID **VMS8** Method: **SW8260B**

MSD Sample ID: **18011336-01A MSD** Units: **µg/Kg-dry** Analysis Date: **1/30/2018 05:44 PM**
Client ID: Run ID: **VMS8_180130A** SeqNo: **4869516** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1346	35	1172	0	115	75-125	1343	0.218	30	
Ethylbenzene	1313	35	1172	0	112	75-125	1317	0.356	30	
m,p-Xylene	2670	70	2343	0	114	80-125	2648	0.837	30	
o-Xylene	1300	35	1172	0	111	75-125	1306	0.405	30	
Toluene	1300	35	1172	0	111	70-125	1282	1.41	30	
Xylenes, Total	3970	110	3515	0	113	75-125	3953	0.429	30	
Surr: 1,2-Dichloroethane-d4	*1212*	0	*1172*	0	*103*	*70-130*	1223	*0.866*	*30*	
Surr: 4-Bromofluorobenzene	*1211*	0	*1172*	0	*103*	*70-130*	1209	*0.194*	*30*	
Surr: Dibromofluoromethane	*1139*	0	*1172*	0	*97.2*	*70-130*	1140	*0.103*	*30*	
Surr: Toluene-d8	*1162*	0	*1172*	0	*99.2*	*70-130*	1141	*1.88*	*30*	

The following samples were analyzed in this batch:

18011341-01A	18011341-02A	18011341-03A
18011341-04A	18011341-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **113515** Instrument ID **VMS10** Method: **SW8260B**

MBLK Sample ID: **MBLK-113515-113515** Units: **µg/Kg-dry** Analysis Date: **1/29/2018 09:20 PM**
Client ID: Run ID: **VMS10_180129B** SeqNo: **4868618** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	30								
Ethylbenzene	ND	30								
m,p-Xylene	ND	60								
o-Xylene	ND	30								
Toluene	ND	30								
Xylenes, Total	ND	90								
Surr: 1,2-Dichloroethane-d4	*1036*	0	*1000*	0	*104*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*944*	0	*1000*	0	*94.4*	*70-130*	0			
Surr: Dibromofluoromethane	*1006*	0	*1000*	0	*101*	*70-130*	0			
Surr: Toluene-d8	*975*	0	*1000*	0	*97.5*	*70-130*	0			

LCS Sample ID: **LCS-113515-113515** Units: **µg/Kg-dry** Analysis Date: **1/29/2018 08:33 PM**
Client ID: Run ID: **VMS10_180129B** SeqNo: **4868617** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1072	30	1000	0	107	75-125	0			
Ethylbenzene	959	30	1000	0	95.9	75-125	0			
m,p-Xylene	1914	60	2000	0	95.7	80-125	0			
o-Xylene	958.5	30	1000	0	95.8	75-125	0			
Toluene	1058	30	1000	0	106	70-125	0			
Xylenes, Total	2872	90	3000	0	95.7	75-125	0			
Surr: 1,2-Dichloroethane-d4	*963.5*	0	*1000*	0	*96.4*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1024*	0	*1000*	0	*102*	*70-130*	0			
Surr: Dibromofluoromethane	*1002*	0	*1000*	0	*100*	*70-130*	0			
Surr: Toluene-d8	*999.5*	0	*1000*	0	*100*	*70-130*	0			

MS Sample ID: **18011339-01A MS** Units: **µg/Kg-dry** Analysis Date: **1/30/2018 02:31 AM**
Client ID: Run ID: **VMS10_180129B** SeqNo: **4868634** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1298	37	1247	0	104	75-125	0			
Ethylbenzene	1156	37	1247	0	92.6	75-125	0			
m,p-Xylene	2363	75	2494	0	94.7	80-125	0			
o-Xylene	1192	37	1247	0	95.6	75-125	0			
Toluene	1245	37	1247	0	99.8	70-125	0			
Xylenes, Total	3555	110	3742	0	95	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1202*	0	*1247*	0	*96.4*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1333*	0	*1247*	0	*107*	*70-130*	0			
Surr: Dibromofluoromethane	*1166*	0	*1247*	0	*93.4*	*70-130*	0			
Surr: Toluene-d8	*1224*	0	*1247*	0	*98.2*	*70-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **113515** Instrument ID **VMS10** Method: **SW8260B**

MSD Sample ID: **18011339-01A MSD** Units: **µg/Kg-dry** Analysis Date: **1/30/2018 02:47 AM**
Client ID: Run ID: **VMS10_180129B** SeqNo: **4868635** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1252	37	1247	0	100	75-125	1298	3.67	30	
Ethylbenzene	1175	37	1247	0	94.2	75-125	1156	1.71	30	
m,p-Xylene	2376	75	2494	0	95.2	80-125	2363	0.553	30	
o-Xylene	1207	37	1247	0	96.8	75-125	1192	1.2	30	
Toluene	1270	37	1247	0	102	70-125	1245	2.03	30	
Xylenes, Total	3583	110	3742	0	95.8	75-125	3555	0.769	30	
Surr: 1,2-Dichloroethane-d4	*1171*	0	*1247*	0	*93.9*	*70-130*	1202	*2.58*	*30*	
Surr: 4-Bromofluorobenzene	*1359*	0	*1247*	0	*109*	*70-130*	1333	*1.95*	*30*	
Surr: Dibromofluoromethane	*1200*	0	*1247*	0	*96.2*	*70-130*	1166	*2.95*	*30*	
Surr: Toluene-d8	*1291*	0	*1247*	0	*104*	*70-130*	1224	*5.31*	*30*	

The following samples were analyzed in this batch:

18011341-06A	18011341-07A	18011341-08A
18011341-09A	18011341-10A	18011341-11A
18011341-12A	18011341-13A	18011341-14A
18011341-15A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **113545** Instrument ID **GALLERY** Method: **A4500-Cl E-11**

MBLK Sample ID: **MBLK-113545-113545** Units: **mg/Kg** Analysis Date: **1/30/2018 06:30 PM**
Client ID: Run ID: **GALLERY_180130F** SeqNo: **4869690** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	10								

MS Sample ID: **18011339-04AMS** Units: **mg/Kg** Analysis Date: **1/30/2018 06:30 PM**
Client ID: Run ID: **GALLERY_180130F** SeqNo: **4869692** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	591.4	10	500	46.79	109	75-125	0			

MSD Sample ID: **18011339-04AMSD** Units: **mg/Kg** Analysis Date: **1/30/2018 06:30 PM**
Client ID: Run ID: **GALLERY_180130F** SeqNo: **4869693** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	604.7	10	500	46.79	112	75-125	591.4	2.22	25	

LCS1 Sample ID: **LCS1-113545-113545** Units: **mg/Kg** Analysis Date: **1/30/2018 06:30 PM**
Client ID: Run ID: **GALLERY_180130F** SeqNo: **4869713** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	96.95	10	100	0	96.9	80-120	0			

LCS2 Sample ID: **LCS2-113545-113545** Units: **mg/Kg** Analysis Date: **1/30/2018 06:30 PM**
Client ID: Run ID: **GALLERY_180130F** SeqNo: **4869714** Prep Date: **1/29/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	531.6	10	500	0	106	80-120	0			

The following samples were analyzed in this batch:

18011341-01A	18011341-02A	18011341-03A
18011341-04A	18011341-05A	18011341-06A
18011341-07A	18011341-08A	18011341-09A
18011341-10A	18011341-11A	18011341-12A
18011341-13A	18011341-14A	18011341-15A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: WPX Energy
Work Order: 18011341
Project: RDX 15-11

QC BATCH REPORT

Batch ID: **R229228** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R229228** Units: **% of sample** Analysis Date: **1/31/2018 07:15 PM**
Client ID: Run ID: **MOIST_180131F** SeqNo: **4873594** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	ND	0.050								

LCS Sample ID: **LCS-R229228** Units: **% of sample** Analysis Date: **1/31/2018 07:15 PM**
Client ID: Run ID: **MOIST_180131F** SeqNo: **4873593** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **18011341-01A DUP** Units: **% of sample** Analysis Date: **1/31/2018 07:15 PM**
Client ID: **S1 (0-2 ft)** Run ID: **MOIST_180131F** SeqNo: **4873576** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	26.33	0.050	0	0	0	0-0	29.39	11	10	R

DUP Sample ID: **18011341-07A DUP** Units: **% of sample** Analysis Date: **1/31/2018 07:15 PM**
Client ID: **S3 (0-2 ft)** Run ID: **MOIST_180131F** SeqNo: **4873583** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	23.77	0.050	0	0	0	0-0	25.23	5.96	10	

The following samples were analyzed in this batch:

18011341-01A	18011341-02A	18011341-03A
18011341-04A	18011341-05A	18011341-06A
18011341-07A	18011341-08A	18011341-09A
18011341-10A	18011341-11A	18011341-12A
18011341-13A	18011341-14A	18011341-15A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Laboratory Group

HOLLAND, Michigan 49424

Chain-of-Custody

Form 202r8

WORKORDER # 18011341

PAGE 1 of 1

DISPOSAL By Lab or Return to Client

PROJECT NAME	RDX 15-11	SAMPLER	
PROJECT No.	17E--00043	SITE ID	RDX 15-11
		EDD FORMAT	
COMPANY NAME	WPX Energy	PURCHASE ORDER	
SEND REPORT TO	Raley	BILL TO COMPANY	WPX Energy
ADDRESS		INVOICE ATTN TO	Jim Raley
CITY / STATE / ZIP		ADDRESS	5315 Buena Vista Dr
PHONE		CITY / STATE / ZIP	Carlsbad, NM 88220
FAX		PHONE	970 589 0743
E-MAIL	Karolina.blaney@wpxenergy.com; james.raley@wpxenergy.com	FAX	
		E-MAIL	Karolina.blaney@wpxenergy.com; James.Raley@wpxenergy.com

DATE 23/01/2018

TURNAROUND 5 days

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	DRO + GRO + ORO	BTEX	Chloride	Hold
1	S1 (0-2 ft)	S	23/01/2018		2			x	x	x	
2	S1 (2-4 ft)	S	23/01/2018		2			x	x	x	
3	S1 (4-6 ft)	S	23/01/2018		2			x	x	x	
4	S2 (0-2 ft)	S	23/01/2018		2			x	x	x	
5	S2 (2-4 ft)	S	23/01/2018		2			x	x	x	
6	S2 (4-6 ft)	S	23/01/2018		2			x	x	x	
7	S3 (0-2 ft)	S	23/01/2018		2			x	x	x	
8	S3 (2-4 ft)	S	23/01/2018		2			x	x	x	
9	S3 (4-6 ft)	S	23/01/2018		2			x	x	x	

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments: SR 5.7°C

QC PACKAGE (check below)	
X	LEVEL II (Standard QC)
	LEVEL III (Std QC + forms)
	LEVEL IV (Std QC + forms + raw data)

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	Karolina Blaney	Karolina Blaney	24/01/2018	15:00
RECEIVED BY		Kevin Wiegenick	1/25/18	0930
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

ALS Laboratory Group
HOLLAND, Michigan 49424

Chain-of-Custody

Form 202r8

WORKORDER # 1801134 1

PAGE 1 of 1

DISPOSAL By Lab or Return to Client

PROJECT NAME	RDX 15-11	SITE ID	RDX 15-11
PROJECT No.	17E--00043	EDD FORMAT	
		PURCHASE ORDER	
COMPANY NAME	WPX Energy	BILL TO COMPANY	WPX Energy
SEND REPORT TO	Raley	INVOICE ATTN TO	Jim Raley
ADDRESS		ADDRESS	5315 Buena Vista Dr
CITY / STATE / ZIP		CITY / STATE / ZIP	Carlsbad, NM 88220
PHONE		PHONE	970 589 0743
FAX		FAX	
E-MAIL	Karolina.blaney@wpxenergy.com; james.raley@wpxenergy.com	E-MAIL	Karolina.blaney@wpxenergy.com; James.Raley@wpxenergy.com

DATE 23/01/2018

TURNAROUND 5 days

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	DRO + GRO + ORO	BTEX	Chloride	Hold
10	S4 (0-2 ft)	S	23/01/2018		2			x	x	x	
11	S4 (2-4 ft)	S	23/01/2018		2			x	x	x	
12	S4 (4-6 ft)	S	23/01/2018		2			x	x	x	
13	S5 (0-2 ft)	S	23/01/2018		2			x	x	x	
14	S5 (2-4 ft)	S	23/01/2018		2			x	x	x	
15	S5 (4-6 ft)	S	23/01/2018		2			x	x	x	

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:

QC PACKAGE (check below)	
X	LEVEL II (Standard QC)
	LEVEL III (Std QC + forms)
	LEVEL IV (Std QC + forms + raw data)

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	Karolina Blaney	Karolina Blaney	24/01/2018	15:00
RECEIVED BY		KEITH WICKENDA	1/26/18	0930
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

ALS Group, USA

Sample Receipt Checklist

Client Name: **WPX - NM** Date/Time Received: **26-Jan-18 09:30**

Work Order: **18011341** Received by: **KRW**

Checklist completed by Keith Wierenga eSignature 26-Jan-18 Date Reviewed by: Chad Whelton eSignature 26-Jan-18 Date

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	5.2/5.2 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	1/26/2018 2:28:12 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Analytical Report 605809

for

LT Environmental, Inc.

Project Manager: Adrian Baker

RDX 15-11

27-NOV-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
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-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)

27-NOV-18

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

Reference: XENCO Report No(s): **605809**
RDX 15-11
Project Address: EDDY NM

Adrian Baker:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 605809. 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. 605809 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

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

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

Sample Cross Reference 605809

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SS01	S	11-14-18 16:00	6 In	605809-001
SS01	S	11-14-18 16:05	1 ft	605809-002
SS02	S	11-14-18 16:10	6 In	605809-003
SS02	S	11-14-18 16:15	1 ft	605809-004
SS03	S	11-14-18 16:20	6 In	605809-005
SS03	S	11-14-18 16:25	1 ft	605809-006
SS04	S	11-14-18 16:30	6 In	605809-007
SS04	S	11-14-18 16:40	1 ft	605809-008
SS05	S	11-14-18 16:55	6 In	605809-009
SS05	S	11-14-18 17:00	1 ft	605809-010

CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: RDX 15-11

Project ID:
Work Order Number(s): *605809*

Report Date: *27-NOV-18*
Date Received: *11/16/2018*

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3070611 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3070616 BTEX by EPA 8021B
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Certificate of Analysis Summary 605809

LT Environmental, Inc., Arvada, CO

Project Name: RDX 15-11

Project Id:
Contact: Adrian Baker
Project Location: EDDY NM

Date Received in Lab: Fri Nov-16-18 12:30 pm
Report Date: 27-NOV-18
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	605809-001		605809-002		605809-003		605809-004		605809-005		605809-006	
	Field Id:	SS01		SS01		SS02		SS02		SS03		SS03	
	Depth:	6- In		1- ft		6- In		1- ft		6- In		1- ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-14-18 16:00		Nov-14-18 16:05		Nov-14-18 16:10		Nov-14-18 16:15		Nov-14-18 16:20		Nov-14-18 16:25	
BTEX by EPA 8021B SUB: T104704219-18-18	*Extracted:*	Nov-20-18 10:00		Nov-20-18 10:00		Nov-20-18 10:00		Nov-20-18 10:00		Nov-20-18 10:00		Nov-20-18 10:00	
	Analyzed:	Nov-21-18 20:42		Nov-21-18 21:05		Nov-22-18 00:39		Nov-22-18 02:13		Nov-22-18 02:37		Nov-22-18 03:00	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.0192	0.0192	<0.0197	0.0197	<0.0192	0.0192	<0.0189	0.0189	<0.0198	0.0198	<0.0178	0.0178
Toluene		<0.0192	0.0192	<0.0197	0.0197	<0.0192	0.0192	<0.0189	0.0189	<0.0198	0.0198	<0.0178	0.0178
Ethylbenzene		<0.0192	0.0192	<0.0197	0.0197	<0.0192	0.0192	<0.0189	0.0189	<0.0198	0.0198	<0.0178	0.0178
m,p-Xylenes		<0.0385	0.0385	<0.0394	0.0394	<0.0385	0.0385	<0.0377	0.0377	<0.0396	0.0396	<0.0357	0.0357
o-Xylene		<0.0192	0.0192	<0.0197	0.0197	<0.0192	0.0192	<0.0189	0.0189	<0.0198	0.0198	<0.0178	0.0178
Total Xylenes		<0.0192	0.0192	<0.0197	0.0197	<0.0192	0.0192	<0.0189	0.0189	<0.0198	0.0198	<0.0178	0.0178
Total BTEX		<0.0192	0.0192	<0.0197	0.0197	<0.0192	0.0192	<0.0189	0.0189	<0.0198	0.0198	<0.0178	0.0178
Inorganic Anions by EPA 300 SUB: T104704219-18-18	*Extracted:*	Nov-19-18 17:30		Nov-19-18 17:30		Nov-19-18 17:30		Nov-19-18 17:30		Nov-19-18 17:30		Nov-19-18 17:30	
	Analyzed:	Nov-20-18 07:12		Nov-20-18 07:18		Nov-20-18 07:25		Nov-20-18 07:31		Nov-20-18 07:49		Nov-20-18 07:56	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		<4.97	4.97	<5.00	5.00	<4.99	4.99	<4.99	4.99	287	4.99	549	4.96
TPH by SW8015 Mod	*Extracted:*	Nov-16-18 16:00		Nov-16-18 16:00		Nov-16-18 16:00		Nov-16-18 16:00		Nov-16-18 16:00		Nov-16-18 16:00	
	Analyzed:	Nov-17-18 23:22		Nov-18-18 00:17		Nov-18-18 00:35		Nov-18-18 00:53		Nov-18-18 01:11		Nov-18-18 01:29	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Diesel Range Organics (DRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Total TPH		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0

Jessica Kramer
Project Assistant

Final 1.000

Certificate of Analysis Summary 605809

LT Environmental, Inc., Arvada, CO

Project Name: RDX 15-11

Project Id:
Contact: Adrian Baker
Project Location: EDDY NM

Date Received in Lab: Fri Nov-16-18 12:30 pm
Report Date: 27-NOV-18
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	605809-007		605809-008		605809-009		605809-010					
	Field Id:	SS04		SS04		SS05		SS05					
	Depth:	6- In		1- ft		6- In		1- ft					
	Matrix:	SOIL		SOIL		SOIL		SOIL					
	Sampled:	Nov-14-18 16:30		Nov-14-18 16:40		Nov-14-18 16:55		Nov-14-18 17:00					
BTEX by EPA 8021B SUB: T104704219-18-18	*Extracted:*	Nov-20-18 10:00		Nov-20-18 10:00		Nov-20-18 10:00		Nov-20-18 10:00					
	Analyzed:	Nov-22-18 03:24		Nov-22-18 03:47		Nov-22-18 04:11		Nov-22-18 04:35					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		<0.0193	0.0193	<0.0196	0.0196	<0.0197	0.0197	<0.0193	0.0193				
Toluene		<0.0193	0.0193	<0.0196	0.0196	<0.0197	0.0197	<0.0193	0.0193				
Ethylbenzene		<0.0193	0.0193	<0.0196	0.0196	<0.0197	0.0197	<0.0193	0.0193				
m,p-Xylenes		<0.0386	0.0386	<0.0392	0.0392	<0.0394	0.0394	<0.0385	0.0385				
o-Xylene		<0.0193	0.0193	<0.0196	0.0196	<0.0197	0.0197	<0.0193	0.0193				
Total Xylenes		<0.0193	0.0193	<0.0196	0.0196	<0.0197	0.0197	<0.0193	0.0193				
Total BTEX		<0.0193	0.0193	<0.0196	0.0196	<0.0197	0.0197	<0.0193	0.0193				
Inorganic Anions by EPA 300 SUB: T104704219-18-18	*Extracted:*	Nov-19-18 17:30		Nov-19-18 17:30		Nov-19-18 17:30		Nov-19-18 17:30					
	Analyzed:	Nov-20-18 08:14		Nov-20-18 08:20		Nov-20-18 08:26		Nov-20-18 08:33					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		60.7	4.98	78.8	4.98	50.7	5.00	223	5.00				
TPH by SW8015 Mod	*Extracted:*	Nov-16-18 16:00		Nov-16-18 16:00		Nov-16-18 16:00		Nov-16-18 16:00					
	Analyzed:	Nov-18-18 01:47		Nov-18-18 02:05		Nov-18-18 02:23		Nov-18-18 02:41					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		<14.9	14.9	<15.0	15.0	<15.0	15.0	<15.0	15.0				
Diesel Range Organics (DRO)		88.6	14.9	<15.0	15.0	<15.0	15.0	<15.0	15.0				
Motor Oil Range Hydrocarbons (MRO)		<14.9	14.9	<15.0	15.0	<15.0	15.0	<15.0	15.0				
Total TPH		88.6	14.9	<15.0	15.0	<15.0	15.0	<15.0	15.0				

Jessica Kramer
Project Assistant

Certificate of Analytical Results 605809

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS01**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-001	Date Collected:	11.14.18 16.00	Sample Depth:	6 In

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.97	4.97	mg/kg	11.20.18 07.12	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	11.17.18 23.22	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	11.17.18 23.22	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.17.18 23.22	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.17.18 23.22	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	11.17.18 23.22	
o-Terphenyl	84-15-1	95	%	70-135	11.17.18 23.22	

Certificate of Analytical Results 605809

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS01**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-001	Date Collected:	11.14.18 16.00	Sample Depth:	6 In
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070611			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0192	0.0192	mg/kg	11.21.18 20.42	U	1
Toluene	108-88-3	<0.0192	0.0192	mg/kg	11.21.18 20.42	U	1
Ethylbenzene	100-41-4	<0.0192	0.0192	mg/kg	11.21.18 20.42	U	1
m,p-Xylenes	179601-23-1	<0.0385	0.0385	mg/kg	11.21.18 20.42	U	1
o-Xylene	95-47-6	<0.0192	0.0192	mg/kg	11.21.18 20.42	U	1
Total Xylenes	1330-20-7	<0.0192	0.0192	mg/kg	11.21.18 20.42	U	1
Total BTEX		<0.0192	0.0192	mg/kg	11.21.18 20.42	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	114	%	68-120	11.21.18 20.42	
a,a,a-Trifluorotoluene	98-08-8	120	%	71-121	11.21.18 20.42	

Certificate of Analytical Results 605809

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS01**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-002	Date Collected:	11.14.18 16.05	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<5.00	5.00	mg/kg	11.20.18 07.18	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	11.18.18 00.17	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	11.18.18 00.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.18.18 00.17	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.18.18 00.17	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	11.18.18 00.17	
o-Terphenyl	84-15-1	98	%	70-135	11.18.18 00.17	

Certificate of Analytical Results 605809

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS01**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-002	Date Collected:	11.14.18 16.05	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070611			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0197	0.0197	mg/kg	11.21.18 21.05	U	1
Toluene	108-88-3	<0.0197	0.0197	mg/kg	11.21.18 21.05	U	1
Ethylbenzene	100-41-4	<0.0197	0.0197	mg/kg	11.21.18 21.05	U	1
m,p-Xylenes	179601-23-1	<0.0394	0.0394	mg/kg	11.21.18 21.05	U	1
o-Xylene	95-47-6	<0.0197	0.0197	mg/kg	11.21.18 21.05	U	1
Total Xylenes	1330-20-7	<0.0197	0.0197	mg/kg	11.21.18 21.05	U	1
Total BTEX		<0.0197	0.0197	mg/kg	11.21.18 21.05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	92	%	68-120	11.21.18 21.05	
a,a,a-Trifluorotoluene	98-08-8	96	%	71-121	11.21.18 21.05	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS02**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-003	Date Collected:	11.14.18 16.10	Sample Depth:	6 In

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.99	4.99	mg/kg	11.20.18 07.25	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	11.18.18 00.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	11.18.18 00.35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.18.18 00.35	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.18.18 00.35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	101	%	70-135	11.18.18 00.35	
o-Terphenyl	84-15-1	109	%	70-135	11.18.18 00.35	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS02**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-003	Date Collected:	11.14.18 16.10	Sample Depth:	6 In
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070616			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0192	0.0192	mg/kg	11.22.18 00.39	U	1
Toluene	108-88-3	<0.0192	0.0192	mg/kg	11.22.18 00.39	U	1
Ethylbenzene	100-41-4	<0.0192	0.0192	mg/kg	11.22.18 00.39	U	1
m,p-Xylenes	179601-23-1	<0.0385	0.0385	mg/kg	11.22.18 00.39	U	1
o-Xylene	95-47-6	<0.0192	0.0192	mg/kg	11.22.18 00.39	U	1
Total Xylenes	1330-20-7	<0.0192	0.0192	mg/kg	11.22.18 00.39	U	1
Total BTEX		<0.0192	0.0192	mg/kg	11.22.18 00.39	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	89	%	68-120	11.22.18 00.39	
a,a,a-Trifluorotoluene	98-08-8	95	%	71-121	11.22.18 00.39	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS02**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-004	Date Collected:	11.14.18 16.15	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<4.99	4.99	mg/kg	11.20.18 07.31	U	1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	11.18.18 00.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	11.18.18 00.53	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.18.18 00.53	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.18.18 00.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-135	11.18.18 00.53	
o-Terphenyl	84-15-1	114	%	70-135	11.18.18 00.53	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS02**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-004	Date Collected:	11.14.18 16.15	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070616			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0189	0.0189	mg/kg	11.22.18 02.13	U	1
Toluene	108-88-3	<0.0189	0.0189	mg/kg	11.22.18 02.13	U	1
Ethylbenzene	100-41-4	<0.0189	0.0189	mg/kg	11.22.18 02.13	U	1
m,p-Xylenes	179601-23-1	<0.0377	0.0377	mg/kg	11.22.18 02.13	U	1
o-Xylene	95-47-6	<0.0189	0.0189	mg/kg	11.22.18 02.13	U	1
Total Xylenes	1330-20-7	<0.0189	0.0189	mg/kg	11.22.18 02.13	U	1
Total BTEX		<0.0189	0.0189	mg/kg	11.22.18 02.13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	112	%	68-120	11.22.18 02.13	
a,a,a-Trifluorotoluene	98-08-8	116	%	71-121	11.22.18 02.13	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS03**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-005	Date Collected:	11.14.18 16.20	Sample Depth:	6 In

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**287**	4.99	mg/kg	11.20.18 07.49		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	11.18.18 01.11	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	11.18.18 01.11	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.18.18 01.11	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.18.18 01.11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	11.18.18 01.11	
o-Terphenyl	84-15-1	95	%	70-135	11.18.18 01.11	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS03**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-005	Date Collected:	11.14.18 16.20	Sample Depth:	6 In
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070616			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0198	0.0198	mg/kg	11.22.18 02.37	U	1
Toluene	108-88-3	<0.0198	0.0198	mg/kg	11.22.18 02.37	U	1
Ethylbenzene	100-41-4	<0.0198	0.0198	mg/kg	11.22.18 02.37	U	1
m,p-Xylenes	179601-23-1	<0.0396	0.0396	mg/kg	11.22.18 02.37	U	1
o-Xylene	95-47-6	<0.0198	0.0198	mg/kg	11.22.18 02.37	U	1
Total Xylenes	1330-20-7	<0.0198	0.0198	mg/kg	11.22.18 02.37	U	1
Total BTEX		<0.0198	0.0198	mg/kg	11.22.18 02.37	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	110	%	68-120	11.22.18 02.37	
a,a,a-Trifluorotoluene	98-08-8	117	%	71-121	11.22.18 02.37	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS03**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-006	Date Collected:	11.14.18 16.25	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**549**	4.96	mg/kg	11.20.18 07.56		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	11.18.18 01.29	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	11.18.18 01.29	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.18.18 01.29	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.18.18 01.29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	11.18.18 01.29	
o-Terphenyl	84-15-1	99	%	70-135	11.18.18 01.29	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS03**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-006	Date Collected:	11.14.18 16.25	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070616			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0178	0.0178	mg/kg	11.22.18 03.00	U	1
Toluene	108-88-3	<0.0178	0.0178	mg/kg	11.22.18 03.00	U	1
Ethylbenzene	100-41-4	<0.0178	0.0178	mg/kg	11.22.18 03.00	U	1
m,p-Xylenes	179601-23-1	<0.0357	0.0357	mg/kg	11.22.18 03.00	U	1
o-Xylene	95-47-6	<0.0178	0.0178	mg/kg	11.22.18 03.00	U	1
Total Xylenes	1330-20-7	<0.0178	0.0178	mg/kg	11.22.18 03.00	U	1
Total BTEX		<0.0178	0.0178	mg/kg	11.22.18 03.00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	115	%	68-120	11.22.18 03.00	
a,a,a-Trifluorotoluene	98-08-8	120	%	71-121	11.22.18 03.00	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS04**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-007	Date Collected:	11.14.18 16.30	Sample Depth:	6 In

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**60.7**	4.98	mg/kg	11.20.18 08.14		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	11.18.18 01.47	U	1
Diesel Range Organics (DRO)	C10C28DRO	**88.6**	14.9	mg/kg	11.18.18 01.47		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	14.9	mg/kg	11.18.18 01.47	U	1
Total TPH	PHC635	**88.6**	14.9	mg/kg	11.18.18 01.47		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	11.18.18 01.47	
o-Terphenyl	84-15-1	97	%	70-135	11.18.18 01.47	

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LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS04**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-007	Date Collected:	11.14.18 16.30	Sample Depth:	6 In
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070616			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0193	0.0193	mg/kg	11.22.18 03.24	U	1
Toluene	108-88-3	<0.0193	0.0193	mg/kg	11.22.18 03.24	U	1
Ethylbenzene	100-41-4	<0.0193	0.0193	mg/kg	11.22.18 03.24	U	1
m,p-Xylenes	179601-23-1	<0.0386	0.0386	mg/kg	11.22.18 03.24	U	1
o-Xylene	95-47-6	<0.0193	0.0193	mg/kg	11.22.18 03.24	U	1
Total Xylenes	1330-20-7	<0.0193	0.0193	mg/kg	11.22.18 03.24	U	1
Total BTEX		<0.0193	0.0193	mg/kg	11.22.18 03.24	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	112	%	68-120	11.22.18 03.24	
a,a,a-Trifluorotoluene	98-08-8	118	%	71-121	11.22.18 03.24	

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RDX 15-11

Sample Id:	**SS04**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-008	Date Collected:	11.14.18 16.40	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**78.8**	4.98	mg/kg	11.20.18 08.20		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	11.18.18 02.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	11.18.18 02.05	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.18.18 02.05	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.18.18 02.05	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	89	%	70-135	11.18.18 02.05	
o-Terphenyl	84-15-1	96	%	70-135	11.18.18 02.05	

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RDX 15-11

Sample Id:	**SS04**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-008	Date Collected:	11.14.18 16.40	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070616			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0196	0.0196	mg/kg	11.22.18 03.47	U	1
Toluene	108-88-3	<0.0196	0.0196	mg/kg	11.22.18 03.47	U	1
Ethylbenzene	100-41-4	<0.0196	0.0196	mg/kg	11.22.18 03.47	U	1
m,p-Xylenes	179601-23-1	<0.0392	0.0392	mg/kg	11.22.18 03.47	U	1
o-Xylene	95-47-6	<0.0196	0.0196	mg/kg	11.22.18 03.47	U	1
Total Xylenes	1330-20-7	<0.0196	0.0196	mg/kg	11.22.18 03.47	U	1
Total BTEX		<0.0196	0.0196	mg/kg	11.22.18 03.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	110	%	68-120	11.22.18 03.47	
a,a,a-Trifluorotoluene	98-08-8	117	%	71-121	11.22.18 03.47	

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RDX 15-11

Sample Id:	**SS05**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-009	Date Collected:	11.14.18 16.55	Sample Depth:	6 In

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**50.7**	5.00	mg/kg	11.20.18 08.26		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	11.18.18 02.23	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	11.18.18 02.23	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.18.18 02.23	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.18.18 02.23	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	86	%	70-135	11.18.18 02.23	
o-Terphenyl	84-15-1	92	%	70-135	11.18.18 02.23	

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RDX 15-11

Sample Id:	**SS05**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-009	Date Collected:	11.14.18 16.55	Sample Depth:	6 In
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070616			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0197	0.0197	mg/kg	11.22.18 04.11	U	1
Toluene	108-88-3	<0.0197	0.0197	mg/kg	11.22.18 04.11	U	1
Ethylbenzene	100-41-4	<0.0197	0.0197	mg/kg	11.22.18 04.11	U	1
m,p-Xylenes	179601-23-1	<0.0394	0.0394	mg/kg	11.22.18 04.11	U	1
o-Xylene	95-47-6	<0.0197	0.0197	mg/kg	11.22.18 04.11	U	1
Total Xylenes	1330-20-7	<0.0197	0.0197	mg/kg	11.22.18 04.11	U	1
Total BTEX		<0.0197	0.0197	mg/kg	11.22.18 04.11	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	117	%	68-120	11.22.18 04.11	
a,a,a-Trifluorotoluene	98-08-8	117	%	71-121	11.22.18 04.11	

Certificate of Analytical Results 605809

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS05**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-010	Date Collected:	11.14.18 17.00	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	11.19.18 17.30	Basis:	Wet Weight
Seq Number:	3070276			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**223**	5.00	mg/kg	11.20.18 08.33		1

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	11.16.18 16.00	Basis:	Wet Weight
Seq Number:	3070133				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	11.18.18 02.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	11.18.18 02.41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	11.18.18 02.41	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	11.18.18 02.41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	11.18.18 02.41	
o-Terphenyl	84-15-1	96	%	70-135	11.18.18 02.41	

Certificate of Analytical Results 605809

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SS05**	Matrix:	Soil	Date Received:	11.16.18 12.30
Lab Sample Id:	605809-010	Date Collected:	11.14.18 17.00	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	MIT			% Moisture:	
Analyst:	MIT	Date Prep:	11.20.18 10.00	Basis:	Wet Weight
Seq Number:	3070616			SUB:	T104704219-18-18

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.0193	0.0193	mg/kg	11.22.18 04.35	U	1
Toluene	108-88-3	<0.0193	0.0193	mg/kg	11.22.18 04.35	U	1
Ethylbenzene	100-41-4	<0.0193	0.0193	mg/kg	11.22.18 04.35	U	1
m,p-Xylenes	179601-23-1	<0.0385	0.0385	mg/kg	11.22.18 04.35	U	1
o-Xylene	95-47-6	<0.0193	0.0193	mg/kg	11.22.18 04.35	U	1
Total Xylenes	1330-20-7	<0.0193	0.0193	mg/kg	11.22.18 04.35	U	1
Total BTEX		<0.0193	0.0193	mg/kg	11.22.18 04.35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	94	%	68-120	11.22.18 04.35	
a,a,a-Trifluorotoluene	98-08-8	97	%	71-121	11.22.18 04.35	

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

QC Summary 605809

LT Environmental, Inc.

RDX 15-11

Analytical Method: Inorganic Anions by EPA 300 — Prep Method: E300P
Seq Number: 3070276 — Matrix: Solid — Date Prep: 11.19.18
MB Sample Id: 7666506-1-BLK — LCS Sample Id: 7666506-1-BKS — LCSD Sample Id: 7666506-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	268	107	275	110	90-110	3	20	mg/kg	11.20.18 05:52	

Analytical Method: Inorganic Anions by EPA 300 — Prep Method: E300P
Seq Number: 3070276 — Matrix: Soil — Date Prep: 11.19.18
Parent Sample Id: 605760-001 — MS Sample Id: 605760-001 S — MSD Sample Id: 605760-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.850	248	261	105	260	105	90-110	0	20	mg/kg	11.20.18 06:10	

Analytical Method: Inorganic Anions by EPA 300 — Prep Method: E300P
Seq Number: 3070276 — Matrix: Soil — Date Prep: 11.19.18
Parent Sample Id: 605809-004 — MS Sample Id: 605809-004 S — MSD Sample Id: 605809-004 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	1.37	250	267	106	264	105	90-110	1	20	mg/kg	11.20.18 07:37	

Analytical Method: TPH by SW8015 Mod — Prep Method: TX1005P
Seq Number: 3070133 — Matrix: Solid — Date Prep: 11.16.18
MB Sample Id: 7666452-1-BLK — LCS Sample Id: 7666452-1-BKS — LCSD Sample Id: 7666452-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	960	96	966	97	70-135	1	20	mg/kg	11.17.18 19:26	
Diesel Range Organics (DRO)	<8.13	1000	1030	103	1040	104	70-135	1	20	mg/kg	11.17.18 19:26	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	97		129		128		70-135	%	11.17.18 19:26
o-Terphenyl	108		103		106		70-135	%	11.17.18 19:26

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

QC Summary 605809

LT Environmental, Inc.

RDX 15-11

Analytical Method: TPH by SW8015 Mod | Prep Method: TX1005P
Seq Number: 3070133 | Matrix: Soil | Date Prep: 11.16.18
Parent Sample Id: 605669-001 | MS Sample Id: 605669-001 S | MSD Sample Id: 605669-001 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)	<8.00	1000	1110	111	1100	110	70-135	1	20	mg/kg	11.17.18 20:20	
Diesel Range Organics (DRO)	<8.13	1000	1130	113	1130	113	70-135	0	20	mg/kg	11.17.18 20:20	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	128		128		70-135	%	11.17.18 20:20
o-Terphenyl	117		113		70-135	%	11.17.18 20:20

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3070611 | Matrix: Solid | Date Prep: 11.20.18
MB Sample Id: 7666783-1-BLK | LCS Sample Id: 7666783-1-BKS | LCSD Sample Id: 7666783-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.0200	2.00	1.99	100	2.00	100	55-120	1	20	mg/kg	11.21.18 09:01	
Toluene	<0.0200	2.00	1.97	99	2.00	100	77-120	2	20	mg/kg	11.21.18 09:01	
Ethylbenzene	<0.0200	2.00	2.05	103	2.13	107	77-120	4	20	mg/kg	11.21.18 09:01	
m,p-Xylenes	<0.0400	4.00	4.10	103	4.25	106	78-120	4	20	mg/kg	11.21.18 09:01	
o-Xylene	<0.0200	2.00	2.08	104	2.09	105	78-120	0	20	mg/kg	11.21.18 09:01	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	85		86		104		68-120	%	11.21.18 09:01
a,a,a-Trifluorotoluene	88		87		100		71-121	%	11.21.18 09:01

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3070616 | Matrix: Solid | Date Prep: 11.20.18
MB Sample Id: 7666784-1-BLK | LCS Sample Id: 7666784-1-BKS | LCSD Sample Id: 7666784-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.0200	2.00	2.07	104	2.07	104	55-120	0	20	mg/kg	11.21.18 22:41	
Toluene	<0.0200	2.00	2.05	103	2.05	103	77-120	0	20	mg/kg	11.21.18 22:41	
Ethylbenzene	<0.0200	2.00	2.12	106	2.11	106	77-120	0	20	mg/kg	11.21.18 22:41	
m,p-Xylenes	<0.0400	4.00	4.19	105	4.24	106	78-120	1	20	mg/kg	11.21.18 22:41	
o-Xylene	<0.0200	2.00	2.16	108	2.11	106	78-120	2	20	mg/kg	11.21.18 22:41	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	91		113		90		68-120	%	11.21.18 22:41
a,a,a-Trifluorotoluene	94		113		89		71-121	%	11.21.18 22:41

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

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

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

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

Final 1.000

QC Summary 605809

LT Environmental, Inc.

RDX 15-11

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3070611 Matrix: Soil Date Prep: 11.20.18

Parent Sample Id: 605806-001 MS Sample Id: 605806-001 S MSD Sample Id: 605806-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.0191	1.91	1.84	96	1.86	97	54-120	1	25	mg/kg	11.21.18 11:25	
Toluene	<0.0191	1.91	1.85	97	1.88	98	57-120	2	25	mg/kg	11.21.18 11:25	
Ethylbenzene	<0.0191	1.91	1.90	99	1.96	102	58-131	3	25	mg/kg	11.21.18 11:25	
m,p-Xylenes	<0.0382	3.82	3.82	100	3.96	103	62-124	4	25	mg/kg	11.21.18 11:25	
o-Xylene	<0.0191	1.91	1.86	97	1.93	101	62-124	4	25	mg/kg	11.21.18 11:25	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	108		86		68-120	%	11.21.18 11:25
a,a,a-Trifluorotoluene	116		89		71-121	%	11.21.18 11:25

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3070616 Matrix: Soil Date Prep: 11.20.18

Parent Sample Id: 605809-003 MS Sample Id: 605809-003 S MSD Sample Id: 605809-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.0196	1.96	1.83	93	1.78	93	54-120	3	25	mg/kg	11.22.18 01:03	
Toluene	<0.0196	1.96	1.88	96	1.82	95	57-120	3	25	mg/kg	11.22.18 01:03	
Ethylbenzene	<0.0196	1.96	1.92	98	1.88	98	58-131	2	25	mg/kg	11.22.18 01:03	
m,p-Xylenes	<0.0391	3.91	3.81	97	3.76	98	62-124	1	25	mg/kg	11.22.18 01:03	
o-Xylene	<0.0196	1.96	1.88	96	1.84	96	62-124	2	25	mg/kg	11.22.18 01:03	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
4-Bromofluorobenzene	112		97		68-120	%	11.22.18 01:03
a,a,a-Trifluorotoluene	116		103		71-121	%	11.22.18 01:03

MS/MSD Percent Recovery [D] = 100*(C-A) / B LCS = Laboratory Control Sample MS = Matrix Spike

Relative Percent Difference RPD = 200* | (C-E) / (C+E) | A = Parent Result B = Spike Added

LCS/LCSD Recovery [D] = 100 * (C) / [B] C = MS/LCS Result D = MSD/LCSD % Rec

Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample) E = MSD/LCSD Result

CHAIN OF CUSTODY

Page 1 of 1

XENCO LABORATORIES

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Xenco Quote #: | Xenco Job #: 605009

Client / Reporting Information

Company Name / Branch: LT Environmental, Inc. Permian Office
Company Address: 3300 N "A" St. Building 1 Unit 103 Midland, TX 79705
Email: abaker@ltenv.com Phone No: (432) 704-5178
Project Contact: Adrian Baker
Samplers's Name

Project Information

Project Name/Number: RDX 15-11
Project Location: EDDY, NM 2RP-4032 & 4545
Invoice To: LT Environmental - Adrian Baker
PO Number: 03418014

Analytical Information

BTEX (only BTEX) 8021
TPH (DRO GRO MRO) 8015
Chloride (300.00)

Matrix Codes

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

No.	Field ID / Point of Collection	Sample Depth	Collection Date	Collection Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	Field Comments
1	SS01	6"	11/14	16:00	S	1								X	
2	SS01	1'		16:05											
3	SS02	6"		16:10											
4	SS02	1'		16:15											
5	SS03	6"		16:20											
6	SS03	1'		16:25											
7	SS04	6"		16:30											
8	SS04	1'		16:40											
9	SS05	6"		16:55											
10	SS05	1'		17:00											

Turnaround Time (Business days)

- [ ] Same Day TAT
- [ ] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [x] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 5:00 pm

Data Deliverable Information

- [ ] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes:

FED-EX / UPS: Tracking # 773740247056

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		11/14/2018	1	2	11.15.18	2
3	Relinquished by:	Date Time: 11/16 1230	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable	On Ice: X Cooler Temp. 2.1 2.0 Thermo. Corr. Factor

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Inter-Office Shipment

IOS Number **117553**

Date/Time: 11/19/18 10:15

Created by: Brianna Teel

Please send report to: Jessica Kramer

Lab# From: **Midland**

Delivery Priority:

Address: 1211 W. Florida Ave, Midland TX 79701

Lab# To: **Lubbock**

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
605809-001	S	SS01	11/14/18 16:00	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	
605809-001	S	SS01	11/14/18 16:00	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-002	S	SS01	11/14/18 16:05	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	
605809-002	S	SS01	11/14/18 16:05	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-003	S	SS02	11/14/18 16:10	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	
605809-003	S	SS02	11/14/18 16:10	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-004	S	SS02	11/14/18 16:15	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	
605809-004	S	SS02	11/14/18 16:15	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-005	S	SS03	11/14/18 16:20	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	
605809-005	S	SS03	11/14/18 16:20	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-006	S	SS03	11/14/18 16:25	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	
605809-006	S	SS03	11/14/18 16:25	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-007	S	SS04	11/14/18 16:30	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	
605809-007	S	SS04	11/14/18 16:30	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-008	S	SS04	11/14/18 16:40	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	
605809-008	S	SS04	11/14/18 16:40	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-009	S	SS05	11/14/18 16:55	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	
605809-009	S	SS05	11/14/18 16:55	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-010	S	SS05	11/14/18 17:00	SW8021B	BTEX by EPA 8021B	11/23/18	11/28/18	JKR	BR4FBZ BZ BZME EBZ X	
605809-010	S	SS05	11/14/18 17:00	E300	Inorganic Anions by EPA 300	11/23/18	12/12/18	JKR	CL	

Inter-Office Shipment

IOS Number **117553**

Date/Time: 11/19/18 10:15
Lab# From: **Midland**
Lab# To: **Lubbock**

Created by: Brianna Teel
Delivery Priority:
Air Bill No.:

Please send report to: Jessica Kramer
Address: 1211 W. Florida Ave, Midland TX 79701
E-Mail: jessica.kramer@xenco.com

Inter Office Shipment or Sample Comments:

Relinquished By: Brianna Teel
Brianna Teel

Date Relinquished: 11/19/2018

Received By:

Date Received:

Cooler Temperature:

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 11/16/2018 12:30:00 PM

Work Order #: 605809

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

Temperature Measuring device used : R8

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	2	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#5 Custody Seals intact on sample bottles?	**N/A**	
#6*Custody Seals Signed and dated?	**N/A**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**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**	Xenco Lubbock-BTEX, Chloride
#18 Water VOC samples have zero headspace?	**N/A**	

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

Analyst: PH Device/Lot#:

Checklist completed by: Brianna Teel Date: 11/16/2018
Brianna Teel

Checklist reviewed by: Jessica Kramer Date: 11/16/2018
Jessica Kramer

Analytical Report 613652

for

LT Environmental, Inc.

Project Manager: Adrian Baker

RDX 15-11

034818014

20-FEB-19

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-28), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-18-17), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-18-14)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-18-18)
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-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429), North Carolina (483)
Xenco-Lakeland: Florida (E84098)

20-FEB-19

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

Reference: XENCO Report No(s): **613652**
RDX 15-11
Project Address:

Adrian Baker:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 613652. 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. 613652 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

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

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

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

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

Sample Cross Reference 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
FS01	S	02-04-19 09:05	1.5 - 3 ft	613652-001
FS02	S	02-04-19 09:45	0.5 - 1.5 ft	613652-002
SW01	S	02-04-19 10:00	0 - 3 ft	613652-003
SW02	S	02-04-19 10:10	0 - 1.5 ft	613652-004
FS03	S	02-04-19 10:35	1 ft	613652-005
FS05	S	02-04-19 11:20	2 ft	613652-006
FS04	S	02-04-19 12:00	2.5 ft	613652-007
SW04	S	02-04-19 12:25	0 - 2.5 ft	613652-008
SW03	S	02-04-19 12:30	0 - 2.5 ft	613652-009

Version: 1.%

CASE NARRATIVE

Client Name: LT Environmental, Inc.

Project Name: RDX 15-11

Project ID: *034818014*
Work Order Number(s): *613652*

Report Date: *20-FEB-19*
Date Received: *02/06/2019*

Sample receipt non conformances and comments:

Corrected sample 009 name from SW05 to SW03 JK 02/20/19 JK NEW VERSION GENERATED

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3078987 BTEX by EPA 8021B

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

Certificate of Analysis Summary 613652

LT Environmental, Inc., Arvada, CO

Project Name: RDX 15-11

Project Id: 034818014
Contact: Adrian Baker
Project Location:

Date Received in Lab: Wed Feb-06-19 12:00 pm
Report Date: 20-FEB-19
Project Manager: Jessica Kramer

Analysis Requested													
	Lab Id:	613652-001		613652-002		613652-003		613652-004		613652-005		613652-006	
	Field Id:	FS01		FS02		SW01		SW02		FS03		FS05	
	Depth:	1.5-3 ft		0.5-1.5 ft		0-3 ft		0-1.5 ft		1- ft		2- ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Feb-04-19 09:05		Feb-04-19 09:45		Feb-04-19 10:00		Feb-04-19 10:10		Feb-04-19 10:35		Feb-04-19 11:20	
BTEX by EPA 8021B	*Extracted:*	Feb-12-19 15:00		Feb-12-19 15:00		Feb-12-19 15:00		Feb-12-19 15:00		Feb-12-19 15:00		Feb-12-19 15:00	
	Analyzed:	Feb-13-19 11:32		Feb-13-19 13:19		Feb-13-19 13:40		Feb-13-19 14:02		Feb-13-19 14:23		Feb-13-19 16:10	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.00199	0.00199	<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00200	0.00200	<0.00201	0.00201
Toluene		<0.00199	0.00199	<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00200	0.00200	<0.00201	0.00201
Ethylbenzene		<0.00199	0.00199	<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00200	0.00200	<0.00201	0.00201
m,p-Xylenes		<0.00398	0.00398	<0.00401	0.00401	<0.00398	0.00398	<0.00402	0.00402	<0.00399	0.00399	<0.00402	0.00402
o-Xylene		<0.00199	0.00199	<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00200	0.00200	<0.00201	0.00201
Total Xylenes		<0.00199	0.00199	<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00200	0.00200	<0.00201	0.00201
Total BTEX		<0.00199	0.00199	<0.00200	0.00200	<0.00199	0.00199	<0.00201	0.00201	<0.00200	0.00200	<0.00201	0.00201
Inorganic Anions by EPA 300	*Extracted:*	Feb-08-19 11:30		Feb-08-19 11:30		Feb-08-19 11:30		Feb-08-19 11:30		Feb-08-19 11:30		Feb-08-19 11:30	
	Analyzed:	Feb-08-19 14:41		Feb-08-19 14:47		Feb-08-19 15:12		Feb-08-19 15:18		Feb-08-19 15:39		Feb-08-19 15:46	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3130	24.9	6730	49.9	14300	99.8	7020	49.9	1180	24.8	1320	25.1
TPH by SW8015 Mod	*Extracted:*	Feb-09-19 14:00		Feb-09-19 14:00		Feb-09-19 14:00		Feb-09-19 14:00		Feb-09-19 14:00		Feb-09-19 14:00	
	Analyzed:	Feb-10-19 06:24		Feb-10-19 07:25		Feb-10-19 07:45		Feb-10-19 08:05		Feb-10-19 08:25		Feb-10-19 08:46	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0	<15.0	15.0
Diesel Range Organics (DRO)		16.2	15.0	464	15.0	<15.0	15.0	84.9	15.0	161	15.0	178	15.0
Motor Oil Range Hydrocarbons (MRO)		<15.0	15.0	96.8	15.0	<15.0	15.0	21.5	15.0	27.4	15.0	35.4	15.0
Total TPH		16.2	15.0	561	15.0	<15.0	15.0	106	15.0	188	15.0	213	15.0

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

Version: 1.%

Jessica Kramer
Project Assistant

Certificate of Analysis Summary 613652

LT Environmental, Inc., Arvada, CO

Project Name: RDX 15-11

Project Id: 034818014
Contact: Adrian Baker
Project Location:

Date Received in Lab: Wed Feb-06-19 12:00 pm
Report Date: 20-FEB-19
Project Manager: Jessica Kramer

Analysis Requested											
	Lab Id:	613652-007		613652-008		613652-009					
	Field Id:	FS04		SW04		SW03					
	Depth:	2.5- ft		0-2.5 ft		0-2.5 ft					
	Matrix:	SOIL		SOIL		SOIL					
	Sampled:	Feb-04-19 12:00		Feb-04-19 12:25		Feb-04-19 12:30					
BTEX by EPA 8021B	***Extracted:***	Feb-12-19 15:00		Feb-12-19 15:00		Feb-12-19 15:00					
	Analyzed:	Feb-13-19 16:32		Feb-13-19 16:53		Feb-13-19 17:14					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Benzene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200				
Toluene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200				
Ethylbenzene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200				
m,p-Xylenes		<0.00398	0.00398	<0.00400	0.00400	<0.00401	0.00401				
o-Xylene		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200				
Total Xylenes		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200				
Total BTEX		<0.00199	0.00199	<0.00200	0.00200	<0.00200	0.00200				
Inorganic Anions by EPA 300	***Extracted:***	Feb-08-19 11:30		Feb-08-19 11:30		Feb-08-19 11:30					
	Analyzed:	Feb-08-19 16:03		Feb-08-19 16:09		Feb-08-19 16:15					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		8840	100	6090	49.6	9690	99.8				
TPH by SW8015 Mod	***Extracted:***	Feb-09-19 14:00		Feb-09-19 14:00		Feb-09-19 14:00					
	Analyzed:	Feb-10-19 12:29		Feb-10-19 09:26		Feb-10-19 09:46					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Gasoline Range Hydrocarbons (GRO)		<14.9	14.9	<15.0	15.0	<15.0	15.0				
Diesel Range Organics (DRO)		105	14.9	180	15.0	353	15.0				
Motor Oil Range Hydrocarbons (MRO)		17.0	14.9	35.1	15.0	65.3	15.0				
Total TPH		122	14.9	215	15.0	418	15.0				

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

Version: 1.%

Jessica Kramer
Project Assistant

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS01**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-001	Date Collected:	02.04.19 09.05	Sample Depth:	1.5 - 3 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.08.19 11.30	Basis:	Wet Weight
Seq Number:	3078636				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**3130**	24.9	mg/kg	02.08.19 14.41		5

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.09.19 14.00	Basis:	Wet Weight
Seq Number:	3078602				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.19 06.24	U	1
Diesel Range Organics (DRO)	C10C28DRO	**16.2**	15.0	mg/kg	02.10.19 06.24		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	02.10.19 06.24	U	1
Total TPH	PHC635	**16.2**	15.0	mg/kg	02.10.19 06.24		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	02.10.19 06.24	
o-Terphenyl	84-15-1	89	%	70-135	02.10.19 06.24	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS01**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-001	Date Collected:	02.04.19 09.05	Sample Depth:	1.5 - 3 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.12.19 15.00	Basis:	Wet Weight
Seq Number:	3078987				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.13.19 11.32	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.13.19 11.32	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.13.19 11.32	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.13.19 11.32	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.13.19 11.32	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.13.19 11.32	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.13.19 11.32	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	80	%	70-130	02.13.19 11.32	
1,4-Difluorobenzene	540-36-3	87	%	70-130	02.13.19 11.32	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS02**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-002	Date Collected:	02.04.19 09.45	Sample Depth:	0.5 - 1.5 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.08.19 11.30	Basis:	Wet Weight
Seq Number:	3078636				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6730**	49.9	mg/kg	02.08.19 14.47		10

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.09.19 14.00	Basis:	Wet Weight
Seq Number:	3078602				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.19 07.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	**464**	15.0	mg/kg	02.10.19 07.25		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**96.8**	15.0	mg/kg	02.10.19 07.25		1
Total TPH	PHC635	**561**	15.0	mg/kg	02.10.19 07.25		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	87	%	70-135	02.10.19 07.25	
o-Terphenyl	84-15-1	102	%	70-135	02.10.19 07.25	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS02**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-002	Date Collected:	02.04.19 09.45	Sample Depth:	0.5 - 1.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.12.19 15.00	Basis:	Wet Weight
Seq Number:	3078987				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.13.19 13.19	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.13.19 13.19	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.13.19 13.19	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	02.13.19 13.19	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.13.19 13.19	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.13.19 13.19	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.13.19 13.19	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	81	%	70-130	02.13.19 13.19	
1,4-Difluorobenzene	540-36-3	98	%	70-130	02.13.19 13.19	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SW01**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-003	Date Collected:	02.04.19 10.00	Sample Depth:	0 - 3 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.08.19 11.30	Basis:	Wet Weight
Seq Number:	3078636				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**14300**	99.8	mg/kg	02.08.19 15.12		20

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.09.19 14.00	Basis:	Wet Weight
Seq Number:	3078602				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.19 07.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	15.0	mg/kg	02.10.19 07.45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	15.0	mg/kg	02.10.19 07.45	U	1
Total TPH	PHC635	<15.0	15.0	mg/kg	02.10.19 07.45	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-135	02.10.19 07.45	
o-Terphenyl	84-15-1	91	%	70-135	02.10.19 07.45	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SW01**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-003	Date Collected:	02.04.19 10.00	Sample Depth:	0 - 3 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.12.19 15.00	Basis:	Wet Weight
Seq Number:	3078987				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.13.19 13.40	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.13.19 13.40	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.13.19 13.40	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.13.19 13.40	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.13.19 13.40	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.13.19 13.40	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.13.19 13.40	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	87	%	70-130	02.13.19 13.40	
4-Bromofluorobenzene	460-00-4	72	%	70-130	02.13.19 13.40	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SW02**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-004	Date Collected:	02.04.19 10.10	Sample Depth:	0 - 1.5 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.08.19 11.30	Basis:	Wet Weight
Seq Number:	3078636				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**7020**	49.9	mg/kg	02.08.19 15.18		10

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.09.19 14.00	Basis:	Wet Weight
Seq Number:	3078602				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.19 08.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	**84.9**	15.0	mg/kg	02.10.19 08.05		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**21.5**	15.0	mg/kg	02.10.19 08.05		1
Total TPH	PHC635	**106**	15.0	mg/kg	02.10.19 08.05		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-135	02.10.19 08.05	
o-Terphenyl	84-15-1	86	%	70-135	02.10.19 08.05	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SW02**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-004	Date Collected:	02.04.19 10.10	Sample Depth:	0 - 1.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.12.19 15.00	Basis:	Wet Weight
Seq Number:	3078987				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.13.19 14.02	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.13.19 14.02	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.13.19 14.02	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	02.13.19 14.02	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	02.13.19 14.02	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	02.13.19 14.02	U	1
Total BTEX		<0.00201	0.00201	mg/kg	02.13.19 14.02	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	88	%	70-130	02.13.19 14.02	
4-Bromofluorobenzene	460-00-4	81	%	70-130	02.13.19 14.02	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS03**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-005	Date Collected:	02.04.19 10.35	Sample Depth:	1 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.08.19 11.30	Basis:	Wet Weight
Seq Number:	3078636				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1180**	24.8	mg/kg	02.08.19 15.39		5

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.09.19 14.00	Basis:	Wet Weight
Seq Number:	3078602				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.19 08.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	**161**	15.0	mg/kg	02.10.19 08.25		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**27.4**	15.0	mg/kg	02.10.19 08.25		1
Total TPH	PHC635	**188**	15.0	mg/kg	02.10.19 08.25		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	02.10.19 08.25	
o-Terphenyl	84-15-1	89	%	70-135	02.10.19 08.25	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS03**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-005	Date Collected:	02.04.19 10.35	Sample Depth:	1 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.12.19 15.00	Basis:	Wet Weight
Seq Number:	3078987				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.13.19 14.23	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.13.19 14.23	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.13.19 14.23	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	02.13.19 14.23	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.13.19 14.23	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.13.19 14.23	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.13.19 14.23	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	87	%	70-130	02.13.19 14.23	
1,4-Difluorobenzene	540-36-3	96	%	70-130	02.13.19 14.23	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS05**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-006	Date Collected:	02.04.19 11.20	Sample Depth:	2 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.08.19 11.30	Basis:	Wet Weight
Seq Number:	3078636				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1320**	25.1	mg/kg	02.08.19 15.46		5

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.09.19 14.00	Basis:	Wet Weight
Seq Number:	3078602				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.19 08.46	U	1
Diesel Range Organics (DRO)	C10C28DRO	**178**	15.0	mg/kg	02.10.19 08.46		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**35.4**	15.0	mg/kg	02.10.19 08.46		1
Total TPH	PHC635	**213**	15.0	mg/kg	02.10.19 08.46		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-135	02.10.19 08.46	
o-Terphenyl	84-15-1	96	%	70-135	02.10.19 08.46	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS05**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-006	Date Collected:	02.04.19 11.20	Sample Depth:	2 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.12.19 15.00	Basis:	Wet Weight
Seq Number:	3078987				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	02.13.19 16.10	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	02.13.19 16.10	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	02.13.19 16.10	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	02.13.19 16.10	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	02.13.19 16.10	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	02.13.19 16.10	U	1
Total BTEX		<0.00201	0.00201	mg/kg	02.13.19 16.10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	95	%	70-130	02.13.19 16.10	
4-Bromofluorobenzene	460-00-4	84	%	70-130	02.13.19 16.10	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS04**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-007	Date Collected:	02.04.19 12.00	Sample Depth:	2.5 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.08.19 11.30	Basis:	Wet Weight
Seq Number:	3078636				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**8840**	100	mg/kg	02.08.19 16.03		20

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.09.19 14.00	Basis:	Wet Weight
Seq Number:	3078602				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	14.9	mg/kg	02.10.19 12.29	U	1
Diesel Range Organics (DRO)	C10C28DRO	**105**	14.9	mg/kg	02.10.19 12.29		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**17.0**	14.9	mg/kg	02.10.19 12.29		1
Total TPH	PHC635	**122**	14.9	mg/kg	02.10.19 12.29		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-135	02.10.19 12.29	
o-Terphenyl	84-15-1	104	%	70-135	02.10.19 12.29	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**FS04**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-007	Date Collected:	02.04.19 12.00	Sample Depth:	2.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.12.19 15.00	Basis:	Wet Weight
Seq Number:	3078987				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	02.13.19 16.32	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	02.13.19 16.32	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	02.13.19 16.32	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	02.13.19 16.32	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	02.13.19 16.32	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	02.13.19 16.32	U	1
Total BTEX		<0.00199	0.00199	mg/kg	02.13.19 16.32	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	80	%	70-130	02.13.19 16.32	
1,4-Difluorobenzene	540-36-3	92	%	70-130	02.13.19 16.32	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SW04**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-008	Date Collected:	02.04.19 12.25	Sample Depth:	0 - 2.5 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.08.19 11.30	Basis:	Wet Weight
Seq Number:	3078636				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6090**	49.6	mg/kg	02.08.19 16.09		10

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.09.19 14.00	Basis:	Wet Weight
Seq Number:	3078602				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.19 09.26	U	1
Diesel Range Organics (DRO)	C10C28DRO	**180**	15.0	mg/kg	02.10.19 09.26		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**35.1**	15.0	mg/kg	02.10.19 09.26		1
Total TPH	PHC635	**215**	15.0	mg/kg	02.10.19 09.26		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	88	%	70-135	02.10.19 09.26	
o-Terphenyl	84-15-1	91	%	70-135	02.10.19 09.26	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SW04**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-008	Date Collected:	02.04.19 12.25	Sample Depth:	0 - 2.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.12.19 15.00	Basis:	Wet Weight
Seq Number:	3078987				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.13.19 16.53	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.13.19 16.53	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.13.19 16.53	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	02.13.19 16.53	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.13.19 16.53	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.13.19 16.53	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.13.19 16.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	95	%	70-130	02.13.19 16.53	
4-Bromofluorobenzene	460-00-4	84	%	70-130	02.13.19 16.53	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SW03**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-009	Date Collected:	02.04.19 12.30	Sample Depth:	0 - 2.5 ft

Analytical Method:	Inorganic Anions by EPA 300			Prep Method:	E300P
Tech:	CHE			% Moisture:	
Analyst:	CHE	Date Prep:	02.08.19 11.30	Basis:	Wet Weight
Seq Number:	3078636				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**9690**	99.8	mg/kg	02.08.19 16.15		20

Analytical Method:	TPH by SW8015 Mod			Prep Method:	TX1005P
Tech:	ARM			% Moisture:	
Analyst:	ARM	Date Prep:	02.09.19 14.00	Basis:	Wet Weight
Seq Number:	3078602				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	15.0	mg/kg	02.10.19 09.46	U	1
Diesel Range Organics (DRO)	C10C28DRO	**353**	15.0	mg/kg	02.10.19 09.46		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**65.3**	15.0	mg/kg	02.10.19 09.46		1
Total TPH	PHC635	**418**	15.0	mg/kg	02.10.19 09.46		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	92	%	70-135	02.10.19 09.46	
o-Terphenyl	84-15-1	101	%	70-135	02.10.19 09.46	

Certificate of Analytical Results 613652

LT Environmental, Inc., Arvada, CO

RDX 15-11

Sample Id:	**SW03**	Matrix:	Soil	Date Received:	02.06.19 12.00
Lab Sample Id:	613652-009	Date Collected:	02.04.19 12.30	Sample Depth:	0 - 2.5 ft
Analytical Method:	BTEX by EPA 8021B			Prep Method:	SW5030B
Tech:	SCM			% Moisture:	
Analyst:	SCM	Date Prep:	02.12.19 15.00	Basis:	Wet Weight
Seq Number:	3078987				

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	02.13.19 17.14	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	02.13.19 17.14	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	02.13.19 17.14	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	02.13.19 17.14	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	02.13.19 17.14	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	02.13.19 17.14	U	1
Total BTEX		<0.00200	0.00200	mg/kg	02.13.19 17.14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	82	%	70-130	02.13.19 17.14	
1,4-Difluorobenzene	540-36-3	95	%	70-130	02.13.19 17.14	

Flagging Criteria

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

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

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

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

F RPD exceeded lab control limits.

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

U Analyte was not detected.

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

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

K Sample analyzed outside of recommended hold time.

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

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

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

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

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

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

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

+ NELAC certification not offered for this compound.

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

QC Summary 613652

LT Environmental, Inc.

RDX 15-11

Analytical Method: Inorganic Anions by EPA 300 — Prep Method: E300P
Seq Number: 3078636 — Matrix: Solid — Date Prep: 02.08.19
MB Sample Id: 7671377-1-BLK — LCS Sample Id: 7671377-1-BKS — LCSD Sample Id: 7671377-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	235	94	238	95	90-110	1	20	mg/kg	02.08.19 13:11	

Analytical Method: Inorganic Anions by EPA 300 — Prep Method: E300P
Seq Number: 3078636 — Matrix: Soil — Date Prep: 02.08.19
Parent Sample Id: 613938-001 — MS Sample Id: 613938-001 S — MSD Sample Id: 613938-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	450	250	655	82	702	101	90-110	7	20	mg/kg	02.08.19 13:30	X

Analytical Method: Inorganic Anions by EPA 300 — Prep Method: E300P
Seq Number: 3078636 — Matrix: Soil — Date Prep: 02.08.19
Parent Sample Id: 613938-002 — MS Sample Id: 613938-002 S — MSD Sample Id: 613938-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	523	250	753	92	770	99	90-110	2	20	mg/kg	02.08.19 14:59	

Analytical Method: TPH by SW8015 Mod — Prep Method: TX1005P
Seq Number: 3078602 — Matrix: Solid — Date Prep: 02.09.19
MB Sample Id: 7671426-1-BLK — LCS Sample Id: 7671426-1-BKS — LCSD Sample Id: 7671426-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<8.00	1000	887	89	902	90	70-135	2	20	mg/kg	02.10.19 02:02	
Diesel Range Organics (DRO)	<8.13	1000	921	92	903	90	70-135	2	20	mg/kg	02.10.19 02:02	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	102		121		122		70-135	%	02.10.19 02:02
o-Terphenyl	103		117		117		70-135	%	02.10.19 02:02

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

QC Summary 613652

LT Environmental, Inc.

RDX 15-11

Analytical Method: TPH by SW8015 Mod | Prep Method: TX1005P
Seq Number: 3078602 | Matrix: Soil | Date Prep: 02.09.19
Parent Sample Id: 614004-007 | MS Sample Id: 614004-007 S | MSD Sample Id: 614004-007 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)	8.86	999	877	87	908	90	70-135	3	20	mg/kg	02.10.19 11:48	
Diesel Range Organics (DRO)	41.1	999	939	90	952	91	70-135	1	20	mg/kg	02.10.19 11:48	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	120		121		70-135	%	02.10.19 11:48
o-Terphenyl	114		116		70-135	%	02.10.19 11:48

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3078987 | Matrix: Solid | Date Prep: 02.12.19
MB Sample Id: 7671681-1-BLK | LCS Sample Id: 7671681-1-BKS | LCSD Sample Id: 7671681-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.125	125	0.127	126	70-130	2	35	mg/kg	02.13.19 09:22	
Toluene	<0.00200	0.0998	0.102	102	0.103	102	70-130	1	35	mg/kg	02.13.19 09:22	
Ethylbenzene	<0.00200	0.0998	0.116	116	0.113	112	70-130	3	35	mg/kg	02.13.19 09:22	
m,p-Xylenes	<0.00399	0.200	0.232	116	0.232	115	70-130	0	35	mg/kg	02.13.19 09:22	
o-Xylene	<0.00200	0.0998	0.109	109	0.107	106	70-130	2	35	mg/kg	02.13.19 09:22	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	104		128		128		70-130	%	02.13.19 09:22
4-Bromofluorobenzene	86		86		89		70-130	%	02.13.19 09:22

Analytical Method: BTEX by EPA 8021B | Prep Method: SW5030B
Seq Number: 3078987 | Matrix: Soil | Date Prep: 02.12.19
Parent Sample Id: 613652-001 | MS Sample Id: 613652-001 S | MSD Sample Id: 613652-001 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	0.115	114	0.128	128	70-130	11	35	mg/kg	02.13.19 10:06	
Toluene	<0.00202	0.101	0.0914	90	0.101	101	70-130	10	35	mg/kg	02.13.19 10:06	
Ethylbenzene	<0.00202	0.101	0.0962	95	0.111	111	70-130	14	35	mg/kg	02.13.19 10:06	
m,p-Xylenes	<0.00403	0.202	0.199	99	0.226	113	70-130	13	35	mg/kg	02.13.19 10:06	
o-Xylene	<0.00202	0.101	0.0902	89	0.103	103	70-130	13	35	mg/kg	02.13.19 10:06	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		106		70-130	%	02.13.19 10:06
4-Bromofluorobenzene	87		78		70-130	%	02.13.19 10:06

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

Chain of Custody

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

Work Order No: 6013652

Page 1 of 1

Project Manager:	Adrian Baker	Bill to: (if different)	[redacted] Adrian Baker
Company Name:	LT Environmental, Inc., Permian office	Company Name:	[redacted] LT Environmental
Address:	3300 North A Street	Address:	[redacted] Midland TX 79705
City, State ZIP:	Midland, TX 79705	City, State ZIP:	[redacted]
Phone:	432.704.5178	Email:	[redacted] llaumbach@ltenviron, abaker@ltenviron

Work Order Comments

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

Project Name:	RDX 15-11	Turn Around	
Project Number:	0348/8014 2RP4032	Routine	☒
P.O. Number:	2RP4545	Rush:	
Sampler's Name:	[redacted] Lynda Laumbach	Due Date:	02/13

SAMPLE RECEIPT			
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No
Temperature (°C):	4.1/4.0	Thermometer ID	R8
Received Intact:	(Yes) No		
Cooler Custody Seals:	Yes No (N/A)	Correction Factor:	-0.1
Sample Custody Seals:	Yes No (N/A)	Total Containers:	

ANALYSIS REQUEST

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH (EPA 8015)	BTEX (EPA 0=8021)	Chloride (EPA 300.0)
FS01	S	02/04	9:05	~~1'ave~~	1	X	X	X
FS02	S		9:45	~~1'ave~~	1	X	X	X
SW01	S		10:00	0-3'	1	X	X	X
SW02	S		10:10	0-1.5'	1	X	X	X
FS03	S		10:35	1'ave	1	X	X	X
FS05	S		11:20	2'ave	1	X	X	X
FS04	S		12:00	2.5'ave	1	X	X	X
SW04	S		12:25	0-2.5'	1	X	X	X
SW03	S	↓	12:30	0-2.5'	1	X	X	X

1.5-3'
0.5-1.5'

Work Order Notes

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

Sample Comments

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed **TCLP / SPLP 6010**: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U **1631 / 245.1 / 7470 / 7471** : Hg

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
[signature]	[signature]	02/05/2019 14:33	2 [signature]		2/5/19 15:30
	[signature]	2/6/19 1200	4		
			6		

Revised Date 051418 Rev. 2018.1

7743 99059847

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: LT Environmental, Inc.

Date/ Time Received: 02/06/2019 12:00:00 PM

Work Order #: 613652

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

Temperature Measuring device used : R8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	4
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**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: Katie Lowe Date: 02/06/2019

Checklist reviewed by: Jessica Kramer Date: 02/06/2019

Jessica Kramer

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 176141

CONDITIONS

Operator: WPX Energy Permian, LLC Devon Energy - Regulatory Oklahoma City, OK 73102	OGRID: 246289
	Action Number: 176141
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	Final C-141 included in report indicates that Mike Bratcher approved closure on 12/13/2016. Closure approved. Release resolved.	3/31/2023