LT Environmental, Inc.
848 East Second Avenue
Durango, Colorado 81301
970.385.1096

September 11, 2018

OCD RVCD Digtal 9/11/18

APRVD with Conditions
Attached sent via Email

10/22/18

Mr. Cory Smith
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, NM 87410

RE: Summary Report and Delineation Work Plan
Hilcorp Energy Company
OH Randel #5, API # 30-045-05964, #NUF1602039091
San Juan County, New Mexico

Dear Mr. Smith:

LT Environmental, Inc. (LTE), on behalf of Hilcorp Energy Company (Hilcorp), presents the following report summarizing subsurface investigation, soil-vapor extraction (SVE) remediation, and monitoring at the OH Randel #5 natural gas production well (Site). The Site is located west of Highway 550 near Huerfano, New Mexico in Unit D of Section 10 of Township 26 North and Range 11 West (Figure 1). The purpose of this report is to describe activities conducted by XTO Energy, Inc. (XTO), the former operator of the well, and propose additional work to verify remediation to date has been successful, then continue full delineation of soil impact at the Site.

Background

On January 18, 2016, XTO discovered a frozen valve on a 100-barrel (bbl) production tank that resulted in approximately 27 bbl of condensate and 5.5 bbl of produced water draining onto the ground and infiltrating into the subsurface. The release was contained within the tank berm, but no liquids were recovered. The Site was ranked a zero pursuant to the New Mexico Oil Conservation Division's (NMOCD) *1993 Guidelines for Remediation of Leaks, Spills and Releases*. As such, the remediation action levels applied to the Site were 5,000 parts per million (ppm) total petroleum hydrocarbons (TPH), 10 ppm benzene, and 50 ppm total for the sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX). It should be noted that the 1993 Guidelines mentioned above have been superseded by new regulations promulgated by the NMOCD on August 14, 2018; however, since remedial action was previously accepted by the NMOCD with conditions of approval, the former standards are being applied.

Delineation

Several soil sampling events were conducted at the Site between January of 2016 and September of 2017. Soil samples were collected by hand auger and hollow stem auger. Depending on soil observations, SVE wells were installed in delineation boreholes to make efficient use of the equipment on site and reduce mobilizations.

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Monday, October 22, 2018 3:37 PM
To: ccardoza@hilcorp.com
Cc: Ashley Ager; mhenderson@hilcorp.com; Daniel Burns; 'Devin Hencmann'
Subject: RE: OH Randel #5 Summary Report #nVF1602039091

Clara,

OCD has reviewed the Summary report for the HEC OH Randel #5 incident #nVF1602039091 received digitally on September 11, 2018 (never received a hard copy) and has been approved with the following conditions of approval.

Western Area

The location needs to be accessible to the rig/drilling equipment e.g. Berms/equipment need to be moved prior to drilling.

Proposed Bore Holes for Delineation

Proposed Delineation point(Near HA-2)

- Must be drilled to a depth of at least 30' collecting highest OVM and Bottom Hole.

If HEC wants to show separation of the Western and Eastern Area a delineation point just East of BH-5 to a depth of at least 30' is recommended as BH-5/HA-5 have been inadequate for quite some time due to their shallow depth.

Proposed Bore holes for Closure

Proposed Closure Point (Between SVE-2 and HA-2)

- Must be drilled to a depth of at least 30' collecting a composite for 0-10' and a composite sample every 5' thereafter.
- HEC will provide NMOCD at least 2 business day notification prior to the collection of Closure samples.

Proposed Closure point (Between Source and SVE-5)

- Is located were the AST is/was located if the tank has been removed that sampling location is ok. If the tank is still at that location the closure point must be moved just south of BH-15)
- Must be drilled to a depth of at least 30' collecting a composite for 0-10' and a composite sample every 5' thereafter.
- HEC will provide NMOCD at least 2 business day notification prior to the collection of Closure samples.

If Samples do not meet the closure standards, continued SVE operations in this zone will be required meeting a 90% run time.

Eastern Area

Delineation on pad must be completely delineated as describe in 19.15.29.11 NMAC (Using the previous establish standards) and submitted to the OCD to include a Remediation plan as describe by 19.15.29.12 NMAC no later than January 22, 2019.

Delineation off Pad as describe in 19.15.29.11 NMAC (Using the previous establish standards) will be required within 60 days of surface owner approval (Or January 22, 2019 whichever comes later) and must also include a remediation plan as describe by 19.15.29.12 NMAC.

HEC will provide OCD a monthly status update on what HEC has done to get surface owner approval in the previous month starting November 2018.

If you have any additional questions please give me a call, I will attach this email to the digital document and it will be scanned into API#30-045-05964

Thanks,

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Devin Hencmann <dhencmann@ltenv.com>
Sent: Tuesday, September 11, 2018 3:03 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Ashley Ager <aager@ltenv.com>; ccardoza@hilcorp.com; mhenderson@hilcorp.com; Daniel Burns <dburns@ltenv.com>
Subject: OH Randel #5 Summary Report

Cory,

Please see the attached summary report for the OH Randel #5.
Let us know if you have questions or comments.

Thank you,
Devin

Devin Hencmann
Project Geologist

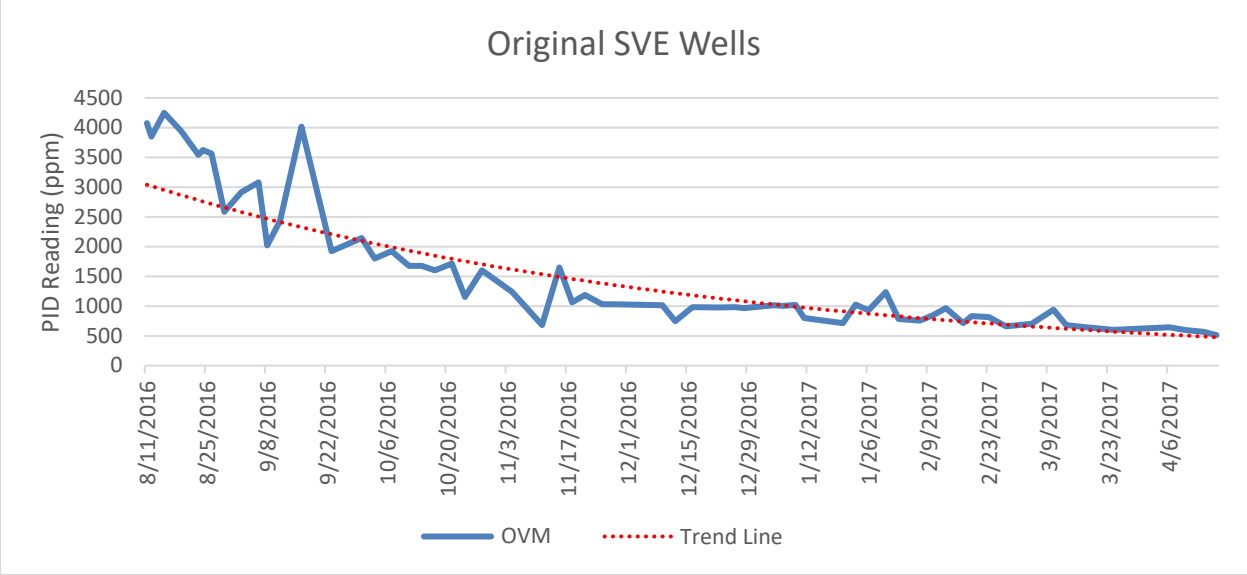
Preliminary Investigation

On January 19, 2016, XTO conducted a preliminary subsurface assessment with a hand auger. Limited field screening and laboratory analytical results indicated that impacted soil exceeding NMOCD standards extended vertically from the ground surface to approximately 9.5 feet bgs with a lateral extent of approximately 300 square feet. It was determined that additional delineation was needed.

Investigation and Soil Vapor Extraction

On July 5, 2016 through August 8, 2016, LTE conducted delineation and concurrently installed a soil vapor extraction (SVE) system for remediation. LTE advanced ten delineation boreholes (HA 1 through HA 5 with a hand auger, and BH-6 through BH-10 with a hollow stem auger) to depths ranging from 10 feet to 20 feet bgs: one borehole was placed in each cardinal direction from the source area, then additional boreholes were installed outward as impacted soil was encountered (Figure 2). The soil from delineation boreholes HA 1 through HA 5 and BH-6 through BH-10 was described and field screened with a PID at one-foot intervals (Attachment A). Soil samples were collected from the intervals with the highest Organic Vapor Measurement (OVM) observed and from the bottom of each borehole to confirm the vertical extent of impact to the soil has been delineated. Soil samples were analyzed for BTEX using United States Environmental Protection Agency (USEPA) Method 8021 and TPH using USEPA Method 8015. If field screening results indicated that no impacted soil was present (HA 2, HA 3, HA 4, and BH-10), no laboratory analysis was conducted.

Based on the preliminary field screening and laboratory analytical results obtained by LTE (Table 1), six SVE wells were installed (SVE-1 through SVE-6) (Figure 3). SVE wells were screened at intervals spanning the identified impacted zones and placed so the radius of influence would affect the impacted soil encountered during delineation (Figure 4). The SVE system consisted of six SVE wells and a one-horsepower blower with a liquid knock out tank. A manifold was installed at the blower so individual wells could be isolated from the system if OVM results indicated vapor extraction was no longer necessary from a given well. The SVE system operated continuously from August 11, 2016 until April 19, 2017, with greater than 92 percent (%) run time. An initial air sample was collected from the SVE system exhaust and analyzed for BTEX using UESPA Method 8021 and TPH using USEPA Method 8015 on August 11, 2018. Results are presented on Table 2. OVM was monitored at each SVE well periodically to assess system performance and effectiveness. Below is a graph presenting OVM measurements from the main line on the manifold where vapors from all six SVE wells were routed.



At start up, OVM readings exceeded 4,000 ppm and steadily declined during system operation to 512 ppm. The decline in OVM values measured from the combined wells prompted XTO to shut down the system in April 2017 for additional soil sampling to evaluate the Site for closure and attempt to finalize delineation.

On November 18, 2016, XTO utilized a hand auger to advance two boreholes: one in the original source area (BH-6) and one to the northeast of the source area (BH-5). Soil samples were collected from each borehole. Soil samples were analyzed for BTEX using USEPA Method 8021 and TPH using USEPA Method 8015 (Table 1). Soil analyzed from these borings was below NMOCD closure standards for this Site. A sampling plan was submitted to the NMOCD on December 30, 2016 and approved on March 6, 2017. Conditions of approval were issued by the NMOCD stipulating that each boring must be advanced to at least 25 feet bgs or the same depth of the deepest previously encountered impacts. Soil samples were collected as a composite sample over the first 10 feet and every additional 5 feet thereafter.

Additional Delineation

On April 19, 2017 through September 30, 2017, LTE utilized a CME 75 hollow stem auger drill rig over the course of three different drilling events to advance another 16 boreholes (BH-11 through BH-27) with depths varying from 25 feet to 82 feet bgs. Additionally, BH-13 was reentered and drilled from a preexisting total depth of 35 feet bgs to a new total depth of 54 feet bgs. Multiple drilling events were necessary to accommodate subsurface conditions and depth of the impact encountered during drilling. Boreholes were located within the radius of influence to confirm the effectiveness of the SVE system and collect potential closure samples (Figure 2). Additional boreholes were drilled outside of the SVE radius of influence to delineate unexpected impact identified to the east and deeper than the originally defined impact. Laboratory analytical results indicated that soil samples from BH-12, BH-13, BH-20, and BH-21 exceeded the NMOCD action level of 5,000 mg/kg for TPH. Soils samples from BH-12, BH-13, BH-15, BH-16, BH-20, BH-21, BH-22 and BH 27 exceeded the NMOCD action level of 50 mg/kg for total BTEX.

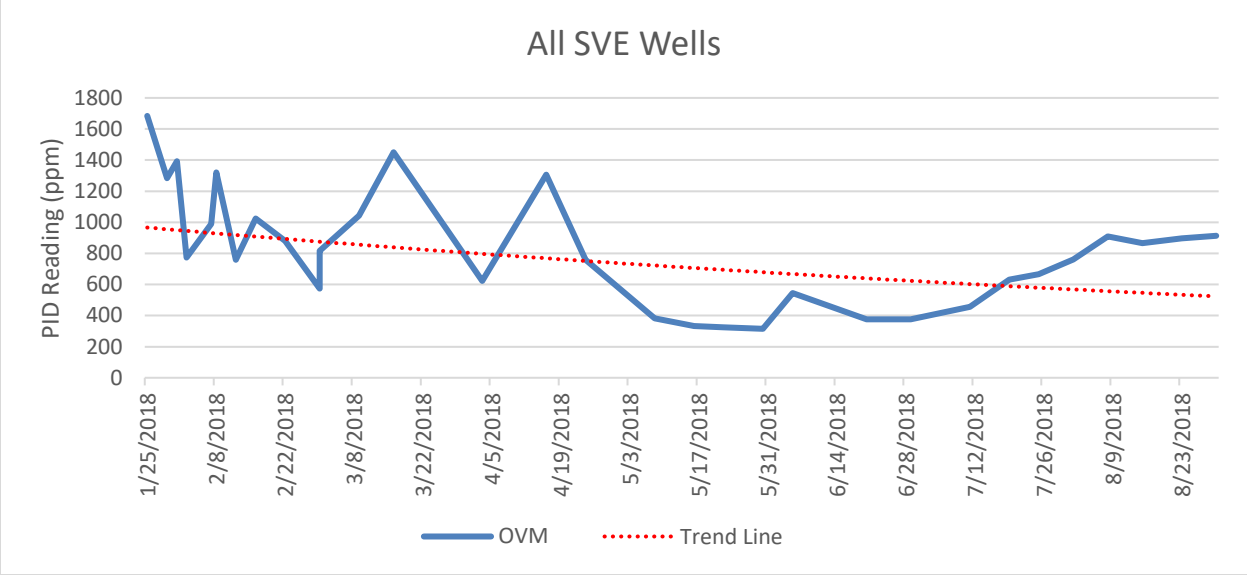
The soil analytical results as compared to the NMOCD action levels are presented in Table 1 and results exceeding NMOCD standards are depicted in Figure 2.

These results indicated that the SVE system needed to be reconfigured and additional delineation of the eastern area of impacted soil was needed. Although the SVE system reduced concentrations of BTEX in the treated area, soil samples collected within the radius of influence of the SVE system (BH-15 and BH-16) still exceeded remediation action levels for BTEX. BTEX concentrations identified in original boreholes HA-1 and BH-9 contained BTEX concentrations of 142.4 mg/kg and 131.7 mg/kg respectively. These occurred at depths between 10 feet bgs and 20 feet bgs. Soil samples collected from similar depth intervals in BH-15 and BH-16 located within the source area exhibited reduced BTEX concentrations of 70.9 mg/kg and 71.2 mg/kg, respectively, indicating the SVE system effectively reduced volatile organic compounds (VOC) from the subsurface, but additional runtime was required to meet closure standards.

These sampling events not only served to assess efficiency of the SVE system, but to continue vertical and lateral delineation that had not been accomplished in the previous sampling events. Soil samples collected from deeper intervals in the original source area (between 20 feet and 25 feet bgs) contained similar elevated concentrations of BTEX. The bottom of boreholes BH-15 and BH-16 provided vertical delineation near 27 feet bgs, with BTEX concentrations below NMOCD remediation action levels. Additional boreholes drilled to the east of the original release in an attempt to define lateral extent (BH-12, BH-13, BH-20, BH-21, BH-22) uncovered additional impacts to soil, characterized not only by elevated BTEX concentrations, but elevated TPH concentrations as well. The elevated concentrations were observed at depths exceeding vertical delineation depth of 27 feet bgs identified in the original source area.

SVE System Reconfiguration and Performance

Based on the preliminary field screening and laboratory analytical results obtained during delineation activities conducted on April 19, 2017 through September 30, 2017, five additional SVE wells were installed (SVE-8 and SVE-9 in the original source area to target elevated BTEX between 20 feet and 25 feet bgs and SVE-7, SVE-10, SVE-11, andSVE-12 in the eastern area at depths from 30 feet to 40 feet bgs) (Figure 3 and 4). The SVE system manifold was reconfigured to address the additional impacts encountered during the August and September 2017 delineation activities. As shown on Figure 3, original SVE wells SVE-1 through SVE-5 remained off while the new SVE wells were activated. The SVE system was restarted on January 25, 2018, and has been in continuous operation since, with greater than 87 percent (%) run time. The downtime was attributed to multiple episodes of unknown duration resulting in system shutdown due to electrical faults onsite. The SVE system requires a manual restart if the electrical power surges. The issues occurred during asset transition between XTO and Hilcorp. Increased frequency in site visits has reduced downtime and power surges are expected to decrease with fall and winter approaching. OVM was monitored at each SVE well periodically to assess system performance and effectiveness. Below is a graph presenting OVM readings from the main line on the manifold where vapors from active SVE wells were routed. The graph presents data spanning the course of operation from January 25, 2018 to August 30, 2018.



A subsequent air sample was collected on August 17, 2018, from the SVE system exhaust and analyzed for BTEX using UESPA Method 8021 and TPH using USEPA Method 8015. Between SVE installation in August 2016 and the air sample collected in August 2018, there has been an 80.2% reduction in total BTEX (2,421 µg/L to 480 µg/L) and an 80.7% reduction in TPH (46,000 µg/L to 8,900 µg/L) in air emissions. As of August 17, 2018, it is estimated that 768 pounds of total BTEX and 14,243 pounds of TPH have been removed from the subsurface via SVE (Table 2).

CURRENT STATUS

Results from subsurface investigation activities suggest subsurface impacts can be attributed to multiple sources. Concentrations of BTEX are higher in the eastern area in comparison to the western area (Figure 5). Additionally, the presence of TPH exceeding NMOCD remediation action levels in the eastern area suggest a separate source signature (Table 1).

The geometry of the identified hydrocarbon impacts resulting from the original production tank release was relatively small in extent, but historical releases are present below and east of the tank. Figure 6 and Figure 7 represent cross sections derived from soil borings conducted over the course of the investigation. The cross sections indicate that there are two areas of impact that correlate to the signature geometry presented in Figure 5: One area to the west and one area to the east that may be separated by a central area where no shallow impact was identified.

Impacted soil in the western area was encountered in boreholes HA 1, BH-9, BH-15, and BH-16 at depths ranging from 0 feet bgs to 27 feet bgs. Impact in the western area appears to be from two different sources. Field screening results of OVM observed in HA-1 showed a decreasing trend from the ground surface to 6 feet bgs and then an increasing trend from 8 feet bgs to 20 feet bgs. Impacts observed in HA-1 from the ground surface to approximately 6 feet bgs are attributed to the original production tank release discovered on January 18, 2016. Impact encountered from 8 feet bgs to 20 feet bgs can be attributed to a historical release likely related to the same production tank (Figure 6). BH-15 and BH-16

were drilled in close proximity to HA-1 at the source location (Figure 2); however, impacts encountered in BH-15 and BH-16 were not observed until 10 feet bgs. Soil samples collected boreholes BH-14, BH-17, BH-18, and BH-19 in the western area serve as lateral delineation points for the western area in the north, south, and east directions (Figure 8).

Impacted soil in the eastern area was encountered in BH-7, BH-13, BH-20, BH-21, BH-22, and BH-27 at depths ranging from 9 feet bgs to 82 feet bgs (Figure 7). Impact in this area is extensive both laterally and vertically and attributed to an unknown historical source. The soil is differentiated from the western impact by higher concentrations of BTEX and TPH and does not appear in soil at depth in the western area as identified by the clean samples collected at the base of BH-15 and BH-16. A separation of two impacted areas potentially exists as evident in BH-5 and HA 5 where no soil exceeding NMOCD action levels was encountered (Figure 5 and Figure 6). Soil samples collected from BH-14, BH-19, BH-23, BH-24, and BH-25 indicate that impacted soil in the eastern area has been delineated to the north and to the west. Impacted soil has not been fully delineated vertically or horizontally to the east and south. Impacted soil was observed in BH-20 at 82 feet bgs, where auger refusal occurred, and impacted soil was encountered in BH-27 at 45 feet to 50 feet bgs. Surface owner access restricted further delineation to the South.

Proposed Work Plan

While it is evident that the eastern area requires further delineation, the original SVE system(s) installed to target the most recent release from the production tank has likely addressed impact to impacted soil identified in the western area. Due to restricted access to the south of the Site and locally available drilling technologies, LTE proposes a step-wise process to simplify the Site releases, then achieve full delineation. An initial phase of drilling will be conducted to collect confirmation closure samples in the western area while simultaneously initiating permission to access the undisturbed area south of the well pad. Once access is granted, LTE will use a different drilling technology to complete vertical and lateral delineation of the impacted source in the eastern area.

LTE proposes to utilize a hollow stem auger drill rig to advance 3 delineation/confirmation boreholes to 30 feet bgs in the western area. Boreholes will be positioned to supplement existing soil data. One borehole will be advanced near former borehole HA-2 to complete lateral delineation on the western side. Two additional boreholes will be advanced near SVE-2 and SVE-5 to collect soil samples to confirm that the SVE system has remediated impacted soil in the western area (Figure 8). Should field screening indicate lateral extent of soil impact has not been defined, LTE will step out with additional boreholes.

Continuous soil samples will be logged by an LTE geologist and described using the Unified Soil Classification System (USCS). The intervals from immediately beneath the ground surface to 10 feet bgs and then every five-foot interval thereafter will be composited and screened for volatile aromatic hydrocarbons, per the existing conditions of approval. Soil with the highest field screening results and from the bottom of each soil boring will be collected for laboratory analysis of BTEX and TPH (GRO, DRO, and MRO). Hilcorp intends to begin delineation of the western area within 30 days of receiving approval of this work plan.

Additional delineation is required to the south, to the east and vertically in the eastern area (Figure 2). Impact to soil extends vertically below 82 feet bgs and laterally beyond the footprint of the well pad. This will require an alternative method of drilling to a CME 75 hollow stem auger and additional landowner access. Hilcorp will initiate access upon approval of this work plan. Once access is achieved, a final delineation event will take place in the eastern area. Hilcorp will provide an update to NMOCD with results from the first phase of investigation and proposed additional boreholes for final delineation.

LTE appreciates the opportunity to provide this remediation work plan to the NMOCD. If you have any questions or comments regarding this work plan, do not hesitate to contact me at (970) 385-1096 or via email at dhencmann@ltenv.com or Clara Cardoza at (505) 564-0733 or at Ccardoza@hilcorp.com.

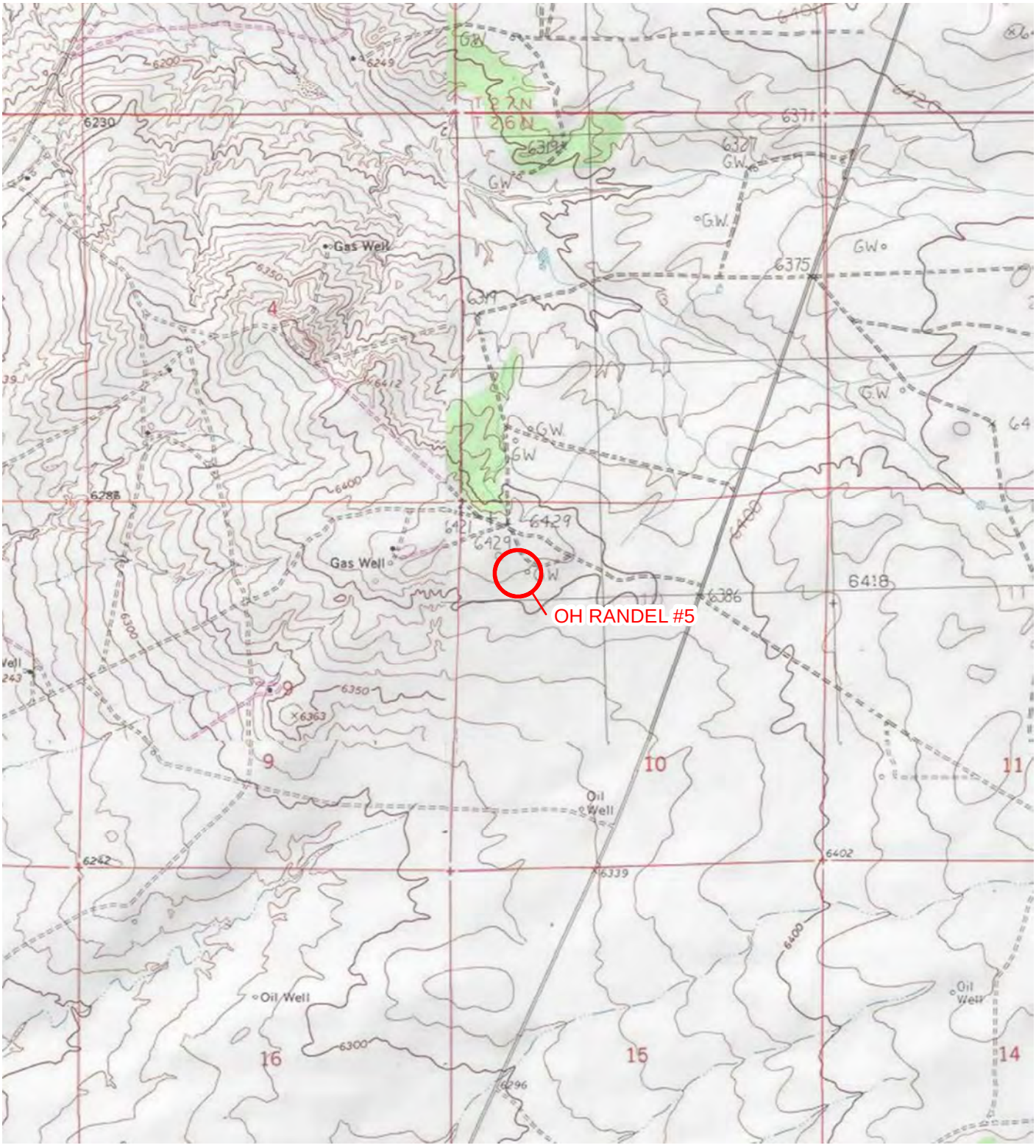
Sincerely,

LT ENVIRONMENTAL, INC.

Devin Hencmann
Project Geologist

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

- Attachments:
- Figure 1 – Site Location Map
- Figure 2 – Site Map
- Figure 3 – Soil Analytical Results Map
- Figure 4 – SVE Well Screened Interval
- Figure 5 – BTEX Isopach Map
- Figure 6 – Cross Section A-A'
- Figure 7 – Cross Section B-B'
- Figure 8 – Proposed Delineation Map
- Table 1 – Borehole Soil Analytical Results
- Table 2 – Emissions Estimate Summary
- Appendix A– Soil Borehole Logs
- Appendix B – Analytical Laboratory Reports



LEGEND

SITE LOCATION

IMAGE COURTESY OF ESRI/USGS

0 2,000 4,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017818016_OH RANDEL #5\017818016_OH RANDEL #5_FIG01_SL.mxd

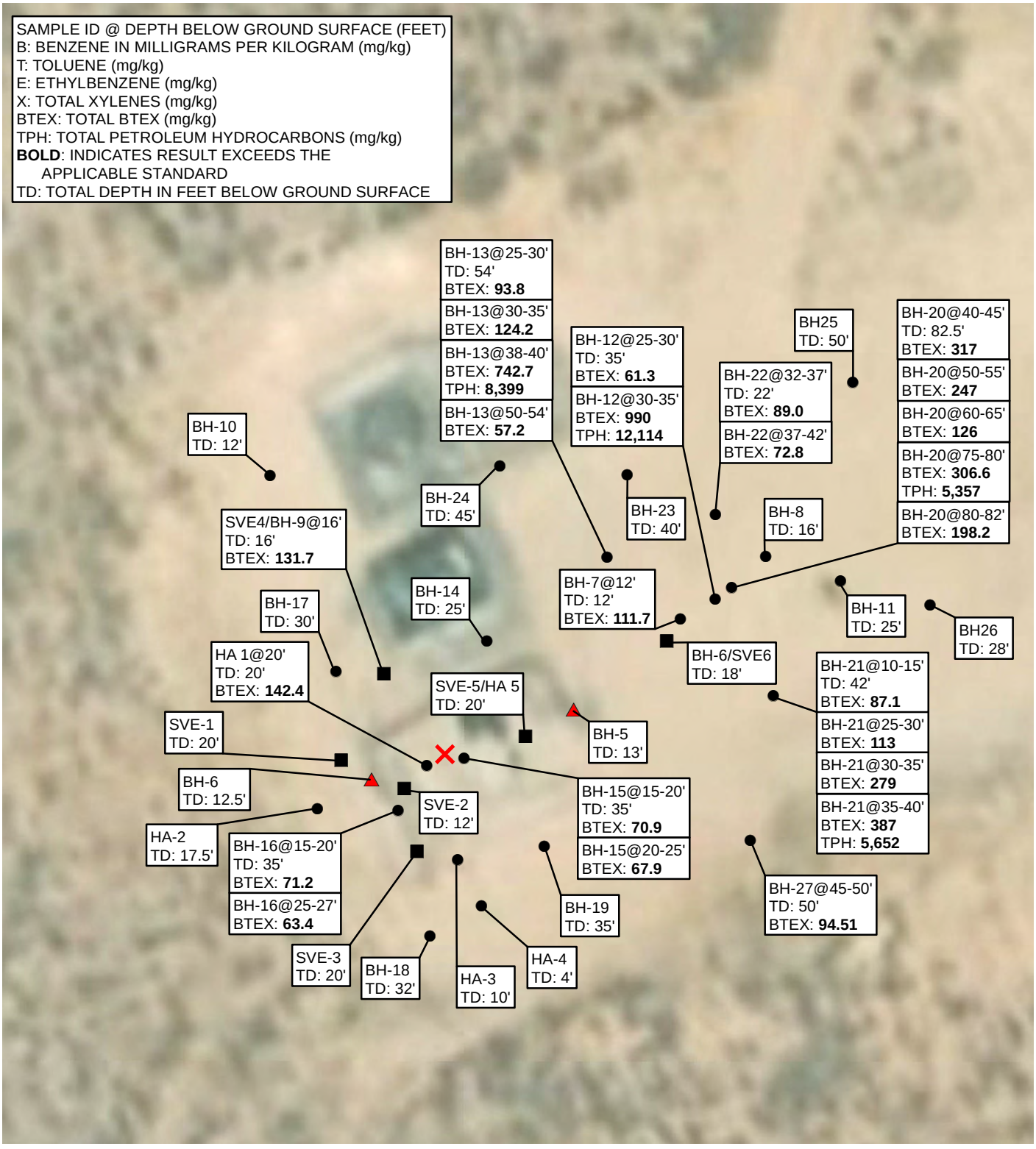


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE LOCATION
- BOREHOLE
- SOIL VAPOR EXTRACTION (SVE) WELL
- BOREHOLE ADVANCED BY XTO

0 30 60
Feet

N

FIGURE 2
SOIL ANALYTICAL RESULTS MAP
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017818016_OH RANDEL #5\017818016_OH RANDEL #5_FIG02_SOIL_ANALY_2017.mxd

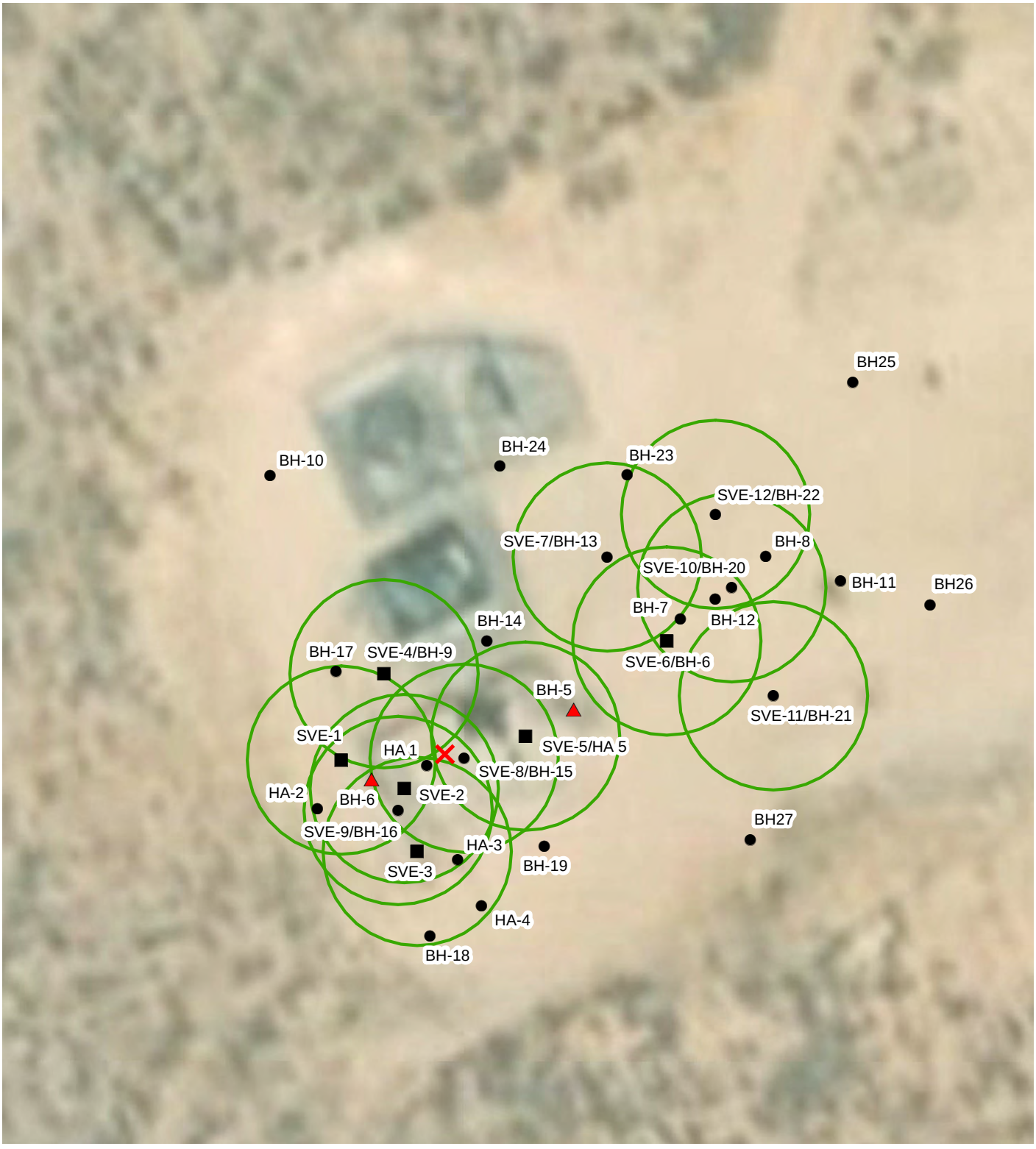


IMAGE COURTESY OF ESRI

LEGEND

- RELEASE LOCATION
- BOREHOLE
- SOIL VAPOR EXTRACTION (SVE) WELL
- BOREHOLE ADVANCED BY XTO
- 20 FOOT RADIUS OF INFLUENCE

0 30 60
Feet

N

FIGURE 3
SITE MAP
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017818016_OH RANDEL #5\017818016_OH RANDEL #5_FIG03_SITE_180618.mxd

IMAGE COURTESY OF ESRI

LEGEND

- RELEASE LOCATION
- BOREHOLE
- SOIL VAPOR EXTRACTION (SVE) WELL
- BOREHOLE ADVANCED BY XTO

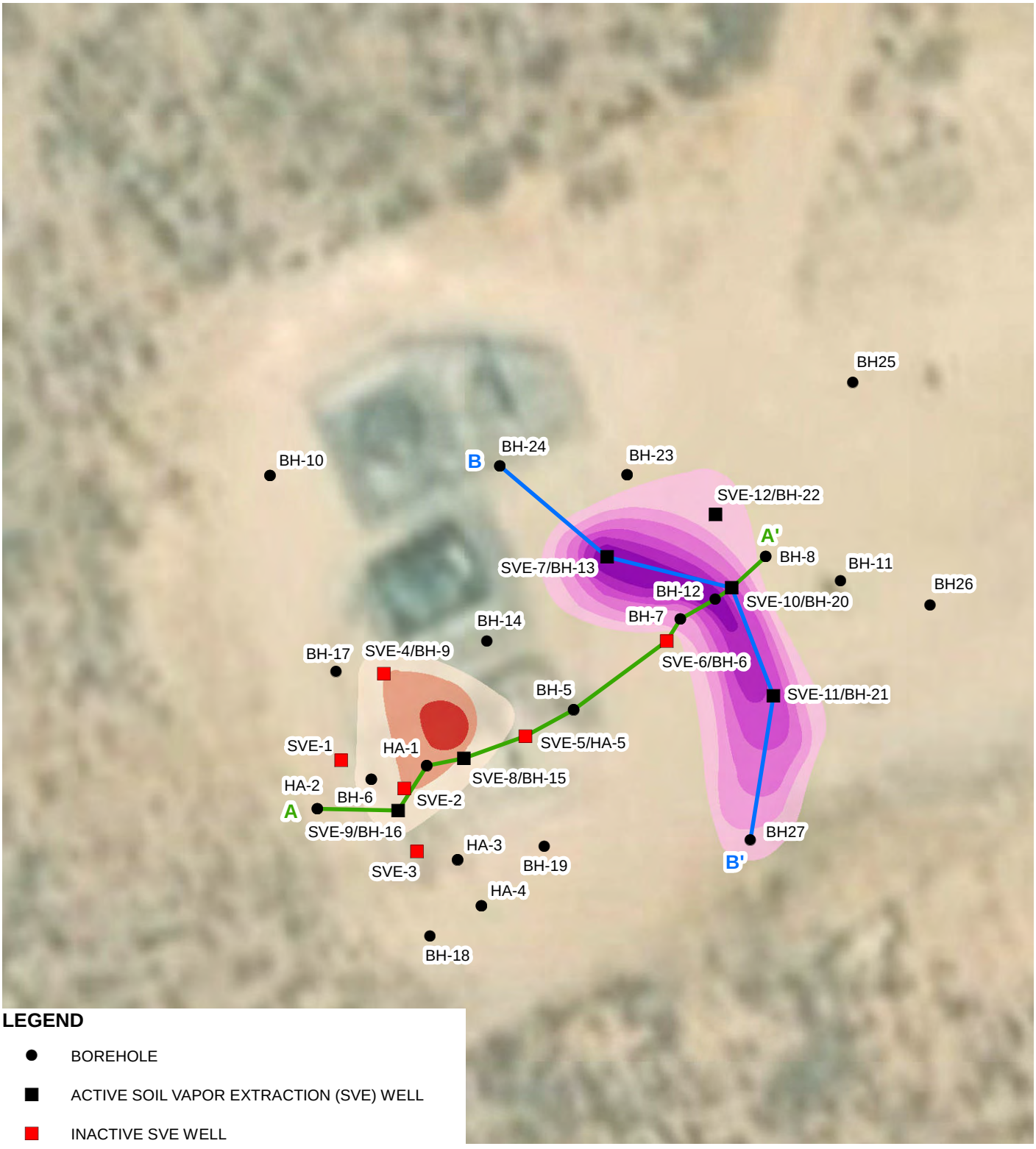
0 30 60

Feet

N

FIGURE 4
SVE WELL SCREENED INTERVAL
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017818016_OH RANDEL #5\017818016_OH RANDEL #5_FIG04_SCREEN.mxd



LEGEND

- BOREHOLE
- ACTIVE SOIL VAPOR EXTRACTION (SVE) WELL
- INACTIVE SVE WELL
- CROSS SECTION A-A'
- CROSS SECTION B-B'

INFERRED BTEX ISOCONCENTRATION (PARTS PER MILLION)

- 50.00 - 100.00
- 100.01 - 200.00
- 200.01 - 300.00
- 300.01 - 400.00
- 400.01 - 500.00
- 500.01 - 600.00

50.00 - 100.00
100.01 - 200.00
200.01 - 300.00

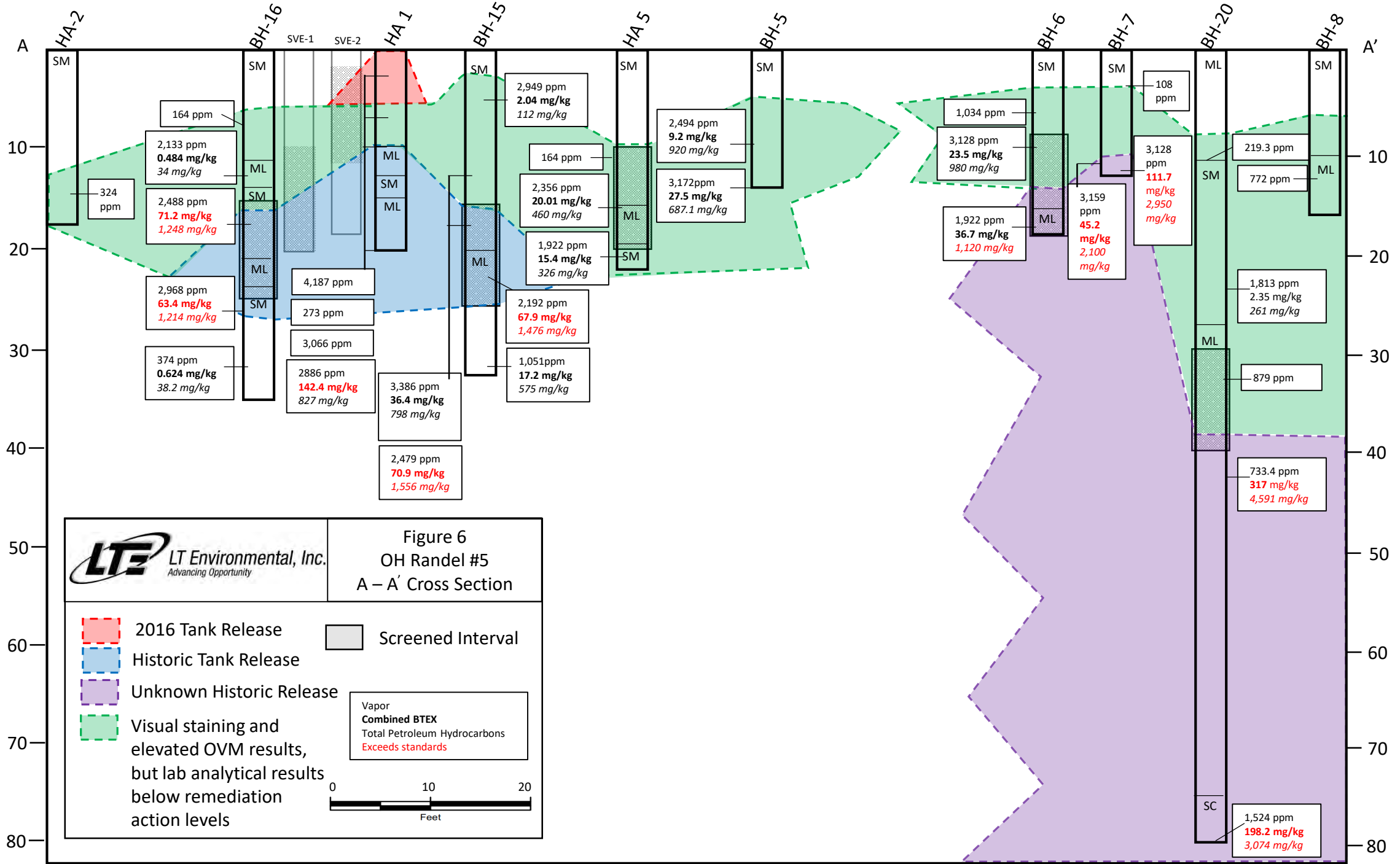
IMAGE COURTESY OF ESRI

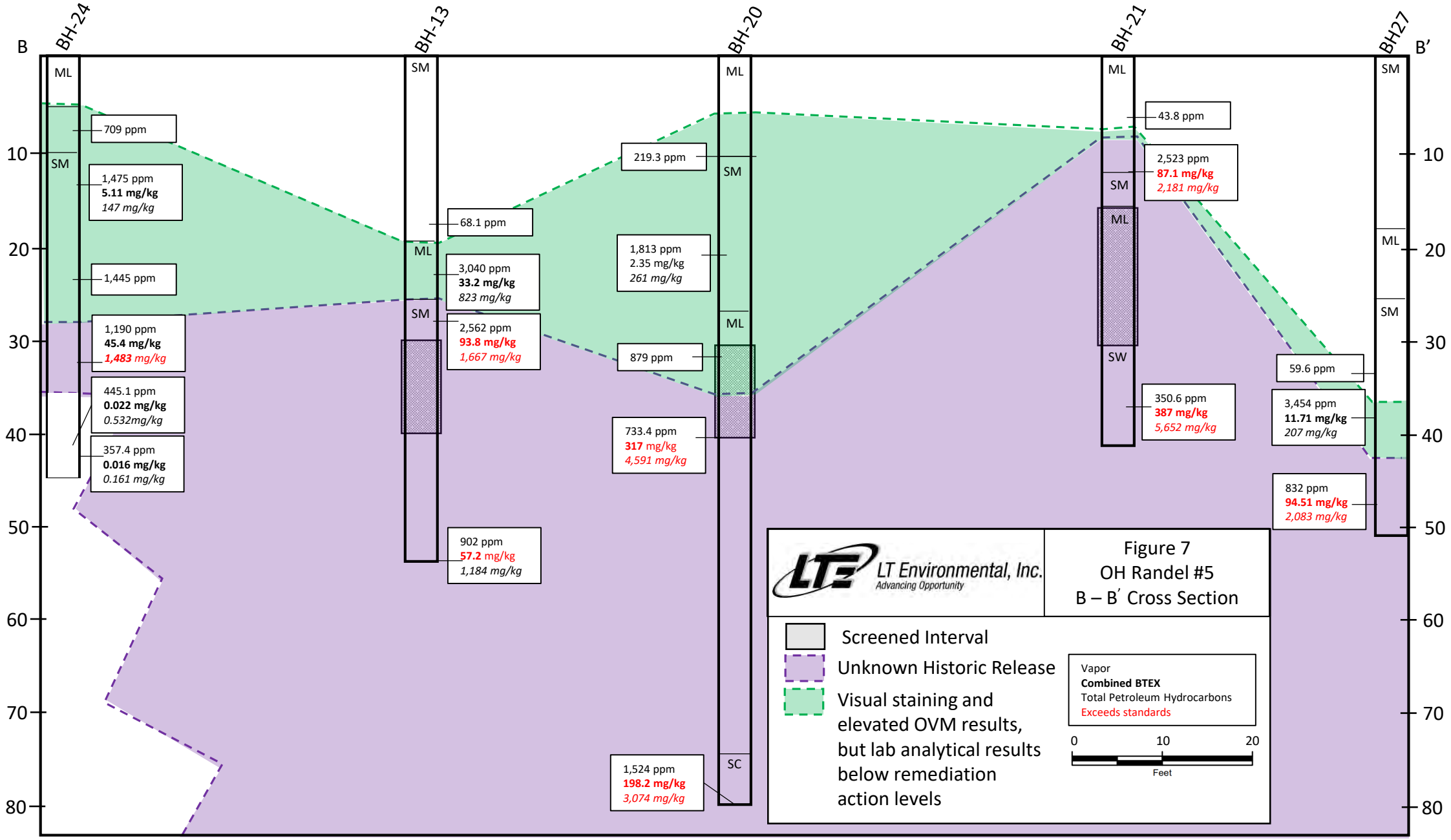
0 30 60
Feet

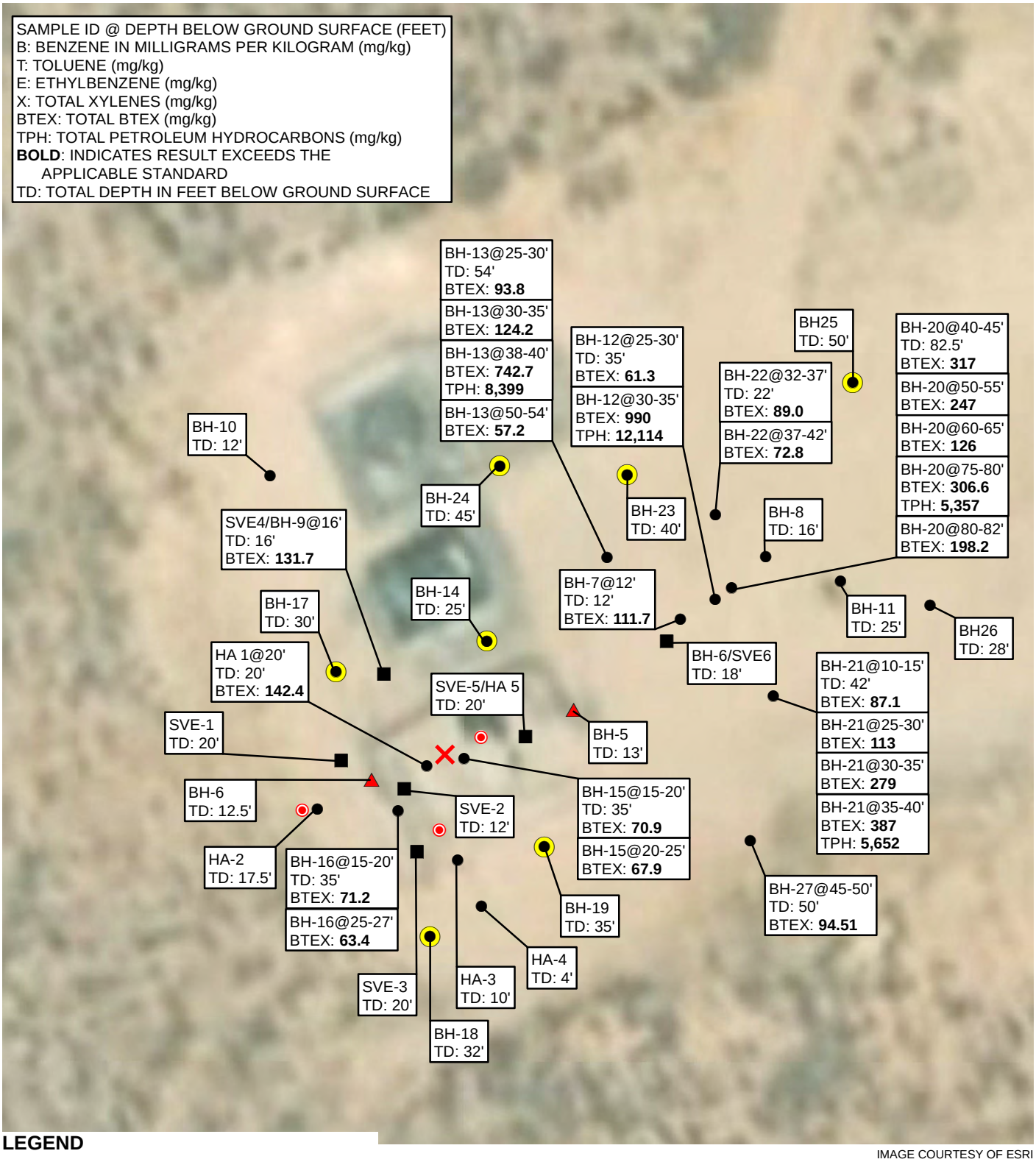
N

FIGURE 5
BTEX ISOPACH MAP
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017818016_OH RANDEL #5\017818016_OH RANDEL #5_FIG05_BTEX_ISO.mxd


A
A'
HA-2
BH-16
SVE-1
SVE-2
HA 1
BH-15
HA 5
BH-5
BH-6
BH-7
BH-20
BH-8
SM
ML
SC
164 ppm
2,133 ppm
0.484 mg/kg
34 mg/kg
324 ppm
2,488 ppm
71.2 mg/kg
1,248 mg/kg
2,968 ppm
63.4 mg/kg
1,214 mg/kg
374 ppm
0.624 mg/kg
38.2 mg/kg
4,187 ppm
273 ppm
3,066 ppm
2886 ppm
142.4 mg/kg
827 mg/kg
3,386 ppm
36.4 mg/kg
798 mg/kg
2,479 ppm
70.9 mg/kg
1,556 mg/kg
2,949 ppm
2.04 mg/kg
112 mg/kg
164 ppm
2,356 ppm
20.01 mg/kg
460 mg/kg
1,922 ppm
15.4 mg/kg
326 mg/kg
2,192 ppm
67.9 mg/kg
1,476 mg/kg
1,051ppm
17.2 mg/kg
575 mg/kg
2,494 ppm
9.2 mg/kg
920 mg/kg
3,172ppm
27.5 mg/kg
687.1 mg/kg
1,034 ppm
3,128 ppm
23.5 mg/kg
980 mg/kg
1,922 ppm
36.7 mg/kg
1,120 mg/kg
3,159 ppm
45.2 mg/kg
2,100 mg/kg
108 ppm
3,128 ppm
111.7 mg/kg
2,950 mg/kg
219.3 ppm
772 ppm
1,813 ppm
2.35 mg/kg
261 mg/kg
879 ppm
733.4 ppm
317 mg/kg
4,591 mg/kg
1,524 ppm
198.2 mg/kg
3,074 mg/kg
10
20
30
40
50
60
70
80
LT Environmental, Inc.
Advancing Opportunity
Figure 6
OH Randel #5
A – A' Cross Section
2016 Tank Release
Historic Tank Release
Unknown Historic Release
Visual staining and elevated OVM results, but lab analytical results below remediation action levels
Screened Interval
Vapor
Combined BTEX
Total Petroleum Hydrocarbons
Exceeds standards
0
10
20
Feet


B
B'
BH-24
BH-13
BH-20
BH-21
BH27
ML
SM
SW
SC
709 ppm
1,475 ppm
5.11 mg/kg
147 mg/kg
1,445 ppm
1,190 ppm
45.4 mg/kg
1,483 mg/kg
445.1 ppm
0.022 mg/kg
0.532mg/kg
357.4 ppm
0.016 mg/kg
0.161 mg/kg
68.1 ppm
3,040 ppm
33.2 mg/kg
823 mg/kg
2,562 ppm
93.8 mg/kg
1,667 mg/kg
902 ppm
57.2 mg/kg
1,184 mg/kg
219.3 ppm
1,813 ppm
2.35 mg/kg
261 mg/kg
879 ppm
733.4 ppm
317 mg/kg
4,591 mg/kg
1,524 ppm
198.2 mg/kg
3,074 mg/kg
43.8 ppm
2,523 ppm
87.1 mg/kg
2,181 mg/kg
350.6 ppm
387 mg/kg
5,652 mg/kg
59.6 ppm
3,454 ppm
11.71 mg/kg
207 mg/kg
832 ppm
94.51 mg/kg
2,083 mg/kg
10
20
30
40
50
60
70
80
LT Environmental, Inc.
Advancing Opportunity
Figure 7
OH Randel #5
B – B' Cross Section
Screened Interval
Unknown Historic Release
Visual staining and elevated OVM results, but lab analytical results below remediation action levels
Vapor
Combined BTEX
Total Petroleum Hydrocarbons
Exceeds standards
0
10
20
Feet



LEGEND

- RELEASE LOCATION
- PROPOSED BOREHOLE
- EXISTING LATERAL DELINEATION POINT
- BOREHOLE
- SOIL VAPOR EXTRACTION (SVE) WELL
- BOREHOLE ADVANCED BY XTO

0 30 60
Feet

N

FIGURE 8
PROPOSED DELINEATION MAP
OH RANDEL #5
NWNW SEC 10 T26N R11W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017818016_OH RANDEL #5\017818016_OH RANDEL #5_FIG08_SOIL_ANALY_2017.mxd

TABLE 1
BOREHOLE SOIL ANALYTICAL RESULTS

OH RANDEL #5
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC

Soil Sample ID	Sample Date	Depth (feet)	Vapor (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	TPH (mg/kg)
HA 1 @ 20'	7/5/2016	20	2,886	5.1	56	7.3	74	**142.4**	810	17	NA	827
HA 5 @ 16'	7/5/2016	16	2,356	0.21	3.5	1.3	15	20.01	310	150	NA	460
HA 5 @ 21.5'	7/5/2016	21.5	1,922	<0.10	2.4	1.0	12	15.4	260	66	NA	326
*BH-5 @ 9.2'	11/18/2016	9.2	2,494	<0.121	<1.21	<0.121	9.2	9.2	783	137	NA	920
*BH-5 @ 13'	11/18/2016	13	3,172	0.314	<2.45	1.28	25.9	27.494	633	54.1	NA	687.1
BH-6 @ 9'	8/2/2016	9	3,128	<0.49	1.8	1.7	20	23.5	840	140	NA	980
BH-6 @ 18'	8/2/2016	18	1,922	<0.49	7.3	2.4	27	36.7	1,000	120	NA	1,120
*BH-6 @ 9'	11/18/2016	9	2,197	<0.0495	<0.495	<0.0495	<0.148	<0.148	51.1	17.9	NA	69
*BH-6 @ 10'	11/18/2016	10	2,980	0.0218	<0.00500	0.188	0.0413	0.2511	138	9.27	NA	147.27
*BH-6 @ 12.6'	11/18/2016	12.6	2,347	<0.0122	<0.122	<0.0122	<0.0368	<0.122	53.9	5.81	NA	59.71
BH-7 @ 11'	8/2/2016	11	3,159	<0.42	2.6	3.6	39	45.2	1,700	400	NA	2,100
BH-7 @ 12'	8/2/2016	12	3,128	<0.42	9.4	8.3	94	**111.7**	2,600	350	NA	2,950
BH-8 @ 16'	8/2/2016	16	3,125	<0.47	<0.94	1.3	12	13.3	560	340	NA	900
BH-9 @ 19'	8/2/2016	16	2,413	<1.0	23	8.7	100	**131.7**	2,200	240	NA	2,440
BH-11 20-25'	4/19/2017	20-25	0.6	<0.000612	<0.00612	<0.000612	0.00220	0.00220	<0.122	<4.95	<4.95	<4.95
BH-12 0-10'	4/19/2017	0-10	51.4	<0.000538	<0.00538	<0.000538	<0.00161	<0.00538	<0.108	5.66	<4.44	5.66
BH-12 10-15'	4/19/2017	10-15	1,001	<0.110	<1.10	0.403	2.11	2.51	401	39.7	4.39	441
BH-12 15-20'	4/19/2017	15-20	73.1	0.000728	0.00750	0.00379	0.0779	0.0892	2.36	508	8.00	518
BH-12 20-25'	4/19/2017	20-25	269	0.00535	0.0218	0.0114	0.156	0.189	4.02	67.1	<4.48	71.1
BH-12 25-30'	4/19/2017	25-30	1,904	0.149	2.98	2.82	55.5	**61.3**	1,260	275	<4.48	1,535
BH-12 30-35'	4/19/2017	30-35	1,632	**66.3**	392	39.8	558	**990**	11,400	687	26.7	**12,114**
BH-13 0-10'	4/19/2017	0-10	0.7	<0.000570	<0.00570	<0.000570	<0.00171	<0.00570	<0.114	<4.65	<4.65	<4.65
BH-13 10-15'	4/19/2017	10-15	1.4	0.00113	<0.00567	<0.000567	0.0444	0.0455	1.32	<4.63	<4.63	1.32
BH-13 15-20'	4/19/2017	15-20	68.1	<0.000590	<0.00590	<0.000590	0.0132	0.0132	0.672	8.14	<4.72	8.81
BH-13 20-25'	4/19/2017	20-25	3,040	<0.114	<1.14	1.59	31.6	33.2	698	120	5.29	823
BH-13 25-30'	4/19/2017	25-30	2,562	0.871	27.9	6.39	59.5	**93.8**	1,380	277	9.51	1,667
BH-13 30-35'	4/19/2017	30-35	1,694	5.31	45.6	8.48	70.1	**124.2**	1,950	240	7.61	2,190
BH13 38-40'	9/28/2017	38-40	1,172	73.4	378	43.7	321	**742.7**	8,090	295	14.4	**8,399**
BH13 50-54'	9/28/2017	50-54	902	0.592	14.8	4.07	38.3	**57.2**	908	257	18.8	1,184
BH-14 15'-20'	4/20/2017	15-20	231	0.00116	<0.00586	0.0175	0.0491	0.0666	0.966	<4.78	<4.78	0.966
BH-14 20'-25'	4/20/2017	20-25	16.0	<0.000529	<0.00529	<0.000529	0.00185	0.00185	<0.106	<4.50	<4.50	<4.50
BH-15 0-10'	4/20/2017	0-10	2,949	<0.0277	<0.277	<0.0277	2.04	2.04	61.8	50.5	<4.48	112
BH-15 10-15'	4/20/2017	10-15	3,386	<0.0572	3.87	2.82	29.7	36.4	651	147	<4.67	798
BH-15 15-20'	4/20/2017	15-20	2,479	0.525	10.7	5.23	55.0	**70.9**	1,270	286	<4.97	1,556
BH-15 20-25'	4/20/2017	20-25	2,192	0.117	10.2	4.63	53.1	**67.9**	1,110	366	<4.52	1,476
BH-15 30-32'	4/20/2017	30-32	1,051	0.812	3.53	1.16	12.5	17.2	549	25.6	<4.43	575
BH-16 0-10'	4/20/2017	0-10	164	<0.000552	<0.00552	<0.000552	0.00315	0.00315	<0.110	7.67	<4.50	7.67
BH-16 10-15'	4/20/2017	10-15	2,133	<0.000558	0.00694	0.0352	0.442	0.484	11.5	22.7	<4.70	34
BH-16 15-20'	4/20/2017	15-20	2,488	0.143	7.02	3.79	60.2	**71.2**	1,150	97.8	<4.76	1,248
BH-16 23-25'	4/20/2017	23-25	2,606	<0.115	2.37	1.36	17.6	21.3	399	169	<4.59	568
BH-16 25-27'	4/20/2017	25-27	2,968	0.252	11.5	4.43	47.5	**63.4**	997	217	<4.53	1,214
BH-16 27-29'	4/20/2017	27-29	2,784	0.107	5.72	2.14	17.2	25.1	600	51.0	<4.51	651
BH-16 33-35'	4/20/2017	33-35	374	0.0252	0.242	0.0393	0.343	0.624	5.34	32.9	<4.41	38.2
BH-17 20-25'	4/21/2017	20-25	362	0.000588	0.00605	0.00778	0.150	0.164	5.52	5.26	<4.51	10.78
BH-18 30-32'	4/21/2017	30-32	9.8	<0.000522	<0.00522	<0.000522	0.00646	0.00646	<1.04	<4.26	<4.26	<4.26
BH-19 30-35'	4/21/2017	30-35	113	0.000866	<0.00521	<0.000521	0.00464	0.00464	<0.104	<4.30	<4.30	<4.30
BH-20 @ 20-25'	8/21/2017	20-25	1,813	0.0138	<0.125	<0.0125	2.35	2.35	96.9	150	13.8	261
BH-20 @ 40-45'	8/21/2017	40-45	733.4	**21.1**	125	18.8	152	**317**	4,170	421	<40.0	4,591
BH-20 @ 50-55'	8/22/2017	50-55	497.3	**12.7**	90.9	15.7	128	**247**	3,310	336	5.44	3,651
BH-20 @ 60-65'	8/22/2017	60-65	519.5	2.26	32.9	9.6	80.8	**126**	1,600	392	9.8	2,002
BH20 75-80'	9/28/2017	75-80	1,665	**12.0**	114	21.6	171	**306.6**	4,900	435	21.5	**5,357**
BH20 80-82'	9/28/2017	80-82	1,524	2.11	63.8	13.4	121	**198.2**	2,710	340	24.2	3,074
BH-21 @ 10-15'	8/21/2017	10-15	2,523	<0.500	5.39	<0.500	81.7	**87.1**	1,710	457	14.0	2,181
BH-21 @ 25-30'	8/21/2017	25-30	1,259	2.47	29.1	8.57	72.7	**113**	1,880	325	8.88	2,214

TABLE 1
BOREHOLE SOIL ANALYTICAL RESULTS

OH RANDEL #5
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC

Soil Sample ID	Sample Date	Depth (feet)	Vapor (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	MRO (mg/kg)	TPH (mg/kg)
BH-21 @ 30-35'	8/21/2017	30-35	624.1	**28.1**	123	13.9	114	**279**	3,620	95.8	<20.0	3,716
BH-21 @ 35-40'	8/21/2017	35-40	350.6	**10.3**	131	26.8	219	**387**	4,810	842	<40.0	**5,652**
BH-22 @ 24-26'	8/21/2017	24-26	1,523	0.0142	<0.125	<0.0125	0.859	0.873	82.5	64.1	<20.0	147
BH-22 @ 32-37'	8/21/2017	32-37	1,047	0.841	22.7	7.02	58.4	**89.0**	1,430	360	<20.0	1,790
BH-22 @ 37-42'	8/21/2017	37-42	304.7	3.50	25.6	4.42	39.3	**72.8**	1,250	92.7	<20.0	1,343
BH-23 @ 30-35'	8/22/2017	30-35	246.9	0.0192	0.0386	0.00242	0.0229	0.0831	0.470	<4.00	<4.00	0.470
BH-23 @ 35-40'	8/22/2017	35-40	349.2	0.00512	0.0102	0.00133	0.00697	0.0236	0.195	<4.00	<4.00	0.195
BH-24 @ 10-15'	8/22/2017	10-15	1,475	0.276	0.517	0.517	3.80	5.11	180	40.8	<4.00	121
BH-24 @ 30-35'	8/22/2017	30-35	1,190	0.462	4.82	3.17	37.4	45.4	1,000	483	<20.0	1,483
BH-24 @ 35-40'	8/22/2017	35-40	445.1	0.00431	0.0085	<0.000500	0.00915	0.0220	0.532	<4.00	<4.00	0.532
BH-24 @ 40-45'	8/22/2017	40-45	357.4	0.00369	0.00711	0.000684	0.00471	0.0162	0.161	<4.00	<4.00	0.161
BH25 30-35'	9/28/2017	30-35	112	0.00956	0.0413	0.00304	0.0534	0.0977	0.399	5.0	<4.97	5.399
BH25 45-50'	9/29/2017	45-50	8.9	0.000770	<0.00528	<0.000528	0.00202	0.00202	<0.106	<4.22	<4.22	<4.22
BH26 20-25'	9/29/2017	20-25	0.0	0.0103	0.0146	<0.000622	0.00390	0.0185	<0.124	<4.98	<4.98	<4.98
BH27 35-40'	9/30/2017	35-40	3,454	0.0442	0.863	1.19	9.66	11.7130	207	<5.29	<5.29	207
BH27 40-45'	9/30/2017	40-45	1,947	<0.263	5.91	3.98	35.4	45.29	621	303	26.7	951
BH27 45-50'	9/30/2017	45-50	832	<0.533	18.9	7.51	68.1	**94.51**	1,540	510	33.2	2,083
NMOCD Closure Criteria				**10**	**NE**	**NE**	**NE**	**50**	**NE**	**NE**	**NE**	**5,000**

Notes:

BTEX - Benzene, Toluene, Ethylbenzene, Total Xylenes analyzed by EPA method 8021
DRO - diesel range organics analyzed by EPA Modified Method 8015
ESC - ESC Laboratory Sciences
GRO - gasoline range organics analyzed by EPA Modified Method 8015
Hall- Hall Environmental Analysis Laboratory
mg/kg - milligrams per kilogram
NA - not analyzed
NE - Not established
NMOCD - New Mexico Oil Conservation Division
ppm - parts per million
TPH- total petroleum hydrocarbons
* - Boreholes drilled by XTO
Bold - indicates value exceeds stated NMOCD standard
< - indicates result is less than laboratory detection limit

TABLE 2
EMISSIONS ESTIMATE SUMMARY

OH RANDEL #5
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Sample Information and Lab Analysis

Date	Total Flow (cf)	Delta Flow (cf)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TVPH (µg/L)	PID (ppm)
08/11/16	0	0	160	1,700	61	500	46,000	0
08/11/16	31,185	31,185	160	1,700	61	500	46,000	4,072
04/19/17	34,134,405	34,103,220	System shut down for additional well installation/delineation					
08/17/18	59,647,485	25,513,080	130	230	10	110	8,900	719

Emission Calculations

Date	Flow Rate (cfm)	Benzene (lb/hr)	Toluene (lb/hr)	Ethylbenzene (lb/hr)	Xylenes (lb/hr)	TVPH (lb/hr)
08/11/16	105	0.0628	0.6676	0.0240	0.1964	18.0646
04/19/17	100	System shut down for additional well installation/delineation				
08/17/18	100	0.0486	0.0860	0.0037	0.0411	3.3287

Tons emitted over total operating time

Date	Total Operational Hours	Delta Hours	Benzene (tons)	Toluene (tons)	Ethylbenzene (tons)	Xylenes (tons)	TVPH (tons)	Cumulative TVPH (tons)	Cumulative TVPH (lbs)	12 Month Rolling Throughput (tons)
08/11/16	0.0	0.0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0.0
08/11/16	5.0	5.0	0.0002	0.0017	0.0001	0.0005	0.0447	0.0447	89.4199	0.0447
04/19/17	5,688.8	5,683.9	System shut down for additional well installation/delineation							
08/17/18	9,941.0	4,252.2	0.1034	0.1829	0.0080	0.0875	7.0771	7.1218	14,243.5597	7.1218
		Sum	**0.1035**	**0.1845**	**0.0080**	**0.0880**	**7.1218**			

NOTES:

cf - cubic feet
cfm - cubic feet per minute
µg/l - micrograms per liter
lb/hr - pounds per hour
lbs - pounds
PID - photo-ionization detector
ppm - part per million
TVPH - total volatile petroleum hydrocarbons
System startup occurred on 8/11/16 at 10 AM with 0 hours on the blower engine.

APPENDIX A: BORELOGS

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.
848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-1		Project: OH Randel #5	
Date: 6/29/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Josh Adams/Devin Hencmann	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3-inch / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 19.5' / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	dry	4187	yes		1	0-1'		SM	silty sand, 40% silt, 40% sand 10% mud brown, hc oder , HC stains 10YR7/4	
		2822	yes		2	1-2'				
		483	yes		3	2-3'				
		859	yes		4	3-4'				
		473	yes		5	4-5'				
		564	no		6	5-6'				
		273	yes		7	6-7'				
		785	yes		8	7-8'				
		999	yes		9	8-9'				
	dry	3066	yes		10	9-10'		ML	silty sand 35% silt, 40% fine sand 10% med sand, 5% course grey color, HC oder and stains seems to be historic, becoming more consolidated 10YR 7/1	
		3746	yes		11	10-11'				
		3584	yes		12	11-12'				
	dry	2655	yes		13	12-13'		SM	grey, stained, mc clay compact 10YR 6/1	
		3384	yes		14	13-14'				
	dry	3441	yes		15	14-15'		ML	transition to a silty clay	

Compliance M Engineering M Remediation
LT Environmental, Inc.

Boring/Well #	
Project:	
Project #	
Date	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	dry							ML	Light brown silty clay, ml compact 10YR 7/4	
		2886	yes		16	15-16'				
		2322	yes		17	16-17'				
	dry	1977	yes		18	17-18'		ML	light brown silty sand, loose, ml 10YR 7/4	
		2886	yes		19	18-19.5'				
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.
848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-2		Project: OH Randel #5	
Date: 6/29/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Josh Adams/Devin Hencmann	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3-inch / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 17.5 / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	dry	0	no		1	0-1'		SM	silty sand, 40% silt, 60% sand light brown 10YR7/4	
		0	no		2	1-2'				
		0	no		3	2-3'				
	dry	0	no		4	3-4'		SM	silty sand, 40%silt, 50% clean sand, 10% lithics, light brown to pale red color, reduced 5YR 6/6	
		0	no		5	4-5'				
		0	no		6	5-6'				
		0	no		7	6-7'				
		0	no		8	7-8'				
	dry	0	no		9	8-9'		SM	silty sand, 60% sand 40% silt, light grey color 10YR 7/1	
		0	no		10	9-10'				
	moist	0	no		11	10-11'				
					12	11-12'				
	moist	1.3	no		13	12-13'		SM	same lith as above, orange staining/stringers, slight HC oder 10YR 7/1 and 5YR 7/8	
		324	no		14	13-14'				
		34.8	no		15	14-15'				

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.

Boring/Well #	HA-2
Project:	OH Randel #5
Project #	12916007
Date	6/29/2016

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	moist	3.2	no		16	15-16'		SM	same lith as above, orange staining/stringers, slight HC oder 10YR 7/1 and 5YR 7/8	
		0	no		17	16-17'				
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

Compliance ᴍ Engineering ᴍ Remediation
LT Environmental, Inc.

Boring/Well #	
Project:	
Project #	
Date	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
					38					
					39					
					40					
					41					
					42					
					43					
					44					
					45					
					46					
					47					
					48					
					49					
					50					
					51					
					52					
					53					
					54					
					55					
					56					
					57					
					58					
					59					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-3		Project: OH Randel #5	
Date: 6/29/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Josh Adams/Devin Hencmann	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3-inch / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 10 / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
		0	no		1	0-1'				
		0	no		2	1-2'				
		0	no		3	2-3'				
		0	no		4	3-4'				
	dry	0	no		5	4-5'		SM	silty sand, 40% silt, 50% clean sand 10% lithics light brown 10YR 7/4	
		0	no		6	5-6'				
		0	no		7	6-7'				
		65	no		8	7-8'				
		907	no		9	8-9'				
		3062	yes		10	9-10'				
									rock encountered, drilling advanced stopped	

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Boring/Well #	
Project:	
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Date	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
					38					
					39					
					40					
					41					
					42					
					43					
					44					
					45					
					46					
					47					
					48					
					49					
					50					
					51					
					52					
					53					
					54					
					55					
					56					
					57					
					58					
					59					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-4		Project: OH Randel #5	
Date: 6/29/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Josh Adams/Devin Hencmann	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3-inch / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 13 / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	dry	0	no		1	0-1'		SM	silty sand, 40% silt, 50% clean sand 10% lithics light brown 10YR 7/4	
		0	no		2	1-2'				
		0	no		3	2-3'				
		0	no		4	3-4'				
		0	no		5	4-5'				
		0	no		6	5-6'				
		0	no		7	6-7'				
		0	no		8	7-8'				
		0	no		9	8-9'				
		0	no		10	9-10'				
	moist	0	no		11			ML	silty/clay rich sand, cohesive, light brown 10YR 7/4	
		0	no		12					
	moist	0	no		13			SM	silty sand, 40% silt, 50% clean sand 10% lithics light brown 10YR 7/4	
					14					
					15					

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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
					38					
					39					
					40					
					41					
					42					
					43					
					44					
					45					
					46					
					47					
					48					
					49					
					50					
					51					
					52					
					53					
					54					
					55					
					56					
					57					
					58					
					59					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: HA-5		Project: OH Randel #5	
Date: 7/5/2016		Project Number: 12916007	
Logged By: Josh Adams/Alex Crooks		Drilled By: Josh Adams/Alex Crooks	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Hand Auger	Sampling Method: Hand Auger
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3-inch / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 21.5 / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	dry	0	no		1	0-1'		SM	silty sand with some gravel, 70% sand, 25% silt 5% gravel med-fine grained subrounded, pale red brown 2.5YR 6/8	
		0	no		2	1-2'				
	dry	0	no		3	2-3'		SM	Same as above except no gravel 70% sand 30% silt 2.5YR 6/8	
		0	no		4	3-4'				
		0	no		5	4-5'				
	dry	0	no		6	5-6'		SM	fine grained silty sand 60% sand 40% silt, subrounded, light golden tan 10YR 7/6	
		0	no		7	6-7'				
	dry	0	no		8	7-8'		SM	silty sand with clay 60% sand 30% silt 10% clay light tan grey 10YR 7/3	
		0	no		9	8-9'				
	dry	0	no		10	9-10'		SM	same lith as above, orange stainning/stringers 10YR 7/2 and 5YR7/8	
		0	no		11	10-11'				
		0	no		12	11-12'				
		164	no		13	12-13'				
	dry	427	no		14	13-14'		SM	silty sand with clay 60% sand 30% silt 10% clay very fine to fine grained sand, dark golden brown 10YR 6/8	
		2241	yes		15	14-15'				

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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	dry	2356	yes		16	15-16'		ML	increase in clay content, silty sand with clay 55% sand 30% silt 15%clay, no staining	
		2017	yes		17	16-17'				
		1857	yes		18	17-18'				
		1993	yes		19	18-19'				
	dry	2168	yes		20	19-20'		SM	silty sand with clay 60% sand, 30% silt, 10% clay light tan grey 10YR7/2	
	dry	1922	yes		21	20-21.5'		SM	silty sand with gravel 55% sand 35% silt, 10% gravel well rounded, very fine to fine grainded sand light brown grey 10YR 7/2	
		1116	yes							
					22				rock encountered, drilling advance stopped	
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-6		Project: OH Randel #5	
Date: 8/2/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Louis Trujillo	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Geo Probe	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3-inch / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 18 / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			SM		
	dry	0	no		1	0-1'			silty sand, 40% silt, 50% fine sand 10% lithics light brown 10YR 7/4	
		0	no		2	1-2'				
		0	no		3	2-3'				
		0	no		4	3-4'				
		0	no		5	4-5'				
		0	no		6	5-6'				
		0	no		7	6-7'				
		1034	yes		8	7-8'				
	dry	3128	yes		9	8-9'			silty sand, 30% silt, 30% fine sand, 30%med sand 10% lithics light brown 10YR 7/4	
		2390	yes		10	9-10'				
		3010	yes		11	10-11'				
		2654	yes		12	11-12'				
		1884	yes		13	12-13'				
	dry	1927	yes		14	13-14'			silty sand 45% silt 50% fine sand 5%med sand light grey brown 10YR 7/2	
		3025	yes		15	14-15'				

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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	dry	2390	yes		16	15-16'			silty sand 45% silt 50% fine sand 5%med sand light grey brown 10YR 7/2	
		2425	yes		17	16-17'				
		1922	yes		18	17-18'				
									refusal at 18'	
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-7		Project: OH Randel #5	
Date: 8/2/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Louis Trujillo	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Geo probe	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 12	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1	0-1'	NR		no recovery	
					2	1-2'				
	dry	108	no		3	2-3'		SM	silty sand with gravel , 60%sand 30% silt 10% gravel light brown 10YR7/4	
		3.5	no		4	3-4'				
					5	4-5'	NR		no recovery	
					6	5-6'				
	dry	13.9	no		7	6-7'		SM	silty sand 40% silt, 30% fine sand 20% med sand minor course light brown 10YR 7/4	
		34	no		8	7-8'				
					9	8-9'				
	dry	1805	yes		10	9-10'		SM	silty sand 30% silt 30% med sand 40% fine sand minor course, HC oder light grey brown 10YR 7/2	
		3159	yes		11	10-11'				
		3128	yes		12	11-12'				
									refusal at 12'	

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-8		Project: OH Randel #5	
Date: 8/2/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Louis Trujillo	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Geo probe	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 16	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1	0-1'	NR		no recovery	
					2	1-2'				
		0	no		3	2-3'				
	dry	3	no		4	3-4'		SM	silty sand with surface gravel light brown 10YR 7/4	
					5	4-5'	NR		no recovery	
					6	5-6'				
		5.3	no		7	6-7'				
	dry	1.5	no		8	7-8'		SM	silty sand 60% sand 40% silt light brown 10YR 7/4	
		2	no		9	8-9'				
		2.2	no		10	9-10'				
		468	no		11	10-11'				
		772	no		12	11-12'				
	moist				13	12-13'		ML	silty sand with clay 50% sand 40% silt 10% clay, light grey brown 10YR 7/2	
		88	no		14	13-14'				
					15	14-15'				

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Boring/Well #	
Project:	
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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	moist							ML	silty sand with clay 50% sand 40% silt 10% clay	
		3125	yes		16	15-16'			, light grey brown 10YR 7/2	
									refusal at 16'	
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-9		Project: OH Randel #5	
Date: 8/2/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Louis Trujillo	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Geo probe	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA	Diameter: NA / Length: NA	Hole Diameter: 3-inch	Depth to Liquid:
Screen Type: NA / Slot: NA	Diameter: NA / Length: NA	Total Depth: 16	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1	0-1'	NR		no recovery	
					2	1-2'				
					3	2-3'				
	dry	0	no		4	3-4'		SM	silty sand with surface gravel light brown 10YR 7/4	
		0	no		5	4-5'				
		0	no		6	5-6'				
		0.4	no		7	6-7'				
	dry	0.6	no		8	7-8'		SM	silty sand 40% silt 40% fine sand 20% med sand light brown 10YR7/4	
		0	no		9	8-9'				
		3.7	no		10	9-10'				
		13.5	no		11	10-11'				
		776	yes		12	11-12'				
		1927	yes		13	12-13'				
	dry	2355	yes		14	13-14'		SM	silty sand 50% med sand 20% fine sand 30% silt light grey 10YR7/2 hc oder and staining	
		2114	yes		15	14-15'				

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Boring/Well #	
Project:	
Project #	
Date	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
	dry							SM	silty sand 50% med sand 20% fine sand 30%	
		2413	yes		16	15-16'			silt light grey 10YR7/2 hc oder and staining	
									refusal at 16'	
					17					
					18					
					19					
					20					
					21					
					22					
					23					
					24					
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-10		Project: OH Randel #5	
Date: 8/2/2016		Project Number: 12916007	
Logged By: Josh Adams/Devin Hencmann		Drilled By: Louis Trujillo	
Elevation:	Detector: Mini Rae Lite	Drilling Method: Geo Probe	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 3-inch / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 12 / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
		0	no		1	0-1'				
		0	no		2	1-2'				
		0	no		3	2-3'				
	dry	0	no		4	3-4'		SM	silty sand, 40% silt, 50% clean sand 10% surface gravel light brown 10YR 7/4	
		0	no		5	4-5'				
		0	no		6	5-6'				
		0	no		7	6-7'				
		0	no		8	7-8'				
		0	no		9	8-9'				
	dry	0	no		10	9-10'		ML	silty sand with clay 50% sand 40% silt 10% clay cohesive, light grey 10YR7/2	
		0	no		11	10-11'				
		0	no		12	11-12'				
									refusal at 12'	

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-11	Project: OH Randel #5
Date: 4-19-17	Project Number: 12916007
Logged By: D. Burns	Drilled By: GEOMAT
Elevation:	Detector: PID
Drilling Method: Hollowstem Auger	Sampling Method: 2' split spoon ~~Continuous~~
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter:	Depth to Liquid: NA
Screen Type: NA	Slot: NA
Diameter: NA Length: NA	Total Depth: 25'
Depth to Water: NA	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0				Road base 0-6"	Bentonite Cap
	Dry	0.0	No		1		100	SW-SM	4/3 10YR Brown well graded sand with silt. No stain/odor.	
					2	PID.				
	Dry	0.0	No	BH-11 0-10	3	COMP			SAA.	
					4	0.0	60%	SM	silty sand. 6/3 2.5Y yellowish grey	
					5					
	Dry	0.3	No		6		50		SAA	
	Dry	0.3	No		7		80	SM	Dense grayish brown + tan silty sand. No s/o	
					8				SAA	
	Dry	0.0	No		9		100	SP	Oxidized orangish-tan coarse sand No s/o	
					10					
					11	PID			SAA. No s/o	
	Dry	0.3		BH-11 10-15	12	COMP. 0.2				
					13				gray~~ish~~ tan med-coarse sand no s/o	
					14					
	Dry	0.3			15			ML	Brownish olive silt with sand No s/o	

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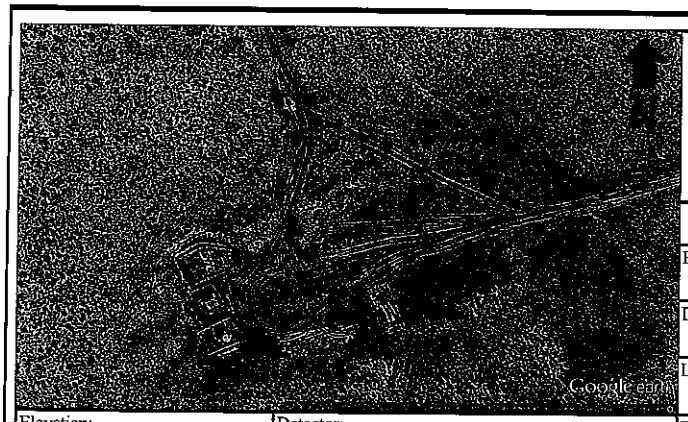
Boring/Well #	BH-11
Project:	OH Randel #5
Project #	
Date	4-19-17

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
			No		16	PID		ML	Brownish red + olive silt w/ sand	
		0.5			17	COMP			No s/o	
	Dry				18	0.5 ppm	3	ML	gray slightly cemented siltstone w/ sand	
			No		19				No s/o	Cuttings
					20					
					21					
			No		22					
	Dry	0.6			23			SP	Lt. Brown + tan silty sand	Bentonite chips, hydrated
			No		24		2'	SM	Same consolidated	
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-12		Project: OH Randel #5	
Date: 4-19-17		Project Number: 012916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation:	Detector: PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA Length: NA	Hole Diameter: / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA Length: NA	Total Depth: / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
	Moist	0.1	No		1	0-10 comp.			Reddish brown med sand w/ silt	
				BH-12	2	PID		SP-SM	No s/o	
				0-10	3	0.8 ppm				
	Moist	0.0	No		4				some carbonate material. No s/o	
					5					
	Dry				6					
		0.8			7					
					8					
					9			SP SM	Lt. gray tan dense compact silty sand. Slight odor,	
	Dry	51.4	Slight odor		10					
					11	10-15 comp PID.				
	Dry	656	slt. odor		12				SAA. slight - Mod sweet degrad. gas odor.	
					13	947 ppm		SP		
	Dry	1001	Mod odor		14			SM	SAA.	
					15					

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Boring/Well #	BH-12
Project:	OH Rundel #5
Project #	
Date	4-19-17

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16	15-20 comp				
					17					
					18					
	Dry	73.1	No		19		1.5	ML	Brownish gray w/ oxidization silt w/ sand. some slt. cementization v. mild HC odor	
					20					
					21					
					22					
					23					
	Dry	269	No		24		2'	SP SM	Lt tan sand w/ silt. slt. odor.	
					25					
					26					
					27					
					28					
	Dry	1,904	No		29		1.5	SPSM	SAA. Lt tan sand w/ silt slt. odor	
					30					
					31					
					32					
	Dry	1,632	No		33	comp 30 -35	3'	SW	Lt. tan to grey med coarse sand w/ oxid. Coarsening to w/ gravel. tenses of mod. odor. Lt. gray coarse sandstone. Weathered med. dense.	
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-13		Project: OH Randel #5	
Date: 4-19-17		Project Number: 12916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation:	Detector: PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1	0-10'				
			No		2	COMP			Reddish brown sand w/ silt.	
	M.				3	PID		SP-SM	No s/o	
		0.1			4	0.3 ppm	4'			
	M.		No		5			SP-SM	Olive-brown sand w/ silt + some trace carbonate. Damp odor. No stain	
					6					
					7					
					8					
					9					
	M	0.7	No		10		1'	SP-SM	SAA. olive BRN sand w/ silt Damp odor. No stain	
					11					
					12	10-15				
					13	comp				
					14	PID:		SP-SM	Lt. gray w/ oxidic sand w/ silt	
	Dry	1.4			15	13.7	2'			

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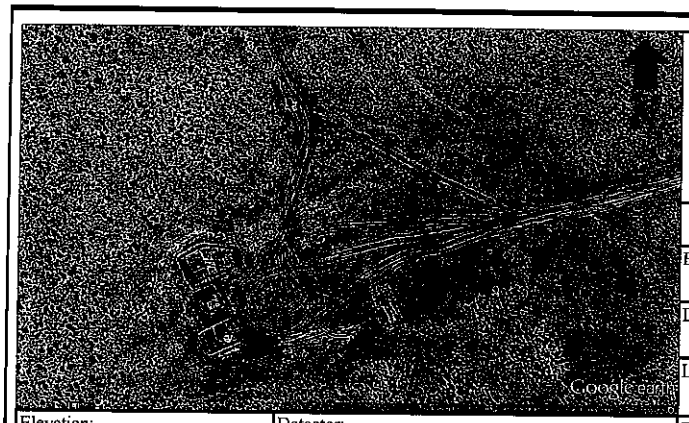
Boring/Well #	BH-13
Project:	OH Randel #5
Project #	
Date	4-19-17

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17					
					18					
					19		1.5	SP SM	Brownish gray and olive sand w/ silt	
	Dry	68.1	No		20			ML	Lt. grayish olive silt w/ sand No s/o	
					21					
					22					
					23			ML	SAA - some cementation slt. odor	
					24		2'	SP SM	Lt. [redacted] olive & Brown med. sand w/ silt. Mod. Odor.	
	Dry	3,040	No		25					
					26					
					27					
					28			SP	SAA - Brown med sand w/ Silt. Mod. odor. Like degraded gas - Xylenes.	
	Dry	2,562	No		29		3'	SM		
					30					
					31					
					32					
					33				very Lt. gray, med-coarse sand w/ gravel	
	Dry	1,694	No		34	2.	2.5'	SW		
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH14		Project: OH Randel #5	
Date: 4-20-17		Project Number: 12916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation:	Detector: PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA Length: NA	Hole Diameter: / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA Length: NA	Total Depth: / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1					
					2					
	Damp	0.0	No	BH-14 @ 0-10'	3		3'	SP SM	Reddish Brown med fn sand w/ silt. No s/o	
					4					
					5				Brown med. fn. sand w/ silt. Trace Carbonate. No s/o	
				PID COMP 0.0 ppm	6					
					7					
					8					
					9					
	dry	0.0	No		10		1'	SP SM	Brown med sand w/ silt. No s/o	
					11					
				BH 14 @ 10-15	12	PID COMP 0.1				
					13					
					14			ML	Gray Sandy silt, partial cementation	
	Dry	0.1	No		15		1'	SP SM	Lt gray w/ oxidization med fn. sand w/ silt	No s/o

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Boring/Well #	BH-14
Project:	OH Rendel #5
Project #	
Date	4-20-17

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
				BH-14@15-20	17	PID COMP 231				
					18					
					19					
	Dry	231	No ~~Slight~~		20		1'	SPSM	Lt. grayish Brown silty sand — On the shoe: Med. gray sandy silt, ~~silty~~ lt. dense, lt. stain + odor	
					21					
				BH 14 @ 20-25'	22					
	Dry	9.1	salty odor		23	PID COMP 13.1	3'	ML	Lt gray w/ oxidation sandy silt, partial cementation, slightly salty odor.	
	Dry	16.0	No		24			SPSM	Lt grayish Brown silty sand No S/O	
					25					
					26					
					27					
					28					
					29					
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-15		Project: OH Randel #5	
Date: 4-20-17		Project Number: 12916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation:	Detector: PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA Length: NA	Hole Diameter: / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA Length: NA	Total Depth: / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1					
					2					
	Moist				3	PID	3'	SPSM	Reddish Brown sand w/ silt.	
		0.4		BH-15 @ 0-10'	4	COMP			No s/o	
	Moist		No		5	1,554		SPSM	More Dense Reddish brown sand w/sill. No s/o	
					6					
					7				Reddish brown med-coarse sand	
	Dry Mois	1.8	No		8		3.5'	SPSM	w/ silt. No s/o	
					9					
	Dry	2949	yes		10			ML	Lt gray to gray silty sandy w/ oxid & carbonate, mod. stain, slight odor.	
					11					
				BH-15 @ 10-15	12	PID				
	Dry	3386	yes		13	COMP		SM	Lt gray & dk gray silty sand w/ some thin cemented lens. Mod stain/odor	
					14	2618	3'			
	Moist	2785	yes		15				Lt gray sand, med-coarse mod-stain/odor	

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Boring/Well #	
Project:	
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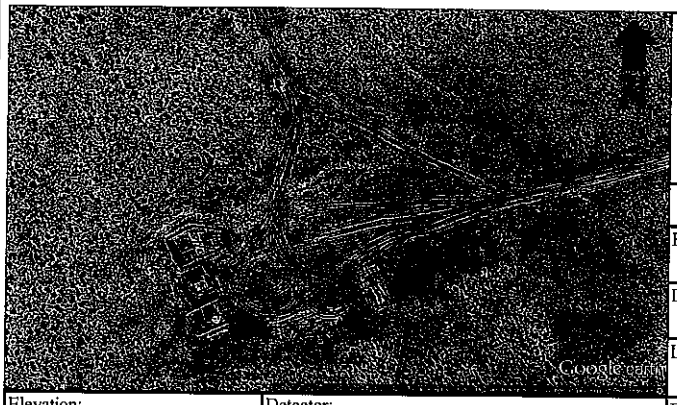
Date	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
				BH-1S @ 15-20'	17	PID COMP				
					18					
					19	2479				
	Dry	2479	yes		20		1'	ML	Lt. Brownish olive silty sand. No stain moderate odor. Olive gray sandy silty. Mod stain/odor	
					21					
				BH-1S @ 20-25'	22	PID COMP 2192				
					23					
					24		2'	ML	Olive gray brown silty sand. No stain, mod odor.	
	Dry	2,192			25					
					26					
					27					
					28					
					29					
	Dry/slight moist	2,568			30		<1'		Possible slough, mix of lt. brown silty sand. unconsolidated	
	Dry	1,051	No		31		2'		split spoon brown + tan med-coarse sand w/ oxidiz.	
					32					
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-16		Project: OH Randel #5	
Date: 4-20-17		Project Number: 12916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation:	Detector: PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA Length: NA	Hole Diameter: / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA Length: NA	Total Depth: / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.7	No	BH-16 @ 0-10'	0 1 2 3 4 5		3'	SP SM	~~Brow~~ Reddish Brown sand w/ silt. No stain/odor	
					6 7	PID COMP 35.8				
	Moist	164			8 9		3'	SPSM	SAA. Reddish Brown sand w/ silt	
	Dry		6" yes		10			ML	gray silty sand. slight stain odor 6"	
		787	Slight	BH-16 @ 10-15	11 12	PID COMP 1,352	3.5'	ML	Lt. gray olive silty sand. slight s/o	
		2,133	Mod		13			SPSM	gray sandy silt mod. s/o Lt gray silt w/ sand. Mod s/o	
		2,039			14 15			SPSM	Lt gray to brown sand w/ silt slight to mod s/o	

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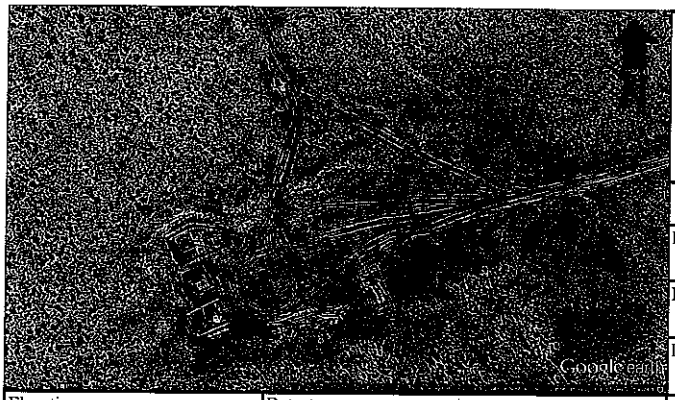
Boring/Well #	
Project:	
Project #	
Date	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17				Possible slough.	
					18	BH-16 @ 15-20'				
					19					
	Dry	2,488	No Yes		20		1'	SPSM ML	Brown silty sand, no stain, slight odor. Dark gray silt w/ sand in shoe.	
					21				Augered to 23'	
					22				Split spoon	
					23					
	Dry	2606	No		24	BH-16 @ 23-25	2'	SP SM	Lt olive brown med fn sand w/ silt. No stain, slight odor. Coarsening to med. sand. slight odor	
					25					
	Dry	2968	No		26	BH-16 @ 25-27	2'	SP SM	SAA - Lt. Brown & tan sand w/ silt. No stain. Mod. odor.	
					27					
	Dry	2,784	No		28	BH-16 @ 27-29	2'	SP SM	Lt. Brownish gray med-coarse sand w/ silt. No stain. Mod. sweet gassy xylene odor.	
					29					
					30					
					31					
					32					
					33					
	Dry	374	No		34	BH-16 @ 33-35	2'	SP SM	SAA - Lt. Brownish gray md-coarse sand w/ silt. No stain. V. slight odor.	
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-17		Project: OH Randel #5	
Date: 4-21-17		Project Number: 12916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation:	Detector: PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA Length: NA	Hole Diameter: / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA Length: NA	Total Depth: / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1					
					2				Reddish Brown sand w/ silt. No s/o	
					3					
	Moist	0.5	No	BH-17 @ 0-10'	4		3'	SP SM		
					5					
					6					
					7					
					8				Lt. Brown silty sand. No s/o.	
	Moist	0.0	No		9		3'	SP SM		
					10			ML	Dense Lt brown silt with sand. Some carbonate + oxidation. No s/o	
					11					
				BH 17 @ 10-15	12					
	Dry	0.3	No		13				Lt gray sand w/ silt. No s/o.	
					14		2.5'	SP SM		
					15			ML	Lt. brownish gray, silty sand. V. dense. No s/o	

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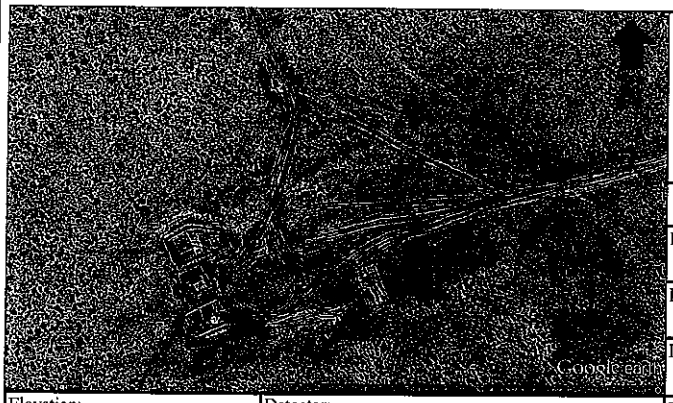
Boring/Well #	BH-17
Project:	OH Randel #5
Project #	
Date	4-21-17

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17					
				BH 17 @	18					
					19					
	Moist	0.0	No	15-20	20		1'	SP	Lt gray & tan med. sand. No s/o	
					21					
					22					
				BH 17 @	23					
	Dry	362	No	15-20	24		2'	SP SM	Lt. Brown fn. sand w/ silt. semi dense. No s/o.	
					25					
					26					
					27					
					28				SAA. - Some slightly cemented siltstone lens.	
	Dry		No		29		2'		Lt. Brown tan med fn sand w/ silt. No s/o	
					30					
					31					
					32					
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-18		Project: OH Randel #5	
Date: 4-21-17		Project Number: 12916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation:	Detector: PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.7	No		0-5		3'	SP/SM	Reddish Brown sand w/ silt. No s/o	
					5-7			ML	Lt. gray silty sand w/ organics/carbonate No s/o	
	Dry	0.0	No		7-10		3'	ML	SAA. No s/o Lt gray + tan.	
					10			SP SM	Lt gray sand w/ silt. some ox. No s/o	
	Dry	0.0	No		13-15		1.5'	SP	Lt. gray med. coarse sand. w/ 4" coarse oxidized lense Med fn. Brown sand. No s/o	

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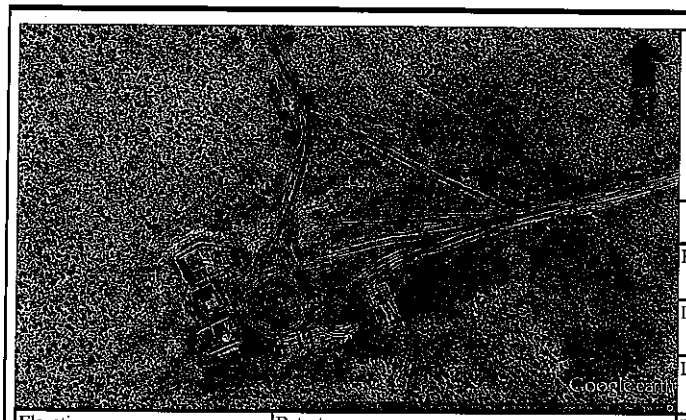
Boring/Well #	
Project:	
Project #	
Date	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17					
					18		—	ML	Lt. Brown sandy silt partial cement lens	
	Dry	0.0	No		19		2'	SP/SM	Lt Brown sand w/silt. No s/o	
					20					
					21					
					22					
					23					
					24			SW	Tan medium sand well graded	
	Dry	6.4	No		25		1.5		No s/o. Dense partially cemented. Very very slight sweetness	
					26		—			
					27				Tan medium sand. slightly consolidated	
	Dry	3.2	No		28		4'	SW	No s/o	
					29					
					30		—			
	Dry.	9.8	No		31		2'	SW	Tan med. - coarse sand w/gravel partial cement. No s/o.	
					32		—			
					33					
					34					
					35					
					36					
					37					



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-19		Project: OH Randel #5	
Date: 4-24-17		Project Number: 12916007	
Logged By: D. Burns		Drilled By: GEOMAT	
Elevation:	Detector: PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: / Depth to Liquid:
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1					
					2					
	Dry	0.2	No		3		3'	SP SM	Reddish Brown sand w/ silt No s/o	
					4					
					5					
					6					
					7					
					8				SAA. No s/o	
			No		9		3'			
		0.1			10			SP SM	Lt. gray. Med sand w/ silt No s/o	
	Dry		No		11					
					12					
			No		13			SP/SM	SAA. No s/o	
	Dry	0.0			14		3'			
			No		15			ML	Brown sandy silt, some ox. No s/o	

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Boring/Well #	
Project:	
Project #	
Date	

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17					
					18				Tan, lt. Brown silty sand.	
	Dry	0.4	No		19		2.5'	ML	No s/o	
					20					
					21					
					22					
					23					
	Dry	5.4	No		24		2.5	ML	SAA. No s/o	
					25					
					26					
					27					
					28					
	Dry	109	No		29		2'	SW	Tan, lt. Brown & gray med-coarse sand. No stain, slight gas. xylenes odor.	
					30					
					31					
				Bkl-19 @ 30-35'	32				SAA. Lt Brownish gray med-coarse sand. No stain, slight sweet gas smell.	
	Dry	113	No		33		4'	SW		
					34					
					35					
					36					
					37					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-20	Project: OH Randel #5
Date: 8/21/2017	Project Number: 12916007
Logged By: Michael A. Wicker	Drilled By: GEOMAT
Elevation: 6,424'	Detector: PID
Drilling Method: Hollowstem Auger	Sampling Method: Continuous / 2' Split-Spoon
Gravel Pack: NA	Seal: NA
Grout: NA	
Casing Type: NA	Diameter: NA Length: NA
Hole Diameter: 6.25-inch	Depth to Liquid: NA
Screen Type: NA Slot: NA	Diameter: NA Length: NA
Total Depth: 80-feet	Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			ML	**Silt w/ Sand**, loose, redish brown, low plasticity, moist, cohesive, 95% silt, 5% f. grained sand, no odor	
					1					
					2					
					3					
	Moist	0.5			4					
					5					
	Moist	1.5			6					
					7					
	Moist	1.5			8					
					9					
	Moist	219.3			10					
					11			SM	**Silty Sand**, loose, lt. brown - lt. gray, low plasticity, moist, sl. cohesive, 65% silt, 35% f.-med grained sand, sl. HC odor,	
	Dry	390.6			12					
					13					
					14				- hard, dk. - lt. brown	
					15					

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LT Environmental, Inc.

Boring/Well #	BH-20
Project:	12916007
Project #	OH Randel #5
Date	8/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
	Dry	271.1			17				- sl. HC odor	
					18					
					19					
					20					
					21				**Silt w/ Sand**, dense, dk. brown - lt. brown, low plasticity, 80% silt, 20% f. grained sand, moderate odor	
				BH20 @ 20-25 1010	22					
	Dry	1,813			23					
					24					
					25				- strong HC odor	
					26					
				BH20 @ 25-30 1030	27					
	Dry	1,481			28					
					29			**ML**		
					30					
					31				- introduce water to prevent ceasing and allow further drilling	
				BH20 @ 30-35 1050	32					
	Dry	879.1			33					
					34					
					35					
					36					
					37					

Compliance ᴍ Engineering ᴍ Remediation LT Environmental, Inc.	Boring/Well #	BH-20
	Project:	12916007
	Project #	OH Randel #5
	Date	8/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
	Dry	935.6		**BH20 @ 35-40 1105**	38					
					39					
					40					
					41					
	Dry	733.4		**BH20 @ 40-45 1125**	42					
					43					
					44					
					45				***8/21/2017***	
				BH20 @ 45-47 0900	46				***8/22/2017***	
	Dry	1,455			47					
				BH20 @ 47-49 0900	48			**ML**		
	Dry	1,034			49					
	Dry	736.3			50					
	Dry	988.4			51					
					52					
				BH20 @ 51-55 1025	53					
	Dry	497.3			54					
					55					
					56					
	Dry	404.2			57					
					58					
					59					

Compliance ᴍ Engineering ᴍ Remediation LT Environmental, Inc.	Boring/Well #	BH-20
	Project:	12916007
	Project #	OH Randel #5
	Date	8/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					60					
	Dry	519.5		**BH20 @ 60-65 1100**	61				- small lens of black staining	
					62					
					63					
					64					
		LTE 575.1 1,300 XTO			65			**ML**	***8/22/2017*** / ***9/6/2017***	
					66					
					67					
					68					
					69					
		LTE 1,100 2,711 XTO			70					
					71				**Clayey Sand**, loose, lt. brown, 70% f.-coarse grained sand, 30% fines, plastic, cohesive	
					72				- split-spoon every 5-feet due to lithology hardness	
					73				- Use water to allow deeper drilling through hard lithology	
					74					
		LTE 849.0 2,298 XTO			75			**SC**		
					76					
					77					
					78					
		LTE 1,044 1,943 XTO			79					
					80					
					81				**TD @ 80'**	
					82					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-21	Project: OH Randel #5
Date: 8/21/2017	Project Number: 12916007
Logged By: Michael A. Wicker	Drilled By: GEOMAT
Elevation: 6,424' / Detector: Mini Rae Lite PID	Drilling Method: Hollowstem Auger / Sampling Method: Continuous / 2' Split Spoon
Gravel Pack: NA	Seal: NA / Grout: NA
Casing Type: NA / Diameter: NA / Length: NA	Hole Diameter: 6.2-inch / Depth to Liquid: NA
Screen Type: NA / Slot: NA / Diameter: NA / Length: NA	Total Depth: 40-feet / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0				**Silt w/ Sand,** loose, redish brown, 65% silt, 35% f.-med. grained sand, sl. Moist, non-low plasticity, cohesive,	
					1					
					2					
					3					
	Sl. Moist	16.8			4					
					5					
					6			**ML**		
					7					
	Sl. Moist	43.8			8					
					9					
					10					
					11					
				BH-21 @ 10-15 1300	12				**Silty Sand**, m. dense, lt. brown, 75% silt, 25% f.-med grained sand, non-plastic, non-cohesive	
	Sl. Moist	2,523			13			**SM**		
					14					
					15					

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Boring/Well #	BH-21
Project:	12916007
Project #	OH Randel #5
Date	8/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15				**Silt w/ Sand**, dense, dk. brown - lt. brown, 80% silt, 20% f. grained sand, non-cohesive, non-low plasticity	
					16					
				BH-21 @ 15-20 1255	17					
	Dry	1,901			18					
					19					
					20			**ML**		
					21					
					22					
				BH-21 @ 20-25 1305	23					
	Dry	1,638			24					
					25					
					26				**Silty Sand**, med. dense-loose, lt. brown,35% f.-med grained sand, 65% silt, high plasticity, cohesive, sl. HC Odor, water used to prevent auger ceasing	
					27					
				BH-21 @ 25-30 1310	28			**ML**		
	Dry	1,259			29					
					30					
					31				**Well Graded Sand**, lt. brown, loose, lt-dark brown, 65% f.-coarse grained sand, 35% silt, plastic, cohesive, sl. HC Odor, water used to	
					32					
				BH-21 @ 30-35 1325	33					
	Dry	624.1			34			**SW**		
					35					
					36					
					37					

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Boring/Well #	BH-20
Project:	12916007
Project #	OH Randel #5
Date	8/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
		350.6		**BH-21 @ 35-40 1355**	38 39 40				**Weathered Sandstone**, lt. brown, non-plastic/non-cohesive	
					41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59				**TD @ 40'**	

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Boring/Well #	BH-21
Project:	12916007
Project #	OH Randel #5
Date	8/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					60					
					61					
					62					
					63					
					64					
					65					
					66					
					67					
					68					
					69					
					70					
					71					
					72					
					73					
					74					
					75					
					76					
					77					
					78					
					79					
					80					
					81					
					82					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-22		Project: OH Randel #5	
Date: 8/21/2017		Project Number: 12916007	
Logged By: Michael A. Wicker		Drilled By: GEOMAT	
Elevation: 6,424'	Detector: Mini Rae Lite PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous / 2' Split Spoon
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 6.25-inch / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 42-feet / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0				**Silt w/Sand**, loose, brown-reddish, 25% fi-med. grained sand , 75% silt	
					1					
					2					
					3					
	Sl. Moist	22.1			4					
					5			**ML**		
					6					
					7					
					8					
					9					
					10					
					11				**Silty Sand**, med-loose, dk. Brown, 30% f.-med grained sand, 70% silt, high plasticity, cohesive	
	Sl. Moist	2.4			12					
					13			**SM**		
					14					
					15					

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Boring/Well #	BH-22
Project:	12916007
Project #	OH Randel #5
Date	8/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15				**Silty w/ Sand**, loose, lt. brown-gray, med. Plasticity, sl. Moist, cohesive, 80% silt, 20% f.-med grained sand - Low recovery, switch to split-spoon	
					16					
					17					
	Sl. Moist	0.0			18			**SM**		
					19					
					20					
					21				**Silt w/ Sand,** brown-reddish, , 80% silt, 20% f.-med grained sand, low-med plasticity, cohesive	
	Dry	0.0			22					
					23				**Silt**, 95% silt, 5% f. grained sand, non-plastic, non-cohesive	
	Dry	0.0			24			**ML**		
	Dry	1,523		**BH-22 @ 24-26 1505**	25					
					26					
	Dry	1,493		**BH-22 @ 26-28 1315**	27					
					28					
	Dry	1,183		**BH-22 @ 28-30 1325**	29				**Silt w/ Sand**, lt. brown-reddish, loose, 80% silt, 20% f.-med grained sand, low-med non-plastic, non-cohesive, sl.-mod HC odor	
					30					
	Dry	814.2		**BH-22 @ 30-32 1335**	31					
					32					
					33				**Well Graded Sand**, med. Dense, lt. brown, 95% f.-coarse grained sand, 5% silt, non-plastic, non-cohesive, HC odor	
	Dry	1,047		**BH-22 @ 32-37 1550**	34					
					35			**SW**		
					36					
					37					

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LT Environmental, Inc.

Boring/Well #	BH-22
Project:	12916007
Project #	OH Randel #5
Date	8/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
		304.7		**BH-22 @ 37-42 1610**	38 39 40 41 42				Weathered Sandstone, hard, lt. brown-reddish, f.-med grained sand, non-plastic/non-cohesive,	
					43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59				**TD @ 42'**	

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LT Environmental, Inc.

Boring/Well #	BH-21
Project:	12916007
Project #	OH Randel #5
Date	8/21/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					60					
					61					
					62					
					63					
					64					
					65					
					66					
					67					
					68					
					69					
					70					
					71					
					72					
					73					
					74					
					75					
					76					
					77					
					78					
					79					
					80					
					81					
					82					

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-23		Project: OH Randel #5	
Date: 8/22/2017		Project Number: 12916007	
Logged By: Michael A. Wicker		Drilled By: GEOMAT	
Elevation: 6,424'	Detector: Mini Rae Lite PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous / 2' Split Spoon
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 6.25-inch / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 40-feet / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0				**Silt w/Sand**, loose, brown-reddish, 25% f.-med. grained sand , 75% silt	
					1					
					2					
					3					
	Sl. Moist	149.7			4					
					5			**ML**		
					6					
					7					
					8					
					9					
					10					
					11				**Silty Sand**, med-loose, dk. Brown, 30% f.-med grained sand, 70% silt, high plasticity, cohesive	
	Sl. Moist	4.1			12					
					13			**SM**		
					14					
					15					

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LT Environmental, Inc.

Boring/Well #	BH-23
Project:	12916007
Project #	OH Randel #5
Date	8/22/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15				- lt. brown-gray, med. plasticity,	
					16					
					17					
	Sl. Moist	5.3			18			SM		
					19					
					20					
					21					
					22					
	Sl. Moist	5.5			23				**Silt w/ Sand**, lt. brown, dense, 75% silt, 25% f. grained sand, non-plastic, non-cohesive	
					24					
					25			ML		
					26					
					27					
	Dry	154.8			28				**Silty Sand**, loose-v. loose, lt. brown, 30% f.-med. grained sand, 70% silt, non-plastic, non-cohesive, HC odor	
					29					
					30					
					31					
				BH-23 @ 30-35 1310	32				- sl. Odor	
	Dry	246.9			33			SM		
					34					
					35					
					36					
					37					

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LT Environmental, Inc.

Boring/Well #	BH-23
Project:	12916007
Project #	OH Randel #5
Date	8/22/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
		349.2		**BH-23 @ 35-40 1325**	38 39 40					
					41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59				**TD @ 40'**	

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-24		Project: OH Randel #5	
Date: 8/22/2017		Project Number: 12916007	
Logged By: Michael A. Wicker		Drilled By: GEOMAT	
Elevation: 6,424'	Detector: Mini Rae Lite PID	Drilling Method: Hollowstem Auger	Sampling Method: Continuous
Gravel Pack: NA		Seal: NA	Grout: NA
Casing Type: NA		Diameter: NA / Length: NA	Hole Diameter: 6.25-inch / Depth to Liquid: NA
Screen Type: NA	Slot: NA	Diameter: NA / Length: NA	Total Depth: 45-feet / Depth to Water: NA

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0				**Silt w/Sand**, loose, brown-reddish, 20% f.-med. grained sand , 80% silt	
					1					
					2					
					3					
	Moist	3.6			4					
					5			ML		
					6					
				BH-24 @ 5-10 1440	7					
	Sl. Moist	709.3			8					
					9					
					10				- Staining @ 9.5' (gray-dk. gray), strong HC odor	
					11				**Silty Sand**, med-loose, dk. Brown, 25% f.-med grained sand, 75% silt, high plasticity, cohesive	
				BH-24 @ 10-15 1450	12					
	Dry	1,475			13			SM		
					14					
					15					

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LT Environmental, Inc.

Boring/Well #	BH-24
Project:	12916007
Project #	OH Randel #5
Date	8/22/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15				- end of gray staining, v. dense, dk. brown, non-plactic, non-cohesive	
					16					
				BH-24 @ 10-15 1452	17					
	Dry	1,331			18					
					19					
					20					
					21					
				BH-24 @ 10-15 1455	22					
	Dry	1,445			23					
					24					
					25					
					26			**SM**	- brown	
				BH-24 @ 10-15 1505	27					
	Dry	1,214			28					
					29					
					30					
					31				- lt brown	
				BH-24 @ 30-35 1320	32					
	Dry	1,190			33					
					34					
					35					
					36					
					37					

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LT Environmental, Inc.

Boring/Well #	BH-24
Project:	12916007
Project #	OH Randel #5
Date	8/22/2017

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
	Dry	445.1		**BH-24 @ 35-40 1530**	38				- lt. brown - lt. gray	
					39					
					40					
					41				- lt. brown	
				BH-23 @ 40-45 1550	42					
	Dry	357.4			43					
					44					
					45					
					46				**TD @ 45'**	
					47					
					48					
					49					
					50					
					51					
					52					
					53					
					54					
					55					
					56					
					57					
					58					
					59					

Location Map:

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4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH25		Project: OH Randel #5	
Date: 9-28-17		Project Number: 012916007	
Logged By: Daniel Burns		Drilled By: Enviro-Drill	
Elevation:	Detector: PID	Drilling Method: Hollow-Stem Auger	Sampling Method: continuous ~~Split Spoon~~
Gravel Pack: 10-20 Silica Sand		Seal: Bentonite chips	Grout: NA
Casing Type: Sch 40 PVC		Diameter: 2" Length:	Hole Diameter: ~~4.25"~~ 7.25" Depth to Liquid:
Screen Type: Sch 40 PVC	Slot: 0.010"	Diameter: 2" Length:	Total Depth: 30 Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.6	No	Not enough material for samples	0			Road base	
					2			Loam	
					4	6" Recov		Brown fn sand w/ silt. No stain odor	
		—			6			No Recovery, large cobble stuck in shoe prevented any material from entering sample barrel.	
					8	0 Recov.			
					10			Brown sandy silt. No s/o	
	Dry	2.1	No		12	3' recov.		Lt gray w/ oxidiz. med. silty sand No s/o	
					14				
		—		—	16			SAA, but w/ slight musty sweet degraded HC odor	
	Dry	0.5	No		18	3' Recov.		gray siltstn.	
					20			Brownish gray sandy silt, No s/o	
		—			22	4' Recov.		Dark brown fn. silty sand, slightly consolidated, dense. No s/o	
	Dry	1.8	No		24				
					26			Brownish tan sandy siltstn. cemented, dense	
	Dry	2.3	No		28	3' Recov		Lt gray/tan silty fn sand + sandy silt.	
					30				

Location Map:

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Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH 25	Project: OH Randel #5
Date: 9-28-17	Project Number: 012916007
Logged By: Daniel Burns	Drilled By: Enviro-Drill
Elevation:	Detector: PID
Drilling Method: Hollow-Stem Auger	Sampling Method: Split Spoon
Gravel Pack: 10-20 Silica Sand	Seal: Bentonite chips
Grout: NA	
Casing Type: Sch 40 PVC	Diameter: 2" Length:
Hole Diameter: ~~4.25"~~ 7.25"	Depth to Liquid:
Screen Type: Sch 40 PVC	Slot: 0.010" Diameter: 2" Length:
Total Depth: 50	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	112	No	BH 25 @ 30-35'	30 32 34	5' Recov.		Lt gray/tan brown silty fn. sand. Slightly cemented. No stain, v. slt. sweet degraded HC odor.	
	Dry	26.2	No	35-40'	36 38 40			Lt gray/tan silty med sand, silty consolidated. No stain v. slt. sweet odor.	
	Dry	2.5	No	40-45'	42 44 46			Lt. tan silty med. sand. No stain/odor.	
	Dry	8.9	No	45-50	48 50 52 54 56 58 60			SAA. No S/O	

Location Map:

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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH26	Project: OH Randel #5
Date: 9-29-17	Project Number: 012916007
Logged By: Daniel Burns	Drilled By: Enviro-Drill
Elevation:	Detector: PID
Drilling Method: Hollow-Stem Auger	Sampling Method: Split Spoon
Gravel Pack: 10-20 Silica Sand	Seal: Bentonite chips
Grout: NA	
Casing Type: Sch 40 PVC	Diameter: 2" Length:
Hole Diameter: ~~4.25"~~ 7.25"	Depth to Liquid:
Screen Type: Sch 40 PVC	Slot: 0.010" Diameter: 2" Length:
Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			Roadbase, fill dirt	
	Moist	0.0	No		2	3'		brown silty med. sand No s/o	
					4				
					6			Lt. Brown silty med. sand. No s/o	
	dry	0.0	No		8	5'			
					10			Lt. tan silty fn. sand No s/o	
					12			tan med sand No s/o	
	Dry	0.0	No		14	4'		slight oxidation lense	
					16			Dark gray sandy siltstn.	
	Dry	0.0	No		18	4'		Brownish gray silty fn sand No s/o	
					20				
					22			Lt. Brown fn sandy silt. some cementation No s/o	
	Dry	0.0	No		24	5'			
					26				
	~~Dry~~	~~0~~	No		28	1'		Dense, consolidated med. s. stn. cemented rock. No stain/odor. Impermeable.	
					30				

BORELOG.XLS

cation Map:

Compliance ▪ Engineering ▪ Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH27		Project: OH Randel #5	
Date: 9-29-17		Project Number: 012916007	
Logged By: Daniel Burns		Drilled By: Enviro-Drill	
Elevation:	Detector: PID	Drilling Method: Hollow-Stem Auger	Sampling Method: Split Spoon
Gravel Pack: 10-20 Silica Sand		Seal: Bentonite chips	Grout: NA
Casing Type: Sch 40 PVC		Diameter: 2" Length:	Hole Diameter: ~~4.25~~ 7.25 Depth to Liquid:
Screen Type: Sch 40 PVC	Slot: 0.010"	Diameter: 2" Length:	Total Depth: Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.0	No		0–4	2'		Topsoil, Brownish red & tan fn-med. silty sand. No s/o	
	Dry	0.0	No		6–8	4'		Brown fn-med silty sand No s/o	
	Dry	0.0	No		10–14	3'		SAA – Light grayish brown fn. sandy slt. slty. cemented. No s/o	
	Dry	0.0	No		16–18	2'		SAA – Lt Brown fn [redacted] sandy slt. No s/o	
	Dry	0.0	No		20–24	3'		SAA. No stain/odor	
	Dry	20.5	No		26–28	3'		Lt. gray/tan silty med. sand No stain, v. slt. sweet hc odor	

ion Map:

Compliance » Engineering » Remediation
LT Environmental, Inc.
4600 W. 60th Avenue
Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH27	Project: OH Randel #5
Date: 9-30-17	Project Number: 012916007
Logged By: Daniel Burns	Drilled By: Enviro-Drill
Elevation:	Detector: PID
Drilling Method: Hollow-Stem Auger	Sampling Method: Split Spoon
Gravel Pack: 10-20 Silica Sand	Seal: Bentonite chips
Grout: NA	
Casing Type: Sch 40 PVC	Diameter: 2" Length:
Hole Diameter: ~~4.25"~~ 7.25	Depth to Liquid:
Screen Type: Sch 40 PVC	Slot: 0.010" Diameter: 2" Length:
Total Depth: 50'	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	59.6	No		30	3'		Lt. gray & tan silty med sand. No stain, slt. sweet HC odor	
					32				
					34			6" lense of gray sandy silt stn. Lt. gray tan silty med. sand	
	Dry	3454	No	BH27 @ 35-40'	36	4'		Lt gray/tan med. sand. w/ silt. No stain, mod. sweet degrading HC odor.	
					38				
					40				
	Dry	1,947	No	BH27 @ 40-45'	42	2'		SAA, No stain, mod. sweet HC odor	
					44				
	Dry	832	No	BH27 @ 45-50'	46	2'		SAA. No stain, lt-mod. sweet odor	
					48			Lt grayish brown silty fn s. stn. mod. dense consolidated.	
					50			Sampler shoe fell off tube in hole, unable to go deeper and still collect samples	
					52				
					54				
					56				
					58				
					60				

BORELOG XLS

APPENDIX B: LABORATORY ANALYTICAL REPORTS

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 07, 2016

Ashley Ager

XTO Energy
382 County Road 3100
Aztec, NM 87410
TEL: (505) 787-0519
FAX (505) 333-3280

RE: OH Randel #5 OrderNo.: 1607132

Dear Ashley Ager:

Hall Environmental Analysis Laboratory received 3 sample(s) on 7/6/2016 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1607132**
Date Reported: **7/7/2016**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1607132-001 **Matrix:** SOIL

Client Sample ID: HA 5 @ 16'
Collection Date: 7/5/2016 11:55:00 AM
Received Date: 7/6/2016 7:35:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	150	10		mg/Kg	1	7/6/2016 10:55:46 AM	26242
Surr: DNOP	90.4	70-130		%Rec	1	7/6/2016 10:55:46 AM	26242
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	310	21		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Surr: BFB	354	80-120	S	%Rec	5	7/6/2016 11:30:14 AM	26229
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.21	0.10		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Toluene	3.5	0.21		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Ethylbenzene	1.3	0.21		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Xylenes, Total	15	0.42		mg/Kg	5	7/6/2016 11:30:14 AM	26229
Surr: 4-Bromofluorobenzene	120	80-120	S	%Rec	5	7/6/2016 11:30:14 AM	26229

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Client Sample ID: HA 5 @ 21.5'
Project: OH Randel #5
Collection Date: 7/5/2016 1:00:00 PM
Lab ID: 1607132-002 **Matrix:** SOIL **Received Date:** 7/6/2016 7:35:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	66	10		mg/Kg	1	7/6/2016 11:17:24 AM	26242
Surr: DNOP	91.7	70-130		%Rec	1	7/6/2016 11:17:24 AM	26242
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	260	20		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Surr: BFB	299	80-120	S	%Rec	5	7/6/2016 11:53:42 AM	26229
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.10		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Toluene	2.4	0.20		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Ethylbenzene	1.0	0.20		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Xylenes, Total	12	0.41		mg/Kg	5	7/6/2016 11:53:42 AM	26229
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	5	7/6/2016 11:53:42 AM	26229

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Client Sample ID: HA 1 @ 20'
Project: OH Randel #5
Collection Date: 7/5/2016 4:00:00 PM
Lab ID: 1607132-003
Matrix: SOIL
Received Date: 7/6/2016 7:35:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	17	9.9		mg/Kg	1	7/6/2016 11:39:25 AM	26242
Surr: DNOP	90.7	70-130		%Rec	1	7/6/2016 11:39:25 AM	26242
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	810	65		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Surr: BFB	166	80-120	S	%Rec	20	7/6/2016 12:17:10 PM	26229
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	5.1	0.32		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Toluene	56	0.65		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Ethylbenzene	7.3	0.65		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Xylenes, Total	74	1.3		mg/Kg	20	7/6/2016 12:17:10 PM	26229
Surr: 4-Bromofluorobenzene	113	80-120		%Rec	20	7/6/2016 12:17:10 PM	26229

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1607132**

07-Jul-16

Client: XTO Energy

Project: OH Randel #5

Sample ID	**LCS-26242**	SampType: **LCS**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID: **26242**			RunNo: **35436**				
Prep Date:	**7/6/2016**	Analysis Date: **7/6/2016**			SeqNo: **1096556**	Units: **mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	84.1	62.6	124			
Surr: DNOP	4.4		5.000		87.7	70	130			

Sample ID	**MB-26242**	SampType: **MBLK**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID: **26242**			RunNo: **35436**				
Prep Date:	**7/6/2016**	Analysis Date: **7/6/2016**			SeqNo: **1096557**	Units: **mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	9.5		10.00		95.4	70	130			

Sample ID	**MB-26224**	SampType: **MBLK**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID: **26224**			RunNo: **35437**				
Prep Date:	**7/5/2016**	Analysis Date: **7/6/2016**			SeqNo: **1096560**	Units: **%Rec**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.5		10.00		94.6	70	130			

Sample ID	**LCS-26224**	SampType: **LCS**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID: **26224**			RunNo: **35437**				
Prep Date:	**7/5/2016**	Analysis Date: **7/6/2016**			SeqNo: **1096561**	Units: **%Rec**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.1		5.000		82.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1607132**

07-Jul-16

Client: XTO Energy

Project: OH Randel #5

Sample ID	**MB-26229**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**26229**	RunNo:	**35443**					
Prep Date:	**7/5/2016**	Analysis Date:	**7/6/2016**	SeqNo:	**1097615**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		95.5	80	120			

Sample ID	**LCS-26229**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**26229**	RunNo:	**35443**					
Prep Date:	**7/5/2016**	Analysis Date:	**7/6/2016**	SeqNo:	**1097616**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	80	120			
Surr: BFB	1100		1000		108	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1607132**

07-Jul-16

Client: XTO Energy

Project: OH Randel #5

Sample ID **MB-26229**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **26229**	RunNo: **35443**
Prep Date: **7/5/2016**	Analysis Date: **7/6/2016**	SeqNo: **1097633** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.93		1.000		92.8	80	120			

Sample ID **LCS-26229**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **26229**	RunNo: **35443**
Prep Date: **7/5/2016**	Analysis Date: **7/6/2016**	SeqNo: **1097635** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.8	75.3	123			
Toluene	0.97	0.050	1.000	0	96.9	80	124			
Ethylbenzene	0.99	0.050	1.000	0	99.4	82.8	121			
Xylenes, Total	3.0	0.10	3.000	0	99.2	83.9	122			
Surr: 4-Bromofluorobenzene	0.99		1.000		98.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: XTO Energy | Work Order Number: 1607132 | RcptNo: 1

Received by/date: AT 07/06/16

Logged By: Anne Thorne 7/6/2016 7:35:00 AM

Completed By: Anne Thorne 7/6/2016

Reviewed By: TO 07/06/16

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: XTO Energy

James McDaniel

Mailing Address: 382 Rd 3100

Aztec, NM 87410

Phone #: 505-419-0915

Email or Fax#:

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation

NELAP ☐ Other

EDD (Type)

Turn-Around Time: Same Day

☐ Standard ☒ Rush 24 hours

Project Name: OH Randel #5

Project #:

Project Manager: Ashley Ager

Sampler: Josh Adams & Alex Crooks

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + ~~MTBE + TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / ~~MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)				Air Bubbles (Y or N)
7/5/16	1155	Soil	HASQ 16'	1-4oz jar	Cool	1607132-001	X		X												
7/5/16	1300	Soil	HASQ 21.5'	1-4oz jar	Cool	-002	X		X												
7/5/16	1600	Soil	HASQ 20'	1-4oz jar	Cool	-003	X		X												

Date	Time	Relinquished by:	Received by:	Date	Time
7/5/16	1715			7/5/16	1715
7/6/16	1841			07/06/16	0735

Remarks:

HASQ 16' = FARAC-7516-1155

HASQ 21.5' = FARAC-7516-1300

HASQ 20' = FARAC-7516-1600

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 09, 2016

James McDaniel

XTO Energy
382 County Road 3100
Aztec, NM 87410
TEL: (505) 787-0519
FAX (505) 333-3280

RE: OH Randel #5 OrderNo.: 1608126

Dear James McDaniel:

Hall Environmental Analysis Laboratory received 6 sample(s) on 8/3/2016 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-001 **Matrix:** SOIL

Client Sample ID: BH-6@9'
Collection Date: 8/2/2016 1:00:00 PM
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	140	9.7		mg/Kg	1	8/3/2016 1:23:47 PM	26760
Surr: DNOP	105	70-130		%Rec	1	8/3/2016 1:23:47 PM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	840	99		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Surr: BFB	302	49.4-163	S	%Rec	20	8/5/2016 2:53:37 PM	26763
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.49		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Toluene	1.8	0.99		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Ethylbenzene	1.7	0.99		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Xylenes, Total	20	2.0		mg/Kg	20	8/5/2016 2:53:37 PM	26763
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	20	8/5/2016 2:53:37 PM	26763

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Client Sample ID: BH-6@18'
Project: OH Randel #5
Collection Date: 8/2/2016 1:05:00 PM
Lab ID: 1608126-002
Matrix: SOIL
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	120	9.5		mg/Kg	1	8/3/2016 2:29:08 PM	26760
Surr: DNOP	107	70-130		%Rec	1	8/3/2016 2:29:08 PM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1000	98		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Surr: BFB	226	49.4-163	S	%Rec	20	8/5/2016 3:17:13 PM	26763
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.49		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Toluene	7.3	0.98		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Ethylbenzene	2.4	0.98		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Xylenes, Total	27	2.0		mg/Kg	20	8/5/2016 3:17:13 PM	26763
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	20	8/5/2016 3:17:13 PM	26763

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Client Sample ID: BH-7@11'
Project: OH Randel #5
Collection Date: 8/2/2016 12:50:00 PM
Lab ID: 1608126-003
Matrix: MEOH (SOIL)
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	400	10		mg/Kg	1	8/3/2016 10:03:18 AM	26760
Surr: DNOP	103	70-130		%Rec	1	8/3/2016 10:03:18 AM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1700	84		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Surr: BFB	617	49.4-163	S	%Rec	20	8/3/2016 9:32:24 AM	26741
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.42		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Toluene	2.6	0.84		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Ethylbenzene	3.6	0.84		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Xylenes, Total	39	1.7		mg/Kg	20	8/3/2016 9:32:24 AM	26741
Surr: 4-Bromofluorobenzene	127	80-120	S	%Rec	20	8/3/2016 9:32:24 AM	26741

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-004
Client Sample ID: BH-7@12'
Collection Date: 8/2/2016 12:55:00 PM
Matrix: MEOH (SOIL)
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	350	10		mg/Kg	1	8/3/2016 10:25:02 AM	26760
Surr: DNOP	102	70-130		%Rec	1	8/3/2016 10:25:02 AM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2600	84		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Surr: BFB	691	49.4-163	S	%Rec	20	8/3/2016 9:55:52 AM	26741
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.42		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Toluene	9.4	0.84		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Ethylbenzene	8.3	0.84		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Xylenes, Total	94	1.7		mg/Kg	20	8/3/2016 9:55:52 AM	26741
Surr: 4-Bromofluorobenzene	137	80-120	S	%Rec	20	8/3/2016 9:55:52 AM	26741

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-005 **Matrix:** SOIL

Client Sample ID: BH-8@16'
Collection Date: 8/2/2016 12:45:00 PM
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	340	9.5		mg/Kg	1	8/3/2016 2:50:55 PM	26760
Surr: DNOP	107	70-130		%Rec	1	8/3/2016 2:50:55 PM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	560	94		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Surr: BFB	296	49.4-163	S	%Rec	20	8/4/2016 6:27:38 PM	26763
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.47		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Toluene	ND	0.94		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Ethylbenzene	1.3	0.94		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Xylenes, Total	12	1.9		mg/Kg	20	8/4/2016 6:27:38 PM	26763
Surr: 4-Bromofluorobenzene	109	80-120		%Rec	20	8/4/2016 6:27:38 PM	26763

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

CLIENT: XTO Energy
Project: OH Randel #5
Lab ID: 1608126-006
Matrix: MEOH (SOIL)
Client Sample ID: BH-9@16'
Collection Date: 8/2/2016 12:40:00 PM
Received Date: 8/3/2016 7:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	240	9.5		mg/Kg	1	8/3/2016 10:46:38 AM	26760
Surr: DNOP	94.4	70-130		%Rec	1	8/3/2016 10:46:38 AM	26760
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2200	210		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Surr: BFB	237	49.4-163	S	%Rec	50	8/3/2016 10:19:20 AM	26741
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Toluene	23	2.1		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Ethylbenzene	8.7	2.1		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Xylenes, Total	100	4.1		mg/Kg	50	8/3/2016 10:19:20 AM	26741
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	50	8/3/2016 10:19:20 AM	26741

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608126**

09-Aug-16

Client: XTO Energy

Project: OH Randel #5

Sample ID	**LCS-26760**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID:	**26760**		RunNo:	**36186**				
Prep Date:	**8/3/2016**	Analysis Date:	**8/3/2016**		SeqNo:	**1120950**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	10	50.00	0	79.1	62.6	124			
Surr: DNOP	4.5		5.000		90.1	70	130			

Sample ID	**MB-26760**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID:	**26760**		RunNo:	**36186**				
Prep Date:	**8/3/2016**	Analysis Date:	**8/3/2016**		SeqNo:	**1120951**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	8.5		10.00		85.0	70	130			

Sample ID	**1608126-001AMS**	SampType:	**MS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**BH-6@9'**	Batch ID:	**26760**		RunNo:	**36185**				
Prep Date:	**8/3/2016**	Analysis Date:	**8/3/2016**		SeqNo:	**1121248**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	170	9.8	49.12	138.0	60.9	33.9	141			
Surr: DNOP	5.3		4.912		107	70	130			

Sample ID	**1608126-001AMSD**	SampType:	**MSD**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**BH-6@9'**	Batch ID:	**26760**		RunNo:	**36185**				
Prep Date:	**8/3/2016**	Analysis Date:	**8/3/2016**		SeqNo:	**1121249**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	150	9.2	46.21	138.0	33.3	33.9	141	9.01	20	S
Surr: DNOP	4.9		4.621		106	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608126**

09-Aug-16

Client: XTO Energy

Project: OH Randel #5

Sample ID	**MB-26741**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**26741**	RunNo:	**36191**					
Prep Date:	**8/2/2016**	Analysis Date:	**8/3/2016**	SeqNo:	**1121472**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.4	49.4	163			

Sample ID	**LCS-26741**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**26741**	RunNo:	**36191**					
Prep Date:	**8/2/2016**	Analysis Date:	**8/3/2016**	SeqNo:	**1121473**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	102	80	120			
Surr: BFB	1100		1000		106	49.4	163			

Sample ID	**MB-26763**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**26763**	RunNo:	**36215**					
Prep Date:	**8/3/2016**	Analysis Date:	**8/4/2016**	SeqNo:	**1122450**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		97.0	49.4	163			

Sample ID	**LCS-26763**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**26763**	RunNo:	**36215**					
Prep Date:	**8/3/2016**	Analysis Date:	**8/4/2016**	SeqNo:	**1122452**	Units:	**mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	102	80	120			
Surr: BFB	1000		1000		105	49.4	163			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1608126**

09-Aug-16

Client: XTO Energy

Project: OH Randel #5

Sample ID **MB-26741**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **26741**	RunNo: **36191**
Prep Date: **8/2/2016**	Analysis Date: **8/3/2016**	SeqNo: **1121479** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.91		1.000		91.5	80	120			

Sample ID **LCS-26741**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **26741**	RunNo: **36191**
Prep Date: **8/2/2016**	Analysis Date: **8/3/2016**	SeqNo: **1121480** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	101	75.3	123			
Toluene	0.98	0.050	1.000	0	97.6	80	124			
Ethylbenzene	1.0	0.050	1.000	0	101	82.8	121			
Xylenes, Total	3.0	0.10	3.000	0	100	83.9	122			
Surr: 4-Bromofluorobenzene	0.96		1.000		96.5	80	120			

Sample ID **MB-26763**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **26763**	RunNo: **36215**
Prep Date: **8/3/2016**	Analysis Date: **8/4/2016**	SeqNo: **1122473** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.92		1.000		91.5	80	120			

Sample ID **LCS-26763**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **26763**	RunNo: **36215**
Prep Date: **8/3/2016**	Analysis Date: **8/4/2016**	SeqNo: **1122474** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.025	1.000	0	94.4	75.3	123			
Toluene	0.92	0.050	1.000	0	91.9	80	124			
Ethylbenzene	0.96	0.050	1.000	0	95.8	82.8	121			
Xylenes, Total	2.9	0.10	3.000	0	96.4	83.9	122			
Surr: 4-Bromofluorobenzene	0.95		1.000		95.0	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **XTO Energy** Work Order Number: **1608126** RcptNo: **1**

Received by/date: 08/03/16

Logged By: **Lindsay Mangin** 8/3/2016 7:20:00 AM

Completed By: **Lindsay Mangin** 8/3/2016 7:44:40 AM

Reviewed By: TO 08/03/16

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.7	Good	Yes			

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: XTO Energy Inc	Turn-Around Time: See Remarks
James McDaniel	~~Standard~~ Rush Same Day
Mailing Address: 382 County Road 3100 Aztec, NM 87410	Project Name: OH Randel #5
Phone #: 505-419-0315	Project #: 012916007
Email or Fax#:	Project Manager: Devin Hencmann
QA/QC Package: Standard ☐ Level 4 (Full Validation)	Sampler: Devin Hencmann / Josh Adams
Accreditation: NELAP ☐ Other	On Ice: ☑ Yes ☐ No
EDD (Type)	Sample Temperature: 1.7

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1608126	BTEX + ~~MTBE + TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / ~~MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
8-16	1300	soil	BH-6 @ 9'	(1) 4oz.	cool	-001	X		X									
	1305		BH-6 @ 18'			-002	X		X									
	1250		BH-7 @ 11'			-003	X		X									
	1255		BH-7 @ 12'			-004	X		X									
	1245		BH-8 @ 16'			-005	X		X									
	1240		BH-9 @ 16'			-006	X		X									

Date	Time	Relinquished by	Received by	Date	Time
8/2/16	1611		Christine Walters	8/2/16	1611
8/2/16	1834	Christine Walters		08/03/16	0720

Remarks: same day on BH-7 & BH-9 only

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

ANALYTICAL REPORT

May 05, 2017

XTO Energy - San Juan Division

Sample Delivery Group:	L905176
Samples Received:	04/26/2017
Project Number:	
Description:	
Site:	OH RANDEL #5
Report To:	James McDaniel 382 County Road 3100 Aztec, NM 87410

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

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BH-11 20-25' L905176-01 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 12:15 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.99	05/02/17 09:39	05/03/17 16:49	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 09:26	ACM

BH-12 0-10' L905176-02 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 13:00 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.97	05/02/17 09:39	05/03/17 17:11	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 10:07	ACM

BH-12 10-15' L905176-03 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 13:15 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	200	05/02/17 09:39	05/03/17 13:29	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 10:20	ACM

BH-12 15-20' L905176-04 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 13:25 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.93	05/02/17 09:39	05/03/17 17:33	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 10:34	ACM
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	10	05/01/17 21:13	05/02/17 12:10	ACM

BH-12 20-25' L905176-05 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 13:40 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.98	05/02/17 09:39	05/03/17 17:55	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 10:47	ACM

BH-12 25-30' L905176-06 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 14:00 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	196	05/02/17 09:39	05/03/17 23:15	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:01	ACM

BH-12 30-35' L905176-07 Solid

Collected by: D. Burns
Collected date/time: 04/19/17 14:35
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	2475	05/02/17 09:39	05/03/17 23:36	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 15:10	ACM
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	20	05/01/17 21:13	05/02/17 15:24	ACM

BH-13 0-10' L905176-08 Solid

Collected by: D. Burns
Collected date/time: 04/19/17 15:40
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.98	05/02/17 09:39	05/03/17 23:36	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:15	ACM

BH-13 10-15' L905176-09 Solid

Collected by: D. Burns
Collected date/time: 04/19/17 15:50
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.98	05/02/17 09:39	05/03/17 19:23	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:28	ACM

BH-13 15-20' L905176-10 Solid

Collected by: D. Burns
Collected date/time: 04/19/17 16:00
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974587	1	04/28/17 09:43	04/28/17 09:54	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	1	05/02/17 09:39	05/03/17 19:45	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:42	ACM

BH-13 20-25' L905176-11 Solid

Collected by: D. Burns
Collected date/time: 04/19/17 16:10
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	200	05/02/17 09:39	05/03/17 23:57	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 11:57	ACM

BH-13 25-30' L905176-12 Solid

Collected by: D. Burns
Collected date/time: 04/19/17 16:20
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	200	05/02/17 09:39	05/03/17 20:29	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 13:06	ACM

BH-13 30-35' L905176-13 Solid

Collected by: D. Burns | Collected date/time: 04/19/17 16:35 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	194	05/02/17 09:39	05/03/17 20:51	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 13:18	ACM

BH-14 15-20' L905176-14 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 09:30 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015	WG975972	.97	05/02/17 09:39	05/03/17 21:13	BMB
Volatile Organic Compounds (GC) by Method 8021	WG975972	.98	05/02/17 09:39	05/04/17 04:25	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 13:33	ACM

BH-14 20-25' L905176-15 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 09:45 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	.94	05/02/17 09:39	05/03/17 23:58	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 13:46	ACM

BH-15 0-10' L905176-16 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 11:30 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	49.5	05/02/17 09:39	05/04/17 18:39	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:00	ACM

BH-15 10-15' L905176-17 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 11:40 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	98	05/02/17 09:39	05/04/17 19:01	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:14	ACM

BH-15 15-20' L905176-18 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 11:45 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	196	05/02/17 09:39	05/04/17 01:05	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:27	ACM

BH-15 20-25' L905176-19 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 12:00 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	198	05/02/17 09:39	05/04/17 01:27	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:41	ACM

BH-15 30-32' L905176-20 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 13:20 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974589	1	04/27/17 15:10	04/27/17 15:28	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975972	49	05/02/17 09:39	05/04/17 19:24	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975037	1	05/01/17 21:13	05/02/17 14:55	ACM

BH-16 0-10' L905176-21 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 14:20 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.98	05/02/17 09:39	05/03/17 03:38	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 13:39	KLM

BH-16 10-15' L905176-22 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 14:30 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.95	05/02/17 09:39	05/03/17 04:00	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 13:53	KLM

BH-16 15-20' L905176-23 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 14:40 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	495	05/02/17 09:39	05/04/17 19:46	BMB
Volatile Organic Compounds (GC) by Method 8021	WG975980	24.75	05/02/17 09:39	05/04/17 02:33	GLN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 13:26	KLM

BH-16 23-25' L905176-24 Solid

Collected by: D. Burns | Collected date/time: 04/20/17 15:15 | Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	200	05/02/17 09:39	05/03/17 01:03	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:58	KLM

BH-16 25-27' L905176-25 Solid

Collected by: D. Burns
Collected date/time: 04/20/17 15:30
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	200	05/02/17 09:39	05/03/17 04:44	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 13:12	KLM

BH-16 27-29' L905176-26 Solid

Collected by: D. Burns
Collected date/time: 04/20/17 15:40
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015	WG975980	500	05/02/17 09:39	05/04/17 20:08	BMB
Volatile Organic Compounds (GC) by Method 8021	WG975980	25	05/02/17 09:39	05/04/17 02:55	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:31	KLM

BH-16 33-35' L905176-27 Solid

Collected by: D. Burns
Collected date/time: 04/20/17 16:05
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.97	05/02/17 09:39	05/03/17 05:28	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 11:50	KLM

BH-17 20-25' L905176-28 Solid

Collected by: D. Burns
Collected date/time: 04/21/17 10:30
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	1	05/02/17 09:39	05/03/17 05:50	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:45	KLM

BH-18 30-32' L905176-29 Solid

Collected by: D. Burns
Collected date/time: 04/24/17 09:00
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.98	05/02/17 09:39	05/04/17 03:17	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:18	KLM

BH-19 30-35' L905176-30 Solid

Collected by: D. Burns
Collected date/time: 04/24/17 10:25
Received date/time: 04/26/17 12:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG974591	1	04/27/17 14:57	04/27/17 15:05	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG975980	.97	05/02/17 09:39	05/04/17 03:40	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG975038	1	04/29/17 12:28	05/01/17 12:04	KLM

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	80.9		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000612	.99	05/03/2017 16:49	WG975972
Toluene	ND		0.00612	.99	05/03/2017 16:49	WG975972
Ethylbenzene	ND		0.000612	.99	05/03/2017 16:49	WG975972
Total Xylene	0.00220	B	0.00184	.99	05/03/2017 16:49	WG975972
TPH (GC/FID) Low Fraction	ND		0.122	.99	05/03/2017 16:49	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*99.4*		*77.0-120*		*05/03/2017 16:49*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.9*		*75.0-128*		*05/03/2017 16:49*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.95	1	05/02/2017 09:26	WG975037
C28-C40 Oil Range	ND		4.95	1	05/02/2017 09:26	WG975037
(S) o-Terphenyl	*70.0*		*18.0-148*		*05/02/2017 09:26*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.1		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000538	.97	05/03/2017 17:11	WG975972
Toluene	ND		0.00538	.97	05/03/2017 17:11	WG975972
Ethylbenzene	ND		0.000538	.97	05/03/2017 17:11	WG975972
Total Xylene	ND		0.00161	.97	05/03/2017 17:11	WG975972
TPH (GC/FID) Low Fraction	ND		0.108	.97	05/03/2017 17:11	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/03/2017 17:11*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.2*		*75.0-128*		*05/03/2017 17:11*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	5.66		4.44	1	05/02/2017 10:07	WG975037
C28-C40 Oil Range	ND		4.44	1	05/02/2017 10:07	WG975037
(S) o-Terphenyl	*68.5*		*18.0-148*		*05/02/2017 10:07*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.1		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.110	200	05/03/2017 13:29	WG975972
Toluene	ND		1.10	200	05/03/2017 13:29	WG975972
Ethylbenzene	0.403		0.110	200	05/03/2017 13:29	WG975972
Total Xylene	2.11	B	0.329	200	05/03/2017 13:29	WG975972
TPH (GC/FID) Low Fraction	401		22.0	200	05/03/2017 13:29	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*103*		*77.0-120*		*05/03/2017 13:29*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*93.3*		*75.0-128*		*05/03/2017 13:29*	WG975972

Sample Narrative:

8015/8021 L905176-03 WG975972: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	39.7		4.39	1	05/02/2017 10:20	WG975037
C28-C40 Oil Range	ND		4.39	1	05/02/2017 10:20	WG975037
(S) o-Terphenyl	*70.7*		*18.0-148*		*05/02/2017 10:20*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.9		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.000728		0.000535	.93	05/03/2017 17:33	WG975972
Toluene	0.00750		0.00535	.93	05/03/2017 17:33	WG975972
Ethylbenzene	0.00379		0.000535	.93	05/03/2017 17:33	WG975972
Total Xylene	0.0779		0.00161	.93	05/03/2017 17:33	WG975972
TPH (GC/FID) Low Fraction	2.36		0.107	.93	05/03/2017 17:33	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/03/2017 17:33*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.9*		*75.0-128*		*05/03/2017 17:33*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	508		46.0	10	05/02/2017 12:10	WG975037
C28-C40 Oil Range	8.00		4.60	1	05/02/2017 10:34	WG975037
(S) o-Terphenyl	*72.6*		*18.0-148*		*05/02/2017 10:34*	WG975037
(S) o-Terphenyl	*63.2*		*18.0-148*		*05/02/2017 12:10*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.4		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00535		0.000548	.98	05/03/2017 17:55	WG975972
Toluene	0.0218		0.00548	.98	05/03/2017 17:55	WG975972
Ethylbenzene	0.0114		0.000548	.98	05/03/2017 17:55	WG975972
Total Xylene	0.156		0.00164	.98	05/03/2017 17:55	WG975972
TPH (GC/FID) Low Fraction	4.02		0.110	.98	05/03/2017 17:55	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*99.4*		*77.0-120*		*05/03/2017 17:55*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.8*		*75.0-128*		*05/03/2017 17:55*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	67.1		4.48	1	05/02/2017 10:47	WG975037
C28-C40 Oil Range	ND		4.48	1	05/02/2017 10:47	WG975037
(S) o-Terphenyl	*62.1*		*18.0-148*		*05/02/2017 10:47*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.2		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.149		0.110	196	05/03/2017 23:15	WG975972
Toluene	2.98		1.10	196	05/03/2017 23:15	WG975972
Ethylbenzene	2.82		0.110	196	05/03/2017 23:15	WG975972
Total Xylene	55.5		0.330	196	05/03/2017 23:15	WG975972
TPH (GC/FID) Low Fraction	1260		22.0	196	05/03/2017 23:15	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*102*		*77.0-120*		*05/03/2017 23:15*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*05/03/2017 23:15*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	275		4.48	1	05/02/2017 11:01	WG975037
C28-C40 Oil Range	ND		4.48	1	05/02/2017 11:01	WG975037
(S) o-Terphenyl	*70.2*		*18.0-148*		*05/02/2017 11:01*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.8		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	66.3		1.33	2475	05/03/2017 23:36	WG975972
Toluene	392		13.3	2475	05/03/2017 23:36	WG975972
Ethylbenzene	39.8		1.33	2475	05/03/2017 23:36	WG975972
Total Xylene	558		4.00	2475	05/03/2017 23:36	WG975972
TPH (GC/FID) Low Fraction	11400		267	2475	05/03/2017 23:36	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*93.5*		*77.0-120*		*05/03/2017 23:36*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*103*		*75.0-128*		*05/03/2017 23:36*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	687		86.2	20	05/02/2017 15:24	WG975037
C28-C40 Oil Range	26.7		4.31	1	05/02/2017 15:10	WG975037
(S) o-Terphenyl	*81.2*		*18.0-148*		*05/02/2017 15:10*	WG975037
(S) o-Terphenyl	*54.8*	J7	*18.0-148*		*05/02/2017 15:24*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.0		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000570	.98	05/03/2017 23:36	WG975972
Toluene	ND		0.00570	.98	05/03/2017 23:36	WG975972
Ethylbenzene	ND		0.000570	.98	05/03/2017 23:36	WG975972
Total Xylene	ND		0.00171	.98	05/03/2017 23:36	WG975972
TPH (GC/FID) Low Fraction	ND		0.114	.98	05/03/2017 23:36	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/03/2017 23:36*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.3*		*75.0-128*		*05/03/2017 23:36*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.65	1	05/02/2017 11:15	WG975037
C28-C40 Oil Range	ND		4.65	1	05/02/2017 11:15	WG975037
(S) o-Terphenyl	*65.0*		*18.0-148*		*05/02/2017 11:15*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.5		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00113		0.000567	.98	05/03/2017 19:23	WG975972
Toluene	ND		0.00567	.98	05/03/2017 19:23	WG975972
Ethylbenzene	ND		0.000567	.98	05/03/2017 19:23	WG975972
Total Xylene	0.0444		0.00170	.98	05/03/2017 19:23	WG975972
TPH (GC/FID) Low Fraction	1.32		0.113	.98	05/03/2017 19:23	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*98.3*		*77.0-120*		*05/03/2017 19:23*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*90.1*		*75.0-128*		*05/03/2017 19:23*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.63	1	05/02/2017 11:28	WG975037
C28-C40 Oil Range	ND		4.63	1	05/02/2017 11:28	WG975037
(S) o-Terphenyl	*72.6*		*18.0-148*		*05/02/2017 11:28*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.7		1	04/28/2017 09:54	WG974587

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000590	1	05/03/2017 19:45	WG975972
Toluene	ND		0.00590	1	05/03/2017 19:45	WG975972
Ethylbenzene	ND		0.000590	1	05/03/2017 19:45	WG975972
Total Xylene	0.0132		0.00177	1	05/03/2017 19:45	WG975972
TPH (GC/FID) Low Fraction	0.672		0.118	1	05/03/2017 19:45	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*98.9*		*77.0-120*		*05/03/2017 19:45*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*90.1*		*75.0-128*		*05/03/2017 19:45*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	8.14		4.72	1	05/02/2017 11:42	WG975037
C28-C40 Oil Range	ND		4.72	1	05/02/2017 11:42	WG975037
(S) o-Terphenyl	*58.1*		*18.0-148*		*05/02/2017 11:42*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.1		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.114	200	05/03/2017 23:57	WG975972
Toluene	ND		1.14	200	05/03/2017 23:57	WG975972
Ethylbenzene	1.59		0.114	200	05/03/2017 23:57	WG975972
Total Xylene	31.6		0.341	200	05/03/2017 23:57	WG975972
TPH (GC/FID) Low Fraction	698		22.7	200	05/03/2017 23:57	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*103*		*77.0-120*		*05/03/2017 23:57*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*05/03/2017 23:57*	WG975972

Sample Narrative:

8015/8021 L905176-11 WG975972: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	120		4.54	1	05/02/2017 11:57	WG975037
C28-C40 Oil Range	5.29		4.54	1	05/02/2017 11:57	WG975037
(S) o-Terphenyl	*67.2*		*18.0-148*		*05/02/2017 11:57*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.8		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.871		0.114	200	05/03/2017 20:29	WG975972
Toluene	27.9		1.14	200	05/03/2017 20:29	WG975972
Ethylbenzene	6.39		0.114	200	05/03/2017 20:29	WG975972
Total Xylene	59.5		0.342	200	05/03/2017 20:29	WG975972
TPH (GC/FID) Low Fraction	1380		22.8	200	05/03/2017 20:29	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*90.8*		*77.0-120*		*05/03/2017 20:29*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.0*		*75.0-128*		*05/03/2017 20:29*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	277		4.56	1	05/02/2017 13:06	WG975037
C28-C40 Oil Range	9.51		4.56	1	05/02/2017 13:06	WG975037
(S) o-Terphenyl	*67.5*		*18.0-148*		*05/02/2017 13:06*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.1		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	5.31		0.104	194	05/03/2017 20:51	WG975972
Toluene	45.6		1.04	194	05/03/2017 20:51	WG975972
Ethylbenzene	8.48		0.104	194	05/03/2017 20:51	WG975972
Total Xylene	70.1		0.313	194	05/03/2017 20:51	WG975972
TPH (GC/FID) Low Fraction	1950		20.8	194	05/03/2017 20:51	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*92.3*		*77.0-120*		*05/03/2017 20:51*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*96.1*		*75.0-128*		*05/03/2017 20:51*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	240		4.30	1	05/02/2017 13:18	WG975037
C28-C40 Oil Range	7.61		4.30	1	05/02/2017 13:18	WG975037
(S) o-Terphenyl	*70.0*		*18.0-148*		*05/02/2017 13:18*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	83.7		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00116		0.000586	.98	05/04/2017 04:25	WG975972
Toluene	ND		0.00586	.98	05/04/2017 04:25	WG975972
Ethylbenzene	0.0175		0.000586	.98	05/04/2017 04:25	WG975972
Total Xylene	0.0491		0.00176	.98	05/04/2017 04:25	WG975972
TPH (GC/FID) Low Fraction	0.966		0.116	.97	05/03/2017 21:13	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*97.9*		*77.0-120*		*05/03/2017 21:13*	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*100*		*77.0-120*		*05/04/2017 04:25*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*90.1*		*75.0-128*		*05/03/2017 21:13*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.3*		*75.0-128*		*05/04/2017 04:25*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.78	1	05/02/2017 13:33	WG975037
C28-C40 Oil Range	ND		4.78	1	05/02/2017 13:33	WG975037
(S) o-Terphenyl	*62.7*		*18.0-148*		*05/02/2017 13:33*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.8		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000529	.94	05/03/2017 23:58	WG975972
Toluene	ND		0.00529	.94	05/03/2017 23:58	WG975972
Ethylbenzene	ND		0.000529	.94	05/03/2017 23:58	WG975972
Total Xylene	0.00185	B	0.00159	.94	05/03/2017 23:58	WG975972
TPH (GC/FID) Low Fraction	ND		0.106	.94	05/03/2017 23:58	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*102*		*77.0-120*		*05/03/2017 23:58*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.0*		*75.0-128*		*05/03/2017 23:58*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.50	1	05/02/2017 13:46	WG975037
C28-C40 Oil Range	ND		4.50	1	05/02/2017 13:46	WG975037
(S) o-Terphenyl	*71.0*		*18.0-148*		*05/02/2017 13:46*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.2		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.0277	49.5	05/04/2017 18:39	WG975972
Toluene	ND		0.277	49.5	05/04/2017 18:39	WG975972
Ethylbenzene	ND		0.0277	49.5	05/04/2017 18:39	WG975972
Total Xylene	2.04		0.0832	49.5	05/04/2017 18:39	WG975972
TPH (GC/FID) Low Fraction	61.8		5.55	49.5	05/04/2017 18:39	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*103*		*77.0-120*		*05/04/2017 18:39*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*93.5*		*75.0-128*		*05/04/2017 18:39*	WG975972

Sample Narrative:

8015/8021 L905176-16 WG975972: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	50.5		4.48	1	05/02/2017 14:00	WG975037
C28-C40 Oil Range	ND		4.48	1	05/02/2017 14:00	WG975037
(S) o-Terphenyl	*74.5*		*18.0-148*		*05/02/2017 14:00*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.6		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.0572	98	05/04/2017 19:01	WG975972
Toluene	3.87		0.572	98	05/04/2017 19:01	WG975972
Ethylbenzene	2.82		0.0572	98	05/04/2017 19:01	WG975972
Total Xylene	29.7		0.172	98	05/04/2017 19:01	WG975972
TPH (GC/FID) Low Fraction	651		11.4	98	05/04/2017 19:01	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*100*		*77.0-120*		*05/04/2017 19:01*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*92.2*		*75.0-128*		*05/04/2017 19:01*	WG975972

Sample Narrative:

8015/8021 L905176-17 WG975972: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	147		4.67	1	05/02/2017 14:14	WG975037
C28-C40 Oil Range	ND		4.67	1	05/02/2017 14:14	WG975037
(S) o-Terphenyl	*74.3*		*18.0-148*		*05/02/2017 14:14*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	80.4		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.525		0.122	196	05/04/2017 01:05	WG975972
Toluene	10.7		1.22	196	05/04/2017 01:05	WG975972
Ethylbenzene	5.23		0.122	196	05/04/2017 01:05	WG975972
Total Xylene	55.0		0.366	196	05/04/2017 01:05	WG975972
TPH (GC/FID) Low Fraction	1270		24.4	196	05/04/2017 01:05	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*92.5*		*77.0-120*		*05/04/2017 01:05*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.3*		*75.0-128*		*05/04/2017 01:05*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	286		4.97	1	05/02/2017 14:27	WG975037
C28-C40 Oil Range	ND		4.97	1	05/02/2017 14:27	WG975037
(S) o-Terphenyl	*72.9*		*18.0-148*		*05/02/2017 14:27*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.5		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.117		0.112	198	05/04/2017 01:27	WG975972
Toluene	10.2		1.12	198	05/04/2017 01:27	WG975972
Ethylbenzene	4.63		0.112	198	05/04/2017 01:27	WG975972
Total Xylene	53.1		0.335	198	05/04/2017 01:27	WG975972
TPH (GC/FID) Low Fraction	1110		22.4	198	05/04/2017 01:27	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*99.4*		*77.0-120*		*05/04/2017 01:27*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*90.9*		*75.0-128*		*05/04/2017 01:27*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	366		4.52	1	05/02/2017 14:41	WG975037
C28-C40 Oil Range	ND		4.52	1	05/02/2017 14:41	WG975037
(S) o-Terphenyl	*82.4*		*18.0-148*		*05/02/2017 14:41*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.3		1	04/27/2017 15:28	WG974589

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.812		0.0271	49	05/04/2017 19:24	WG975972
Toluene	3.53		0.271	49	05/04/2017 19:24	WG975972
Ethylbenzene	1.16		0.0271	49	05/04/2017 19:24	WG975972
Total Xylene	12.5		0.0814	49	05/04/2017 19:24	WG975972
TPH (GC/FID) Low Fraction	549		5.43	49	05/04/2017 19:24	WG975972
(S) a,a,a-Trifluorotoluene(FID)	*92.4*		*77.0-120*		*05/04/2017 19:24*	WG975972
(S) a,a,a-Trifluorotoluene(PID)	*91.3*		*75.0-128*		*05/04/2017 19:24*	WG975972

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	25.6		4.43	1	05/02/2017 14:55	WG975037
C28-C40 Oil Range	ND		4.43	1	05/02/2017 14:55	WG975037
(S) o-Terphenyl	*68.4*		*18.0-148*		*05/02/2017 14:55*	WG975037

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.8		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000552	.98	05/03/2017 03:38	WG975980
Toluene	ND		0.00552	.98	05/03/2017 03:38	WG975980
Ethylbenzene	ND		0.000552	.98	05/03/2017 03:38	WG975980
Total Xylene	0.00315	B	0.00165	.98	05/03/2017 03:38	WG975980
TPH (GC/FID) Low Fraction	ND		0.110	.98	05/03/2017 03:38	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/03/2017 03:38*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.6*		*75.0-128*		*05/03/2017 03:38*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	7.67		4.50	1	05/01/2017 13:39	WG975038
C28-C40 Oil Range	ND		4.50	1	05/01/2017 13:39	WG975038
(S) o-Terphenyl	*94.6*		*18.0-148*		*05/01/2017 13:39*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.1		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000558	.95	05/03/2017 04:00	WG975980
Toluene	0.00694		0.00558	.95	05/03/2017 04:00	WG975980
Ethylbenzene	0.0352		0.000558	.95	05/03/2017 04:00	WG975980
Total Xylene	0.442		0.00167	.95	05/03/2017 04:00	WG975980
TPH (GC/FID) Low Fraction	11.5		0.112	.95	05/03/2017 04:00	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*88.9*		*77.0-120*		*05/03/2017 04:00*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.0*		*75.0-128*		*05/03/2017 04:00*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	22.7		4.70	1	05/01/2017 13:53	WG975038
C28-C40 Oil Range	ND		4.70	1	05/01/2017 13:53	WG975038
(S) o-Terphenyl	*95.1*		*18.0-148*		*05/01/2017 13:53*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.1		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.143		0.0147	24.75	05/04/2017 02:33	WG975980
Toluene	7.02		0.147	24.75	05/04/2017 02:33	WG975980
Ethylbenzene	3.79		0.0147	24.75	05/04/2017 02:33	WG975980
Total Xylene	60.2		0.883	495	05/04/2017 19:46	WG975980
TPH (GC/FID) Low Fraction	1150		58.9	495	05/04/2017 19:46	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*99.6*		*77.0-120*		*05/04/2017 19:46*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.5*		*75.0-128*		*05/04/2017 02:33*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*92.2*		*75.0-128*		*05/04/2017 19:46*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	97.8		4.76	1	05/01/2017 13:26	WG975038
C28-C40 Oil Range	ND		4.76	1	05/01/2017 13:26	WG975038
(S) o-Terphenyl	*91.2*		*18.0-148*		*05/01/2017 13:26*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.1		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.115	200	05/03/2017 01:03	WG975980
Toluene	2.37		1.15	200	05/03/2017 01:03	WG975980
Ethylbenzene	1.36		0.115	200	05/03/2017 01:03	WG975980
Total Xylene	17.6		0.344	200	05/03/2017 01:03	WG975980
TPH (GC/FID) Low Fraction	399		23.0	200	05/03/2017 01:03	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*98.7*		*77.0-120*		*05/03/2017 01:03*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.0*		*75.0-128*		*05/03/2017 01:03*	WG975980

Sample Narrative:

8015/8021 L905176-24 WG975980: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	169		4.59	1	05/01/2017 12:58	WG975038
C28-C40 Oil Range	ND		4.59	1	05/01/2017 12:58	WG975038
(S) o-Terphenyl	*99.8*		*18.0-148*		*05/01/2017 12:58*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.4		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.252		0.113	200	05/03/2017 04:44	WG975980
Toluene	11.5		1.13	200	05/03/2017 04:44	WG975980
Ethylbenzene	4.43		0.113	200	05/03/2017 04:44	WG975980
Total Xylene	47.5		0.339	200	05/03/2017 04:44	WG975980
TPH (GC/FID) Low Fraction	997		22.6	200	05/03/2017 04:44	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*94.1*		*77.0-120*		*05/03/2017 04:44*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*90.9*		*75.0-128*		*05/03/2017 04:44*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	217		4.53	1	05/01/2017 13:12	WG975038
C28-C40 Oil Range	ND		4.53	1	05/01/2017 13:12	WG975038
(S) o-Terphenyl	*99.7*		*18.0-148*		*05/01/2017 13:12*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.6		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.107		0.0141	25	05/04/2017 02:55	WG975980
Toluene	5.72		0.141	25	05/04/2017 02:55	WG975980
Ethylbenzene	2.14		0.0141	25	05/04/2017 02:55	WG975980
Total Xylene	17.2		0.0423	25	05/04/2017 02:55	WG975980
TPH (GC/FID) Low Fraction	600		56.4	500	05/04/2017 20:08	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*93.1*		*77.0-120*		*05/04/2017 02:55*	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*100*		*77.0-120*		*05/04/2017 20:08*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*90.5*		*75.0-128*		*05/04/2017 02:55*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*92.2*		*75.0-128*		*05/04/2017 20:08*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	51.0		4.51	1	05/01/2017 12:31	WG975038
C28-C40 Oil Range	ND		4.51	1	05/01/2017 12:31	WG975038
(S) o-Terphenyl	*98.5*		*18.0-148*		*05/01/2017 12:31*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.6		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0252		0.000535	.97	05/03/2017 05:28	WG975980
Toluene	0.242		0.00535	.97	05/03/2017 05:28	WG975980
Ethylbenzene	0.0393		0.000535	.97	05/03/2017 05:28	WG975980
Total Xylene	0.343		0.00161	.97	05/03/2017 05:28	WG975980
TPH (GC/FID) Low Fraction	5.34		0.107	.97	05/03/2017 05:28	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*88.3*		*77.0-120*		*05/03/2017 05:28*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*93.5*		*75.0-128*		*05/03/2017 05:28*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	32.9		4.41	1	05/01/2017 11:50	WG975038
C28-C40 Oil Range	ND		4.41	1	05/01/2017 11:50	WG975038
(S) o-Terphenyl	*97.0*		*18.0-148*		*05/01/2017 11:50*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.7		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.000588		0.000563	1	05/03/2017 05:50	WG975980
Toluene	0.00605		0.00563	1	05/03/2017 05:50	WG975980
Ethylbenzene	0.00778		0.000563	1	05/03/2017 05:50	WG975980
Total Xylene	0.150		0.00169	1	05/03/2017 05:50	WG975980
TPH (GC/FID) Low Fraction	5.52		0.113	1	05/03/2017 05:50	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*95.5*		*77.0-120*		*05/03/2017 05:50*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*90.8*		*75.0-128*		*05/03/2017 05:50*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	5.26		4.51	1	05/01/2017 12:45	WG975038
C28-C40 Oil Range	ND		4.51	1	05/01/2017 12:45	WG975038
(S) o-Terphenyl	*72.5*		*18.0-148*		*05/01/2017 12:45*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.9		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.000522	.98	05/04/2017 03:17	WG975980
Toluene	ND		0.00522	.98	05/04/2017 03:17	WG975980
Ethylbenzene	ND		0.000522	.98	05/04/2017 03:17	WG975980
Total Xylene	0.00646		0.00157	.98	05/04/2017 03:17	WG975980
TPH (GC/FID) Low Fraction	ND		0.104	.98	05/04/2017 03:17	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/04/2017 03:17*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*91.7*		*75.0-128*		*05/04/2017 03:17*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.26	1	05/01/2017 12:18	WG975038
C28-C40 Oil Range	ND		4.26	1	05/01/2017 12:18	WG975038
(S) o-Terphenyl	*90.4*		*18.0-148*		*05/01/2017 12:18*	WG975038

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.1		1	04/27/2017 15:05	WG974591

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.000866		0.000521	.97	05/04/2017 03:40	WG975980
Toluene	ND		0.00521	.97	05/04/2017 03:40	WG975980
Ethylbenzene	ND		0.000521	.97	05/04/2017 03:40	WG975980
Total Xylene	0.00464		0.00156	.97	05/04/2017 03:40	WG975980
TPH (GC/FID) Low Fraction	ND		0.104	.97	05/04/2017 03:40	WG975980
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*05/04/2017 03:40*	WG975980
(S) a,a,a-Trifluorotoluene(PID)	*92.0*		*75.0-128*		*05/04/2017 03:40*	WG975980

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.30	1	05/01/2017 12:04	WG975038
C28-C40 Oil Range	ND		4.30	1	05/01/2017 12:04	WG975038
(S) o-Terphenyl	*98.4*		*18.0-148*		*05/01/2017 12:04*	WG975038

Method Blank (MB)

(MB) R3214456-1 04/28/17 09:54

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L905176-01 Original Sample (OS) • Duplicate (DUP)

(OS) L905176-01 04/28/17 09:54 • (DUP) R3214456-3 04/28/17 09:54

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	80.9	80.5	1	0.435		5

Laboratory Control Sample (LCS)

(LCS) R3214456-2 04/28/17 09:54

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	99.9	85.0-115	

Method Blank (MB)

(MB) R3214213-1 04/27/17 15:28

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00140			

L905176-11 Original Sample (OS) • Duplicate (DUP)

(OS) L905176-11 04/27/17 15:28 • (DUP) R3214213-3 04/27/17 15:28

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	88.1	88.1	1	0.0446		5

Laboratory Control Sample (LCS)

(LCS) R3214213-2 04/27/17 15:28

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	99.9	85.0-115	

Method Blank (MB)

(MB) R3214212-1 04/27/17 15:05

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L905176-21 Original Sample (OS) • Duplicate (DUP)

(OS) L905176-21 04/27/17 15:05 • (DUP) R3214212-3 04/27/17 15:05

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	88.8	90.0	1	1.30		5

Laboratory Control Sample (LCS)

(LCS) R3214212-2 04/27/17 15:05

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3215427-5 05/03/17 12:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000402	J	0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*102*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*93.8*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215427-1 05/03/17 10:40 • (LCSD) R3215427-2 05/03/17 11:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0535	0.0504	107	101	71.0-121			6.04	20
Toluene	0.0500	0.0540	0.0500	108	99.9	72.0-120			7.69	20
Ethylbenzene	0.0500	0.0555	0.0522	111	104	76.0-121			6.08	20
Total Xylene	0.150	0.176	0.163	117	109	75.0-124			7.44	20
(S) a,a,a-Trifluorotoluene(FID)				*101*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*99.4*	*101*	*75.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215427-3 05/03/17 11:23 • (LCSD) R3215427-4 05/03/17 11:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6.23	6.22	113	113	70.0-136			0.150	20
(S) a,a,a-Trifluorotoluene(FID)				*104*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*111*	*110*	*75.0-128*				

L905176-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-03 05/03/17 13:29 • (MS) R3215427-6 05/03/17 13:51 • (MSD) R3215427-7 05/03/17 15:23

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0549	ND	10.7	11.4	97.0	104	200	10.0-146			7.19	29
Toluene	0.0549	ND	10.6	11.4	95.4	103	200	10.0-143			7.45	30
Ethylbenzene	0.0549	0.403	11.3	12.1	98.8	106	200	10.0-147			7.07	31
Total Xylene	0.165	2.11	37.1	40.4	106	116	200	10.0-149			8.50	30

L905176-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-03 05/03/17 13:29 • (MS) R3215427-6 05/03/17 13:51 • (MSD) R3215427-7 05/03/17 15:23

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) a,a,a-Trifluorotoluene(FID)					*103*	*102*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*99.8*	*98.6*		*75.0-128*				

L905176-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-03 05/03/17 13:29 • (MS) R3215427-8 05/03/17 15:44 • (MSD) R3215427-9 05/03/17 16:06

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.04	401	1620	1600	101	99.4	200	10.0-147			1.03	30
(S) a,a,a-Trifluorotoluene(FID)					*104*	*104*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*111*	*111*		*75.0-128*				

Method Blank (MB)

(MB) R3215147-5 05/02/17 22:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000254	J	0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*102*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*94.2*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215147-1 05/02/17 20:38 • (LCSD) R3215147-2 05/02/17 21:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0470	0.0517	94.0	103	71.0-121			9.51	20
Toluene	0.0500	0.0465	0.0514	93.1	103	72.0-120			9.90	20
Ethylbenzene	0.0500	0.0483	0.0533	96.6	107	76.0-121			9.78	20
Total Xylene	0.150	0.151	0.166	101	110	75.0-124			9.29	20
(S) a,a,a-Trifluorotoluene(FID)				*100*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*99.3*	*101*	*75.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3215147-3 05/02/17 21:22 • (LCSD) R3215147-4 05/02/17 21:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6.35	6.28	115	114	70.0-136			1.17	20
(S) a,a,a-Trifluorotoluene(FID)				*102*	*103*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*110*	*111*	*75.0-128*				

L905176-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-24 05/03/17 01:03 • (MS) R3215147-6 05/02/17 23:12 • (MSD) R3215147-7 05/02/17 23:35

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0574	ND	11.0	11.9	95.1	103	200	10.0-146			8.28	29
Toluene	0.0574	2.37	13.0	13.9	92.8	101	200	10.0-143			6.60	30
Ethylbenzene	0.0574	1.36	12.7	13.6	98.6	107	200	10.0-147			7.18	31
Total Xylene	0.172	17.6	46.1	48.3	83.0	89.4	200	10.0-149			4.62	30

L905176-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-24 05/03/17 01:03 • (MS) R3215147-6 05/02/17 23:12 • (MSD) R3215147-7 05/02/17 23:35

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
(S) a,a,a-Trifluorotoluene(FID)					*98.9*	*100*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*98.5*	*101*		*75.0-128*				

L905176-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-24 05/03/17 01:03 • (MS) R3215147-8 05/02/17 23:57 • (MSD) R3215147-9 05/03/17 00:19

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.31	399	1890	1870	118	117	200	10.0-147			0.870	30
(S) a,a,a-Trifluorotoluene(FID)					*104*	*104*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*111*	*111*		*75.0-128*				

Method Blank (MB)

(MB) R3214911-1 05/02/17 08:44

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*70.1*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3214911-2 05/02/17 08:58 • (LCSD) R3214911-3 05/02/17 09:11

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
C10-C28 Diesel Range	60.0	48.8	46.2	81.3	76.9	50.0-150			5.50	20
(S) o-Terphenyl				*77.1*	*64.3*	*18.0-148*				

L905176-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905176-01 05/02/17 09:26 • (MS) R3214911-4 05/02/17 09:39 • (MSD) R3214911-5 05/02/17 09:53

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	74.2	ND	62.8	61.8	84.6	83.3	1	50.0-150			1.54	20
(S) o-Terphenyl					*70.5*	*71.9*		*18.0-148*				

Method Blank (MB)

(MB) R3214627-1 05/01/17 09:42

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*102*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3214627-2 05/01/17 09:56 • (LCSD) R3214627-3 05/01/17 10:10

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
C10-C28 Diesel Range	60.0	48.2	48.2	80.3	80.4	50.0-150			0.110	20
(S) o-Terphenyl				*106*	*98.3*	*18.0-148*				

L905386-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L905386-01 05/01/17 17:32 • (MS) R3214627-4 05/01/17 17:45 • (MSD) R3214627-5 05/01/17 18:00

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	67.3	480	512	499	47.6	27.0	1	50.0-150	E V	E V	2.74	20
(S) o-Terphenyl					*115*	*119*		*18.0-148*				

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL (dry)	Reported Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**

F025

XTO ENERGY
Western Division

Quote Number	Page 1 of 3
XTO Contact: James McDaniel	XTO Contact Phone #: (505) 419-0915
Email Results to: james_mcdaniel@xtoenergy.com; logan_hixon@xtoenergy.com; dhencmann@ltenv.com; dburns@ltenv.com	
Well Site/Location: CJ ~~OH Randle #5~~ OH Randel #5	API Number
Collected By: D. Burns	Samples on Ice: (Y) N
Company: LT Environmental	QA/QC Requested
Signature: DB	Gray Areas for Lab Use Only!

Test Reason: Confirmation Soil Sample

Turnaround:
- X Standard
- ___ Next Day
- ___ Two Day
- ___ Three Day
- ___ Std. 5 Bus. Days (by contract)

Date Needed: _____

Analysis: BTEX - 8021; TPH (GRO, DRO, MRO) - 8015

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX	TPH	Sample Number
BH-11 @ 20'-25'		Soil	4/18/17	1215	Cool	2	X	X	L906176-01
BH-12 @ 0'-10'			4/19/17	1300		2			02
BH-12 @ 10'-15'			4/19/17	1315		2			03
BH-12 @ 15'-20'			4/19/17	1325		2			04
BH-12 @ 20'-25'			4/19/17	1340		2			05
BH-12 @ 25'-30'			4/19/17	1400		2			06
BH-12 @ 30'-35'			4/19/17	1435		2			07
BH-13 @ 0'-10'			4/19/17	1540		2			08
BH-13 @ 10'-15'			4/19/17	1550		2			09
BH-13 @ 15'-20'			4/19/17	1600		2			10
BH-13 @ 20'-25'			4/19/17	1610		2			11
BH-13 @ 25'-30'			4/19/17	1620		2			12
BH-13 @ 30'-35'			4/19/17	1635		2			13

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature) DB	Date: 4-25-17	Time: 14:00	Received By: (Signature)	Number of Bottles	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 2.1°C	
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 4-26-17 / Time: 845	Other Information

Comments

COC SF ~~NM~~

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200

Count: 160 = 4 oz

XTO ENERGY
Western Division

Quote Number	Page 2 of 3	
XTO Contact: James McDaniel	XTO Contact Phone #: (505) 419-0915	
Email Results to: james_mcdaniel@xtoenergy.com, logan_hixon@xtoenergy.com | dhenemann@ltenv.com, dburns@ltenv.com		
CJ Well Site/Location: ~~OH Bandle #5~~ OH Bandel #5	API Number	Test Reason: Confirmation Soil Sample
Collected By: D. Burns	Samples on Ice: (Y) / N	Turnaround: X Standard; ___ Next Day; ___ Two Day; ___ Three Day; ___ Std. 5 Bus. Days (by contract); Date Needed ___
Company: LT Environmental	QA/QC Requested	
Signature: DLB	Gray Areas for Lab Use Only!	

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	Analysis: BTEX-8021	Analysis: TPH (GRO, DRO, MRO)-8015	Lab Information: Sample Number
BH-14 @ 15'-20'		Soil	4/20/17	0930	Cool	2	X	X	L905176-14
BH-14 @ 20'-25'			4/20/17	0945					15
BH-15 @ 0'-10'			4/20/17	1130					16
BH-15 @ 10'-15'			4/20/17	1140					17
BH-15 @ 15'-20'			4/20/17	1145					18
BH-15 @ 20'-25'			4/20/17	1200					19
BH-15 @ 30'-32'			4/20/17	1320					20
BH-16 @ 0'-10'			4/20/17	1420					21
BH-16 @ 10'-15'			4/20/17	1430					22
BH-16 @ 15'-20'			4/20/17	1440					23
BH-16 @ 23'-25'			4/20/17	1515					24
BH-16 @ 25'-27'			4/20/17	1530					25
BH-16 @ 27'-29'			4/20/17	1540					26

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature) DLB	Date: 4-25-17	Time: 14:00	Received By: (Signature)	Number of Bottles	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 21°C	
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 4-26-17 / Time: 845	Other Information

Comments: COC SE TOH

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200

0190

count 160=482

XTO ENERGY
Western Division

Quote Number	**Page** 3 of 3
XTO Contact James McDaniel	**XTO Contact Phone #** (505) 419-0915
~~james_mcdaniel@~~ CJ **Email Results to:** james_mcdaniel@xtoenergy.com; logan_hixon@xtoenergy.com; dhencmann@ltenv.com; dburns@ltenv.com	
Well Site/Location CJ ~~OH Randle #5~~ OH Randel #5	**API Number**
Collected By D. Burns	**Samples on Ice** (Y/ N)
Company LT Environmental	**QA/QC Requested**
Signature	**Gray Areas for Lab Use Only!**

Test Reason: Confirmation Soil Sample

Turnaround
- X Standard
- ___ Next Day
- ___ Two Day
- ___ Three Day
- ___ Std. 5 Bus. Days (by contract)

Date Needed _____

Analysis

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX - 8021	TPH (GRO, DRO, MRO) - 8015	Sample Number
BH-16 @ 33'-35'		Soil	4/20/17	1405	Cool	2	X	X	L905176-27
BH-17 @ 20'-25'		↓	4/21/17	1030	↓	↓	↓	↓	28
BH-18 @ 30'-32'		↓	4/24/17	0900	↓	↓	↓	↓	29
BH-19 @ 30'-35'		↓	4/24/17	1025	↓	↓	↓	↓	30

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Water = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature)	**Date:** 4-25-17	**Time:** 14:00	**Received By: (Signature)**	**Number of Bottles**	**Sample Condition**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received By: (Signature)**	**Temperature:** 21°	**Other Information**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received for Lab by: (Signature)**	**Date:** 4-26-17 **Time:** 845	

Comments COC SE #011

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200

0191

Count: 60=482

ESC LAB SCIENCES
Cooler Receipt Form

Client: XTORNM	SDG#	L905176	
Cooler Received/Opened On: 4/26/17	Temperature:	2.1	
Received By: Rickey Mosley			
Signature:			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?			

ANALYTICAL REPORT

August 29, 2017

XTO Energy - San Juan Division

Sample Delivery Group:	L931528
Samples Received:	08/24/2017
Project Number:	30-045-05964
Description:	OH Randel #5

Report To: James McDaniel
382 County Road 3100
Aztec, NM 87410

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

TABLE OF CONTENTS

FARMW-82117-1010 L931528-01 Solid

Collected by	Collected date/time	Received date/time
	08/21/17 10:10	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013214	1	08/24/17 12:32	08/24/17 12:43	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	25	08/24/17 10:52	08/25/17 13:22	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/25/17 14:20	ACM

FARMW-82117-1125 L931528-02 Solid

Collected by	Collected date/time	Received date/time
	08/21/17 11:25	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013214	1	08/24/17 12:32	08/24/17 12:43	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1000	08/24/17 10:52	08/25/17 01:18	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	10	08/25/17 00:37	08/25/17 20:00	DMG

FARMW-82217-1100 L931528-03 Solid

Collected by	Collected date/time	Received date/time
	08/22/17 11:00	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013214	1	08/24/17 12:32	08/24/17 12:43	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1000	08/24/17 10:52	08/25/17 01:40	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/25/17 14:35	ACM
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	5	08/25/17 00:37	08/25/17 20:29	DMG

FARMW-82117-1300 L931528-04 Solid

Collected by	Collected date/time	Received date/time
	08/21/17 13:00	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013214	1	08/24/17 12:32	08/24/17 12:43	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1000	08/24/17 10:52	08/25/17 02:02	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/25/17 15:18	ACM
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	5	08/25/17 00:37	08/25/17 21:11	DMG

FARMW-82117-1310 L931528-05 Solid

Collected by	Collected date/time	Received date/time
	08/21/17 13:10	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013214	1	08/24/17 12:32	08/24/17 12:43	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1000	08/24/17 10:52	08/25/17 02:24	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/25/17 15:32	ACM

FARMW-82117-1325 L931528-06 Solid

Collected by	Collected date/time	Received date/time
	08/21/17 13:25	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013214	1	08/24/17 12:32	08/24/17 12:43	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	500	08/24/17 10:52	08/25/17 02:47	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	5	08/25/17 00:37	08/25/17 17:25	DMG

FARMW-82117-1335 L931528-07 Solid

Collected by	Collected date/time	Received date/time
	08/21/17 13:35	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1000	08/24/17 10:52	08/25/17 03:09	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	10	08/25/17 00:37	08/25/17 20:14	DMG

FARMW-82117-1010 L931528-08 Solid

Collected by	Collected date/time	Received date/time
	08/21/17 16:10	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1000	08/24/17 10:52	08/25/17 03:31	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	5	08/25/17 00:37	08/25/17 17:39	DMG

FARMW-82117-1505 L931528-09 Solid

Collected by	Collected date/time	Received date/time
	08/21/17 15:05	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	25	08/24/17 10:52	08/25/17 13:44	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	5	08/25/17 00:37	08/25/17 17:53	DMG

FARMW-82117-1550 L931528-10 Solid

Collected by	Collected date/time	Received date/time
	08/21/17 15:50	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	200	08/24/17 10:52	08/25/17 14:07	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	5	08/25/17 00:37	08/25/17 18:07	DMG

FARMW-82217-1310 L931528-11 Solid

Collected by	Collected date/time	Received date/time
	08/22/17 13:10	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1	08/24/17 10:52	08/25/17 14:29	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/26/17 06:11	DMG

FARMW-82217-1325 L931528-12 Solid

Collected by	Collected date/time	Received date/time
	08/22/17 13:25	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1	08/24/17 10:52	08/25/17 05:00	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/26/17 06:25	DMG

FARMW-82217-1450 L931528-13 Solid

			Collected by	Collected date/time	Received date/time
				08/22/17 14:50	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	25	08/24/17 10:52	08/25/17 14:51	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/26/17 06:38	DMG

FARMW-82217-1320 L931528-14 Solid

			Collected by	Collected date/time	Received date/time
				08/22/17 13:20	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	500	08/24/17 10:52	08/25/17 05:44	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	5	08/25/17 00:37	08/25/17 19:04	DMG

FARMW-82217-1530 L931528-15 Solid

			Collected by	Collected date/time	Received date/time
				08/22/17 15:30	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1	08/24/17 10:52	08/25/17 15:13	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/26/17 09:29	DMG

FARMW-82217-1550 L931528-16 Solid

			Collected by	Collected date/time	Received date/time
				08/22/17 15:50	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013216	1	08/24/17 11:59	08/24/17 12:16	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1	08/24/17 10:52	08/25/17 15:35	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/26/17 09:43	DMG

FARMW-82217-1025 L931528-17 Solid

			Collected by	Collected date/time	Received date/time
				08/22/17 10:25	08/24/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1013217	1	08/24/17 12:16	08/24/17 12:29	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1013435	1000	08/24/17 10:52	08/25/17 06:29	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1013319	1	08/25/17 00:37	08/26/17 14:57	DMG

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.0		1	08/24/2017 12:43	WG1013214

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0138		0.0125	25	08/25/2017 13:22	WG1013435
Toluene	ND		0.125	25	08/25/2017 13:22	WG1013435
Ethylbenzene	ND		0.0125	25	08/25/2017 13:22	WG1013435
Total Xylene	2.34		0.0375	25	08/25/2017 13:22	WG1013435
TPH (GC/FID) Low Fraction	96.9		2.50	25	08/25/2017 13:22	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*95.1*		*77.0-120*		*08/25/2017 13:22*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*106*		*75.0-128*		*08/25/2017 13:22*	WG1013435

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	150		4.00	1	08/25/2017 14:20	WG1013319
C28-C40 Oil Range	13.8		4.00	1	08/25/2017 14:20	WG1013319
(S) o-Terphenyl	*96.5*		*18.0-148*		*08/25/2017 14:20*	WG1013319

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.6		1	08/24/2017 12:43	WG1013214

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	21.1		0.500	1000	08/25/2017 01:18	WG1013435
Toluene	125		5.00	1000	08/25/2017 01:18	WG1013435
Ethylbenzene	18.8		0.500	1000	08/25/2017 01:18	WG1013435
Total Xylene	152		1.50	1000	08/25/2017 01:18	WG1013435
TPH (GC/FID) Low Fraction	4170		100	1000	08/25/2017 01:18	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*89.8*		*77.0-120*		*08/25/2017 01:18*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*104*		*75.0-128*		*08/25/2017 01:18*	WG1013435

Sample Narrative:

L931528-02 WG1013435: Target and Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	421		40.0	10	08/25/2017 20:00	WG1013319
C28-C40 Oil Range	ND		40.0	10	08/25/2017 20:00	WG1013319
(S) o-Terphenyl	*85.2*		*18.0-148*		*08/25/2017 20:00*	WG1013319

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.8		1	08/24/2017 12:43	WG1013214

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	2.26		0.500	1000	08/25/2017 01:40	WG1013435
Toluene	32.9		5.00	1000	08/25/2017 01:40	WG1013435
Ethylbenzene	9.64		0.500	1000	08/25/2017 01:40	WG1013435
Total Xylene	80.8		1.50	1000	08/25/2017 01:40	WG1013435
TPH (GC/FID) Low Fraction	1600		100	1000	08/25/2017 01:40	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*81.2*		*77.0-120*		*08/25/2017 01:40*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*106*		*75.0-128*		*08/25/2017 01:40*	WG1013435

Sample Narrative:

L931528-03 WG1013435: Target and Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	392	V	20.0	5	08/25/2017 20:29	WG1013319
C28-C40 Oil Range	9.83		4.00	1	08/25/2017 14:35	WG1013319
(S) o-Terphenyl	*106*		*18.0-148*		*08/25/2017 14:35*	WG1013319
(S) o-Terphenyl	*87.5*		*18.0-148*		*08/25/2017 20:29*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	87.0		1	08/24/2017 12:43	WG1013214

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.500	1000	08/25/2017 02:02	WG1013435
Toluene	5.39		5.00	1000	08/25/2017 02:02	WG1013435
Ethylbenzene	ND		0.500	1000	08/25/2017 02:02	WG1013435
Total Xylene	81.7		1.50	1000	08/25/2017 02:02	WG1013435
TPH (GC/FID) Low Fraction	1710		100	1000	08/25/2017 02:02	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*93.4*		*77.0-120*		*08/25/2017 02:02*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*08/25/2017 02:02*	WG1013435

Sample Narrative:

L931528-04 WG1013435: Target and Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	457		20.0	5	08/25/2017 21:11	WG1013319
C28-C40 Oil Range	14.0		4.00	1	08/25/2017 15:18	WG1013319
(S) o-Terphenyl	*90.5*		*18.0-148*		*08/25/2017 21:11*	WG1013319
(S) o-Terphenyl	*88.8*		*18.0-148*		*08/25/2017 15:18*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.6		1	08/24/2017 12:43	WG1013214

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	2.47		0.500	1000	08/25/2017 02:24	WG1013435
Toluene	29.1		5.00	1000	08/25/2017 02:24	WG1013435
Ethylbenzene	8.57		0.500	1000	08/25/2017 02:24	WG1013435
Total Xylene	72.7		1.50	1000	08/25/2017 02:24	WG1013435
TPH (GC/FID) Low Fraction	1880		100	1000	08/25/2017 02:24	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*89.8*		*77.0-120*		*08/25/2017 02:24*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*08/25/2017 02:24*	WG1013435

Sample Narrative:

L931528-05 WG1013435: Target and Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	325		4.00	1	08/25/2017 15:32	WG1013319
C28-C40 Oil Range	8.88		4.00	1	08/25/2017 15:32	WG1013319
(S) o-Terphenyl	*95.3*		*18.0-148*		*08/25/2017 15:32*	WG1013319

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	79.3		1	08/24/2017 12:43	WG1013214

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	28.1		0.250	500	08/25/2017 02:47	WG1013435
Toluene	123		2.50	500	08/25/2017 02:47	WG1013435
Ethylbenzene	13.9		0.250	500	08/25/2017 02:47	WG1013435
Total Xylene	114		0.750	500	08/25/2017 02:47	WG1013435
TPH (GC/FID) Low Fraction	3620		50.0	500	08/25/2017 02:47	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*85.8*		*77.0-120*		*08/25/2017 02:47*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*102*		*75.0-128*		*08/25/2017 02:47*	WG1013435

Sample Narrative:

L931528-06 WG1013435: Target and Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	95.8		20.0	5	08/25/2017 17:25	WG1013319
C28-C40 Oil Range	ND		20.0	5	08/25/2017 17:25	WG1013319
(S) o-Terphenyl	*80.0*		*18.0-148*		*08/25/2017 17:25*	WG1013319

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.7		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	10.3		0.500	1000	08/25/2017 03:09	WG1013435
Toluene	131		5.00	1000	08/25/2017 03:09	WG1013435
Ethylbenzene	26.8		0.500	1000	08/25/2017 03:09	WG1013435
Total Xylene	219		1.50	1000	08/25/2017 03:09	WG1013435
TPH (GC/FID) Low Fraction	4810		100	1000	08/25/2017 03:09	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*90.4*		*77.0-120*		*08/25/2017 03:09*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*08/25/2017 03:09*	WG1013435

Sample Narrative:

L931528-07 WG1013435: Target and Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	842		40.0	10	08/25/2017 20:14	WG1013319
C28-C40 Oil Range	ND		40.0	10	08/25/2017 20:14	WG1013319
(S) o-Terphenyl	*88.1*		*18.0-148*		*08/25/2017 20:14*	WG1013319

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	81.6		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	3.50		0.500	1000	08/25/2017 03:31	WG1013435
Toluene	25.6		5.00	1000	08/25/2017 03:31	WG1013435
Ethylbenzene	4.42		0.500	1000	08/25/2017 03:31	WG1013435
Total Xylene	39.3		1.50	1000	08/25/2017 03:31	WG1013435
TPH (GC/FID) Low Fraction	1250		100	1000	08/25/2017 03:31	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*90.6*		*77.0-120*		*08/25/2017 03:31*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*08/25/2017 03:31*	WG1013435

Sample Narrative:

L931528-08 WG1013435: Target and Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	92.7		20.0	5	08/25/2017 17:39	WG1013319
C28-C40 Oil Range	ND		20.0	5	08/25/2017 17:39	WG1013319
(S) o-Terphenyl	*70.5*		*18.0-148*		*08/25/2017 17:39*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	86.9		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0142		0.0125	25	08/25/2017 13:44	WG1013435
Toluene	ND		0.125	25	08/25/2017 13:44	WG1013435
Ethylbenzene	ND		0.0125	25	08/25/2017 13:44	WG1013435
Total Xylene	0.859		0.0375	25	08/25/2017 13:44	WG1013435
TPH (GC/FID) Low Fraction	82.5		2.50	25	08/25/2017 13:44	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*92.8*		*77.0-120*		*08/25/2017 13:44*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*106*		*75.0-128*		*08/25/2017 13:44*	WG1013435

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	64.1		20.0	5	08/25/2017 17:53	WG1013319
C28-C40 Oil Range	ND		20.0	5	08/25/2017 17:53	WG1013319
(S) o-Terphenyl	*88.0*		*18.0-148*		*08/25/2017 17:53*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.9		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.841		0.100	200	08/25/2017 14:07	WG1013435
Toluene	22.7		1.00	200	08/25/2017 14:07	WG1013435
Ethylbenzene	7.02		0.100	200	08/25/2017 14:07	WG1013435
Total Xylene	58.4		0.300	200	08/25/2017 14:07	WG1013435
TPH (GC/FID) Low Fraction	1430		20.0	200	08/25/2017 14:07	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*88.9*		*77.0-120*		*08/25/2017 14:07*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*104*		*75.0-128*		*08/25/2017 14:07*	WG1013435

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	360		20.0	5	08/25/2017 18:07	WG1013319
C28-C40 Oil Range	ND		20.0	5	08/25/2017 18:07	WG1013319
(S) o-Terphenyl	*92.0*		*18.0-148*		*08/25/2017 18:07*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.8		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0192		0.000500	1	08/25/2017 14:29	WG1013435
Toluene	0.0386		0.00500	1	08/25/2017 14:29	WG1013435
Ethylbenzene	0.00242		0.000500	1	08/25/2017 14:29	WG1013435
Total Xylene	0.0229		0.00150	1	08/25/2017 14:29	WG1013435
TPH (GC/FID) Low Fraction	0.470		0.100	1	08/25/2017 14:29	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*93.5*		*77.0-120*		*08/25/2017 14:29*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*102*		*75.0-128*		*08/25/2017 14:29*	WG1013435

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	08/26/2017 06:11	WG1013319
C28-C40 Oil Range	ND		4.00	1	08/26/2017 06:11	WG1013319
(S) o-Terphenyl	*94.6*		*18.0-148*		*08/26/2017 06:11*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.6		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00512		0.000500	1	08/25/2017 05:00	WG1013435
Toluene	0.0102		0.00500	1	08/25/2017 05:00	WG1013435
Ethylbenzene	0.00133	B	0.000500	1	08/25/2017 05:00	WG1013435
Total Xylene	0.00697	B	0.00150	1	08/25/2017 05:00	WG1013435
TPH (GC/FID) Low Fraction	0.195		0.100	1	08/25/2017 05:00	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*94.7*		*77.0-120*		*08/25/2017 05:00*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*103*		*75.0-128*		*08/25/2017 05:00*	WG1013435

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	08/26/2017 06:25	WG1013319
C28-C40 Oil Range	ND		4.00	1	08/26/2017 06:25	WG1013319
(S) o-Terphenyl	*106*		*18.0-148*		*08/26/2017 06:25*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.5		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.276		0.0125	25	08/25/2017 14:51	WG1013435
Toluene	0.517		0.125	25	08/25/2017 14:51	WG1013435
Ethylbenzene	0.517		0.0125	25	08/25/2017 14:51	WG1013435
Total Xylene	3.80		0.0375	25	08/25/2017 14:51	WG1013435
TPH (GC/FID) Low Fraction	180		2.50	25	08/25/2017 14:51	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*89.6*		*77.0-120*		*08/25/2017 14:51*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*103*		*75.0-128*		*08/25/2017 14:51*	WG1013435

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	40.8		4.00	1	08/26/2017 06:38	WG1013319
C28-C40 Oil Range	ND		4.00	1	08/26/2017 06:38	WG1013319
(S) o-Terphenyl	*92.9*		*18.0-148*		*08/26/2017 06:38*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.7		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.462		0.250	500	08/25/2017 05:44	WG1013435
Toluene	4.82		2.50	500	08/25/2017 05:44	WG1013435
Ethylbenzene	3.17		0.250	500	08/25/2017 05:44	WG1013435
Total Xylene	37.4		0.750	500	08/25/2017 05:44	WG1013435
TPH (GC/FID) Low Fraction	1000		50.0	500	08/25/2017 05:44	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*88.3*		*77.0-120*		*08/25/2017 05:44*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*08/25/2017 05:44*	WG1013435

Sample Narrative:

L931528-14 WG1013435: Target and Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	483		20.0	5	08/25/2017 19:04	WG1013319
C28-C40 Oil Range	ND		20.0	5	08/25/2017 19:04	WG1013319
(S) o-Terphenyl	*88.5*		*18.0-148*		*08/25/2017 19:04*	WG1013319

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	84.0		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00431		0.000500	1	08/25/2017 15:13	WG1013435
Toluene	0.00854		0.00500	1	08/25/2017 15:13	WG1013435
Ethylbenzene	ND		0.000500	1	08/25/2017 15:13	WG1013435
Total Xylene	0.00915		0.00150	1	08/25/2017 15:13	WG1013435
TPH (GC/FID) Low Fraction	0.532		0.100	1	08/25/2017 15:13	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*92.3*		*77.0-120*		*08/25/2017 15:13*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*101*		*75.0-128*		*08/25/2017 15:13*	WG1013435

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	08/26/2017 09:29	WG1013319
C28-C40 Oil Range	ND		4.00	1	08/26/2017 09:29	WG1013319
(S) o-Terphenyl	*89.7*		*18.0-148*		*08/26/2017 09:29*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	88.2		1	08/24/2017 12:16	WG1013216

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00369		0.000500	1	08/25/2017 15:35	WG1013435
Toluene	0.00711		0.00500	1	08/25/2017 15:35	WG1013435
Ethylbenzene	0.000684	B	0.000500	1	08/25/2017 15:35	WG1013435
Total Xylene	0.00471		0.00150	1	08/25/2017 15:35	WG1013435
TPH (GC/FID) Low Fraction	0.161		0.100	1	08/25/2017 15:35	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*92.3*		*77.0-120*		*08/25/2017 15:35*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*101*		*75.0-128*		*08/25/2017 15:35*	WG1013435

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	08/26/2017 09:43	WG1013319
C28-C40 Oil Range	ND		4.00	1	08/26/2017 09:43	WG1013319
(S) o-Terphenyl	*90.8*		*18.0-148*		*08/26/2017 09:43*	WG1013319

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	85.7		1	08/24/2017 12:29	WG1013217

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	12.7		0.500	1000	08/25/2017 06:29	WG1013435
Toluene	90.9		5.00	1000	08/25/2017 06:29	WG1013435
Ethylbenzene	15.7		0.500	1000	08/25/2017 06:29	WG1013435
Total Xylene	128		1.50	1000	08/25/2017 06:29	WG1013435
TPH (GC/FID) Low Fraction	3310		100	1000	08/25/2017 06:29	WG1013435
(S) a,a,a-Trifluorotoluene(FID)	*90.9*		*77.0-120*		*08/25/2017 06:29*	WG1013435
(S) a,a,a-Trifluorotoluene(PID)	*104*		*75.0-128*		*08/25/2017 06:29*	WG1013435

Sample Narrative:

L931528-17 WG1013435: Target and Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	336		4.00	1	08/26/2017 14:57	WG1013319
C28-C40 Oil Range	5.44		4.00	1	08/26/2017 14:57	WG1013319
(S) o-Terphenyl	*94.6*		*18.0-148*		*08/26/2017 14:57*	WG1013319

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3244383-1 08/24/17 12:43

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L931528-03 Original Sample (OS) • Duplicate (DUP)

(OS) L931528-03 08/24/17 12:43 • (DUP) R3244383-3 08/24/17 12:43

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	92.8	92.5	1	0.281		5

Laboratory Control Sample (LCS)

(LCS) R3244383-2 08/24/17 12:43

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3244382-1 08/24/17 12:16

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000500			

L931528-11 Original Sample (OS) • Duplicate (DUP)

(OS) L931528-11 08/24/17 12:16 • (DUP) R3244382-3 08/24/17 12:16

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	85.8	85.7	1	0.0906		5

Laboratory Control Sample (LCS)

(LCS) R3244382-2 08/24/17 12:16

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3244380-1 08/24/17 12:29

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000100			

L931563-01 Original Sample (OS) • Duplicate (DUP)

(OS) L931563-01 08/24/17 12:29 • (DUP) R3244380-3 08/24/17 12:29

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	95.3	93.1	1	2.38		5

Laboratory Control Sample (LCS)

(LCS) R3244380-2 08/24/17 12:29

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3244430-5 08/24/17 23:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000534	J	0.000150	0.00500
Ethylbenzene	0.000239	J	0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*95.9*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*105*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3244430-1 08/24/17 21:59 • (LCSD) R3244430-2 08/24/17 22:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0457	0.0492	91.5	98.3	71.0-121			7.23	20
Toluene	0.0500	0.0472	0.0498	94.3	99.5	72.0-120			5.34	20
Ethylbenzene	0.0500	0.0459	0.0490	91.8	97.9	76.0-121			6.51	20
Total Xylene	0.150	0.135	0.142	89.7	94.7	75.0-124			5.50	20
(S) a,a,a-Trifluorotoluene(FID)				*95.7*	*95.9*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*104*	*104*	*75.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3244430-3 08/24/17 22:43 • (LCSD) R3244430-4 08/24/17 23:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.58	5.67	102	103	70.0-136			1.47	20
(S) a,a,a-Trifluorotoluene(FID)				*107*	*109*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*119*	*120*	*75.0-128*				

Method Blank (MB)

(MB) R3244529-1 08/25/17 10:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*100*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3244529-2 08/25/17 10:34 • (LCSD) R3244529-3 08/25/17 10:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	60.0	46.5	44.2	77.5	73.7	50.0-150			5.03	20
(S) o-Terphenyl				*94.8*	*101*	*18.0-148*				

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**

XTO ENERGY
Western Division

Quote Number XTO	**Page** 1 of 2	
XTO Contact: James McDaniel	**XTO Contact Phone #:** 505-333-3701	
Email Results to: James_McDaniel@XTOenergy.com MWicker@LTEnv.com & dhencmann@ltenv.com		
Well Site/Location OH Randel #5	**API Number** 30-045-05964	**Test Reason** Quarterly GW
Collected By	**Samples on Ice (Y / N)**	**Turnaround**
Company LT Environmental, Inc.	**QA/QC Requested** Standard	__ 24-Hour _X_ Next Day __ Two Day __ Three Day __ Std.5 Bus. Days(by contract)
Signature MW	**Gray Areas for Lab Use Only!**	**Date Needed** _____

Analysis

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

L931528

G239

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX 8021	TPH 8015B (Gro/DRO/MRO)					Sample Number
FARMW- 82117-1010	BH-20@20-25	Soil	8/21/17	1010	Cool		X	X					-01
FARMW- 82117-1125	BH-20@40-45	Soil	8/21/17	1125	Cool		X	X					-02
FARMW- 82217-1100	BH-20@60-65	Soil	8/22/17	1100	Cool		X	X					-03
FARMW- 82117-1300	BH21@10-15	Soil	8/21/17	1300	Cool		X	X					-04
FARMW- 82117-1310	BH21@25-30	Soil	8/21/17	1310	Cool		X	X					-05
FARMW- 82117-1325	BH21@30-35	Soil	8/21/17	1325	Cool		X	X					-06
FARMW- 82117-1335	BH21@35-40	Soil	8/21/17	1335	Cool		X	X					-07
FARMW- 82117-1610	BH22@37-42	Soil	8/21/17	1610	Cool		X	X					-08
FARMW- 82117-1505	BH22@24-26	Soil	8/21/17	1505	Cool		X	X					-09
FARMW- 82117-1550	BH22@32-37	Soil	8/21/17	1550	Cool		X	X					-10
FARMW- 82217-1310	BH23@30-35	Soil	8/22/17	1310	Cool		X	X					-11
FARMW- 82217-1325	BH23@35-40	Soil	8/22/17	1325	Cool		X	X					-12
FARMW- 82217-1450	BH24@10-15	Soil	8/22/17	1450	Cool		X	X					-13

Media : Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature)	**Date:** 8/23/17	**Time:** 1420	**Received By: (Signature)**	**Number of Bottles** 17	**Sample Condition** Ok
Relinquished By: (Signature)	**Date:**	**Time:**	**Received By: (Signature)**	**Temperature:** 3.1°C	**Other Information**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received for Lab by: (Signature)** Jaclyn ESL	**Date:** 8/24/17 0845	

Comments

OK

* Sample ID will be the office and sampler-date-military time-sampler initials FARJM-MMDDYY-1200

XTO ENERGY
Western Division

Quote Number XTO	**Page** 2 of 2	
XTO Contact: James McDaniel	**XTO Contact Phone #:** 505-333-3701	
Email Results to: James_McDaniel@XTOenergy.com MWicker@LTEnv.com & dhencmann@ltenv.com		
Well Site/Location OH Randel #5	**API Number** 30-045-05964	**Test Reason** Quarterly GW
Collected By	**Samples on Ice (Y / N)**	**Turnaround**
Company LT Environmental, Inc.	**QA/QC Requested** Standard	___ 24-Hour _X_ Next Day ___ Two Day ___ Three Day ___ Std.5 Bus. Days(by contract)
Signature	**Gray Areas for Lab Use Only!**	**Date Needed**

Analysis

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

L931528

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX 8021	TPH 8015B (Gro/DRO/MRO)	Sample Number
FARMW- 822I7-1320	BH-24 @ 30-35	Soil	8/22/17	1320	Cool	1	X	X	-14
FARMW- 822I7-1530	BH-24 @ 35-40	Soil	8/22/17	1530	Cool	1	X	X	-15
FARMW- 822I7-1550	BH24 @ 40-45	Soil	8/22/17	1550	Cool	↓	X	X	.16
FARMW- 822I7-1025	BH 20 @ 50-55	Soil	8/22/17	1025	Cool		X	X	-17
FARMW-		Soil			Cool		X	X	
FARMW-		Soil			Cool		X	X	
FARMW-		Soil			Cool		X	X	
FARMW-		Soil			Cool		X	X	
FARMW-		Soil			Cool		X	X	
FARMW-		Soil			Cool		X	X	
FARMW-		Soil			Cool		X	X	
FARMW-		Soil			Cool		X	X	
FARMW-		Soil			Cool		X	X	
FARMW-		Soil			Cool		X	X	

Media : Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature)	**Date:** 8/23/17	**Time:** 1420	**Received By: (Signature)**	**Number of Bottles** 17	**Sample Condition**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received By: (Signature)**	**Temperature:** 3.4	**Other Information**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received for Lab by: (Signature)** ESC	**Date:** 8/24/17 **Time:** 0845	

Comments

* Sample ID will be the office and sampler-date-military time-sampler initials FARJM-MMDDYY-1200

ESC LAB SCIENCES
Cooler Receipt Form

Client: XTORNM	SDG#	L931528	
Cooler Received/Opened On: 8/24/17	Temperature:	3.1	2
Received by : Ian White			
Signature: Ian White			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

ANALYTICAL REPORT

October 10, 2017

XTO Energy - San Juan Division

Sample Delivery Group:	L940569
Samples Received:	10/03/2017
Project Number:	
Description:	OH Randal #5

Report To: James McDaniel
382 County Road 3100
Aztec, NM 87410

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

BH20 75-80 L940569-01 Solid

Collected by: D. Burns | Collected date/time: 09/28/17 09:20 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1028636	1	10/06/17 13:50	10/06/17 14:02	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1029054	500	10/03/17 15:38	10/09/17 13:37	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 12:43	TH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	5	10/06/17 09:11	10/08/17 19:53	TH

BH20 80-82 L940569-02 Solid

Collected by: D. Burns | Collected date/time: 09/28/17 09:40 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1028558	1	10/06/17 10:46	10/06/17 10:55	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG1029054	500	10/03/17 15:38	10/09/17 14:00	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 12:57	TH

BH13 38-40 L940569-03 Solid

Collected by: D. Burns | Collected date/time: 09/28/17 12:10 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1028636	1	10/06/17 13:50	10/06/17 14:02	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1029054	5000	10/03/17 15:38	10/10/17 14:32	LRL
Volatile Organic Compounds (GC) by Method 8021	WG1029054	500	10/03/17 15:38	10/09/17 14:23	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 13:11	TH

BH13 50-54 L940569-04 Solid

Collected by: D. Burns | Collected date/time: 09/28/17 13:45 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1028642	1	10/06/17 14:59	10/06/17 15:11	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1029054	100	10/03/17 15:38	10/09/17 14:45	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 13:25	TH

BH25 30-35 L940569-05 Solid

Collected by: D. Burns | Collected date/time: 09/28/17 15:30 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1028558	1	10/06/17 10:46	10/06/17 10:55	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG1029054	1	10/03/17 15:38	10/09/17 12:30	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 13:39	TH

BH25 45-50 L940569-06 Solid

Collected by: D. Burns | Collected date/time: 09/29/17 11:00 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1028558	1	10/06/17 10:46	10/06/17 10:55	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG1029054	1	10/03/17 15:38	10/09/17 12:52	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 13:53	TH

BH26 20-25 L940569-07 Solid

Collected by	Collected date/time	Received date/time
D. Burns	09/29/17 12:00	10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1028647	1	10/06/17 14:19	10/06/17 14:36	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1029054	1	10/03/17 15:38	10/09/17 13:15	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 14:07	TH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.7		1	10/06/2017 14:02	WG1028636

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	12.0		0.273	500	10/09/2017 13:37	WG1029054
Toluene	114		2.73	500	10/09/2017 13:37	WG1029054
Ethylbenzene	21.6		0.273	500	10/09/2017 13:37	WG1029054
Total Xylene	171		0.818	500	10/09/2017 13:37	WG1029054
TPH (GC/FID) Low Fraction	4900		54.5	500	10/09/2017 13:37	WG1029054
(S) a,a,a-Trifluorotoluene(FID)	*85.9*		*77.0-120*		*10/09/2017 13:37*	WG1029054
(S) a,a,a-Trifluorotoluene(PID)	*90.3*		*75.0-128*		*10/09/2017 13:37*	WG1029054

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	435		21.8	5	10/08/2017 19:53	WG1028273
C28-C40 Oil Range	21.5		4.36	1	10/07/2017 12:43	WG1028273
(S) o-Terphenyl	*107*		*18.0-148*		*10/08/2017 19:53*	WG1028273
(S) o-Terphenyl	*69.4*		*18.0-148*		*10/07/2017 12:43*	WG1028273

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.9		1	10/06/2017 10:55	WG1028558

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	2.11		0.275	500	10/09/2017 14:00	WG1029054
Toluene	63.8		2.75	500	10/09/2017 14:00	WG1029054
Ethylbenzene	13.4		0.275	500	10/09/2017 14:00	WG1029054
Total Xylene	121		0.825	500	10/09/2017 14:00	WG1029054
TPH (GC/FID) Low Fraction	2710		55.0	500	10/09/2017 14:00	WG1029054
(S) a,a,a-Trifluorotoluene(FID)	*85.9*		*77.0-120*		*10/09/2017 14:00*	WG1029054
(S) a,a,a-Trifluorotoluene(PID)	*87.2*		*75.0-128*		*10/09/2017 14:00*	WG1029054

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	340		4.40	1	10/07/2017 12:57	WG1028273
C28-C40 Oil Range	24.2		4.40	1	10/07/2017 12:57	WG1028273
(S) o-Terphenyl	*65.4*		*18.0-148*		*10/07/2017 12:57*	WG1028273

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.7		1	10/06/2017 14:02	WG1028636

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	73.4		0.270	500	10/09/2017 14:23	WG1029054
Toluene	378		27.0	5000	10/10/2017 14:32	WG1029054
Ethylbenzene	43.7		0.270	500	10/09/2017 14:23	WG1029054
Total Xylene	321		0.809	500	10/09/2017 14:23	WG1029054
TPH (GC/FID) Low Fraction	8090		539	5000	10/10/2017 14:32	WG1029054
(S) a,a,a-Trifluorotoluene(FID)	*81.3*		*77.0-120*		*10/10/2017 14:32*	WG1029054
(S) a,a,a-Trifluorotoluene(FID)	*89.6*		*77.0-120*		*10/09/2017 14:23*	WG1029054
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*10/09/2017 14:23*	WG1029054
(S) a,a,a-Trifluorotoluene(PID)	*103*		*75.0-128*		*10/10/2017 14:32*	WG1029054

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	295		4.31	1	10/07/2017 13:11	WG1028273
C28-C40 Oil Range	14.4		4.31	1	10/07/2017 13:11	WG1028273
(S) o-Terphenyl	*71.5*		*18.0-148*		*10/07/2017 13:11*	WG1028273

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	81.1		1	10/06/2017 15:11	WG1028642

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.592		0.0616	100	10/09/2017 14:45	WG1029054
Toluene	14.8		0.616	100	10/09/2017 14:45	WG1029054
Ethylbenzene	4.07		0.0616	100	10/09/2017 14:45	WG1029054
Total Xylene	38.3	J6	0.185	100	10/09/2017 14:45	WG1029054
TPH (GC/FID) Low Fraction	908		12.3	100	10/09/2017 14:45	WG1029054
(S) a,a,a-Trifluorotoluene(FID)	*86.8*		*77.0-120*		*10/09/2017 14:45*	WG1029054
(S) a,a,a-Trifluorotoluene(PID)	*87.0*		*75.0-128*		*10/09/2017 14:45*	WG1029054

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	257		4.93	1	10/07/2017 13:25	WG1028273
C28-C40 Oil Range	18.8		4.93	1	10/07/2017 13:25	WG1028273
(S) o-Terphenyl	*63.8*		*18.0-148*		*10/07/2017 13:25*	WG1028273

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	80.5		1	10/06/2017 10:55	WG1028558

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00956		0.000621	1	10/09/2017 12:30	WG1029054
Toluene	0.0413		0.00621	1	10/09/2017 12:30	WG1029054
Ethylbenzene	0.00304		0.000621	1	10/09/2017 12:30	WG1029054
Total Xylene	0.0534		0.00186	1	10/09/2017 12:30	WG1029054
TPH (GC/FID) Low Fraction	0.399		0.124	1	10/09/2017 12:30	WG1029054
(S) a,a,a-Trifluorotoluene(FID)	*97.0*		*77.0-120*		*10/09/2017 12:30*	WG1029054
(S) a,a,a-Trifluorotoluene(PID)	*88.6*		*75.0-128*		*10/09/2017 12:30*	WG1029054

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	5.00		4.97	1	10/07/2017 13:39	WG1028273
C28-C40 Oil Range	ND		4.97	1	10/07/2017 13:39	WG1028273
(S) o-Terphenyl	*95.5*		*18.0-148*		*10/07/2017 13:39*	WG1028273

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.7		1	10/06/2017 10:55	WG1028558

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.000770		0.000528	1	10/09/2017 12:52	WG1029054
Toluene	ND		0.00528	1	10/09/2017 12:52	WG1029054
Ethylbenzene	ND		0.000528	1	10/09/2017 12:52	WG1029054
Total Xylene	0.00202	B	0.00158	1	10/09/2017 12:52	WG1029054
TPH (GC/FID) Low Fraction	ND		0.106	1	10/09/2017 12:52	WG1029054
(S) a,a,a-Trifluorotoluene(FID)	*97.1*		*77.0-120*		*10/09/2017 12:52*	WG1029054
(S) a,a,a-Trifluorotoluene(PID)	*87.8*		*75.0-128*		*10/09/2017 12:52*	WG1029054

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.22	1	10/07/2017 13:53	WG1028273
C28-C40 Oil Range	ND		4.22	1	10/07/2017 13:53	WG1028273
(S) o-Terphenyl	*98.6*		*18.0-148*		*10/07/2017 13:53*	WG1028273

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	80.4		1	10/06/2017 14:36	WG1028647

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0103		0.000622	1	10/09/2017 13:15	WG1029054
Toluene	0.0146		0.00622	1	10/09/2017 13:15	WG1029054
Ethylbenzene	ND		0.000622	1	10/09/2017 13:15	WG1029054
Total Xylene	0.00390	B	0.00187	1	10/09/2017 13:15	WG1029054
TPH (GC/FID) Low Fraction	ND		0.124	1	10/09/2017 13:15	WG1029054
(S) a,a,a-Trifluorotoluene(FID)	*96.7*		*77.0-120*		*10/09/2017 13:15*	WG1029054
(S) a,a,a-Trifluorotoluene(PID)	*88.0*		*75.0-128*		*10/09/2017 13:15*	WG1029054

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.98	1	10/07/2017 14:07	WG1028273
C28-C40 Oil Range	ND		4.98	1	10/07/2017 14:07	WG1028273
(S) o-Terphenyl	*87.8*		*18.0-148*		*10/07/2017 14:07*	WG1028273

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3255530-1 10/06/17 10:55

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.0005			

L940569-02 Original Sample (OS) • Duplicate (DUP)

(OS) L940569-02 10/06/17 10:55 • (DUP) R3255530-3 10/06/17 10:55

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	90.9	91.3	1	0		5

Laboratory Control Sample (LCS)

(LCS) R3255530-2 10/06/17 10:55

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3255781-1 10/06/17 14:02

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.0002			

L940775-01 Original Sample (OS) • Duplicate (DUP)

(OS) L940775-01 10/06/17 14:02 • (DUP) R3255781-3 10/06/17 14:02

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	84.6	84.7	1	0		5

Laboratory Control Sample (LCS)

(LCS) R3255781-2 10/06/17 14:02

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3255797-1 10/06/17 15:11

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0			

L940814-02 Original Sample (OS) • Duplicate (DUP)

(OS) L940814-02 10/06/17 15:11 • (DUP) R3255797-3 10/06/17 15:11

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	83.2	82.8	1	0		5

Laboratory Control Sample (LCS)

(LCS) R3255797-2 10/06/17 15:11

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3255784-1 10/06/17 14:36

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.0006			

L940569-07 Original Sample (OS) • Duplicate (DUP)

(OS) L940569-07 10/06/17 14:36 • (DUP) R3255784-3 10/06/17 14:36

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	80.4	79.8	1	1		5

Laboratory Control Sample (LCS)

(LCS) R3255784-2 10/06/17 14:36

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3256047-5 10/09/17 11:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000419	J	0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*99.0*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*91.3*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3256047-1 10/09/17 09:53 • (LCSD) R3256047-2 10/09/17 10:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0546	0.0569	109	114	71.0-121			4.00	20
Toluene	0.0500	0.0535	0.0554	107	111	72.0-120			3.45	20
Ethylbenzene	0.0500	0.0546	0.0569	109	114	76.0-121			4.22	20
Total Xylene	0.150	0.168	0.175	112	117	75.0-124			4.20	20
(S) a,a,a-Trifluorotoluene(FID)				*101*	*98.0*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*102*	*98.3*	*75.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3256047-3 10/09/17 10:38 • (LCSD) R3256047-4 10/09/17 11:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.51	5.52	100	100	70.0-136			0.250	20
(S) a,a,a-Trifluorotoluene(FID)				*101*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*99.4*	*98.9*	*75.0-128*				

L940569-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L940569-04 10/09/17 14:45 • (MS) R3256047-6 10/09/17 19:56 • (MSD) R3256047-7 10/09/17 20:18

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0616	0.592	8.96	9.10	136	138	100	10.0-146			1.49	29
Toluene	0.0616	14.8	18.8	18.8	66.1	65.1	100	10.0-143			0.320	30
Ethylbenzene	0.0616	4.07	9.90	9.74	94.5	92.0	100	10.0-147			1.59	31
Total Xylene	0.185	38.3	48.8	49.4	57.0	60.3	100	10.0-149	J6	J6	1.25	30
(S) a,a,a-Trifluorotoluene(FID)					*87.8*	*88.1*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*97.6*	*99.4*		*75.0-128*				

L940569-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L940569-04 10/09/17 14:45 • (MS) R3256047-8 10/09/17 20:40 • (MSD) R3256047-9 10/09/17 21:02

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	6.78	908	1530	1470	91.4	83.0	100	10.0-147	E	E	3.76	30
(S) a,a,a-Trifluorotoluene(FID)					*96.9*	*97.3*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*107*	*108*		*75.0-128*				

Method Blank (MB)

(MB) R3255555-1 10/06/17 22:27

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*88.9*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3255555-2 10/06/17 22:41 • (LCSD) R3255555-3 10/06/17 22:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	60.0	35.3	32.7	58.9	54.6	50.0-150			7.61	20
(S) o-Terphenyl				*76.5*	*71.1*	*18.0-148*				

L940399-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L940399-01 10/07/17 06:32 • (MS) R3255555-4 10/07/17 06:47 • (MSD) R3255555-5 10/07/17 07:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	12.0	ND	48.9	55.9	48.7	60.4	5	50.0-150	J6		13.5	20
(S) o-Terphenyl					*8.00*	*79.5*		*18.0-148*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**

H243

XTO ENERGY
Western Division

Quote Number	Page _1_ of _1_
XTO Contact: James McDaniel	XTO Contact Phone #: (505) 419-0915
Email Results to: james_mcdaniel@xtoenergy.com; aager@ltenv.com; dhencmann@ltenv.com; dburns@ltenv.com	
Well Site/Location: OH Randel #5	API Number / Test Reason
Collected By: D. Burns	Samples on Ice (Y / N): Yes
Company: LT Environmental, Inc.	QA/QC Requested
Signature: D. B	Gray Areas for Lab Use Only!

Turnaround
- X Standard
- ___ Next Day
- ___ Two Day
- ___ Three Day
- ___ Std.5 Bus. Days(by contract)

Date Needed ___

Analysis: BTEX - Method 8021; TPH (GRO/DRO/ORO) - Method 8015

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX	TPH	Sample Number
BH20 @ 75-80'		S	9/28/2017	9:20	NA	2	X	X	940364-01
BH20 @ 80-82'		S	9/28/2017	9:40	NA	2	X	X	02
BH13 @ 38-40'		S	9/28/2017	12:10	NA	2	X	X	03
BH13 @ 50-54'		S	9/28/2017	13:45	NA	2	X	X	04
BH25 @ 30-35'		S	9/28/2017	15:30	NA	2	X	X	05
BH25 @ 45-50'		S	9/29/2017	11:00	NA	2	X	X	06
BH26 @ 20-25'		S	9/29/2017	12:00	NA	2	X	X	07

Media : Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature)	Date: 10-2-17	Time: 0800	Received By: (Signature)	Number of Bottles: 14	Sample Condition
Relinquished By: (Signature)	Date: 10-2-17	Time: 1600	Received By: (Signature)	Temperature: 1.3 °C	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: 10-3-17 Time: 8:45	COC SI

Comments: FedEx: 6777 0002 1380

* Sample ID will be the office and sampler-date-military time-sampler initials FARJM-MMDDYY-1200

ESC LAB SCIENCES
Cooler Receipt Form

Client: XTOLNA	SDG#	94085	
Cooler Received/Opened On: 10/3 /17	Temperature:	1.3	
Received by : Jennifer Royal			
Signature: Jennifer Royal			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

ANALYTICAL REPORT

October 10, 2017

XTO Energy - San Juan Division

Sample Delivery Group:	L940568
Samples Received:	10/03/2017
Project Number:	
Description:	OH Randal #5

Report To: James McDaniel
382 County Road 3100
Aztec, NM 87410

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

TABLE OF CONTENTS

BH27 35-40 L940568-01 Solid

Collected by: D. Burns | Collected date/time: 09/30/17 11:00 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1027125	1	10/03/17 11:00	10/03/17 11:36	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG1027344	25	10/03/17 10:22	10/03/17 17:26	BMB

BH 27 40-45 L940568-02 Solid

Collected by: D. Burns | Collected date/time: 09/30/17 11:30 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1027125	1	10/03/17 11:00	10/03/17 11:36	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG1027344	500	10/03/17 10:22	10/03/17 17:04	BMB

BH27 45-50 L940568-03 Solid

Collected by: D. Burns | Collected date/time: 09/30/17 12:00 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1027125	1	10/03/17 11:00	10/03/17 11:36	KDW
Volatile Organic Compounds (GC) by Method 8015/8021	WG1027344	1000	10/03/17 10:22	10/03/17 17:49	BMB

BH27 35-40 L940568-04 Solid

Collected by: D. Burns | Collected date/time: 09/30/17 11:00 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1027125	1	10/03/17 11:00	10/03/17 11:36	KDW
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 11:18	TH

BH 27 40-45 L940568-05 Solid

Collected by: D. Burns | Collected date/time: 09/30/17 11:30 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1027125	1	10/03/17 11:00	10/03/17 11:36	KDW
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 12:14	TH

BH27 45-50 L940568-06 Solid

Collected by: D. Burns | Collected date/time: 09/30/17 12:00 | Received date/time: 10/03/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1027125	1	10/03/17 11:00	10/03/17 11:36	KDW
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	1	10/06/17 09:11	10/07/17 12:29	TH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1028273	5	10/06/17 09:11	10/08/17 19:39	TH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	75.7		1	10/03/2017 11:36	WG1027125

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0442	B	0.0165	25	10/03/2017 17:26	WG1027344
Toluene	0.863		0.165	25	10/03/2017 17:26	WG1027344
Ethylbenzene	1.19		0.0165	25	10/03/2017 17:26	WG1027344
Total Xylene	9.66		0.0496	25	10/03/2017 17:26	WG1027344
TPH (GC/FID) Low Fraction	207		3.30	25	10/03/2017 17:26	WG1027344
(S) a,a,a-Trifluorotoluene(FID)	*83.5*		*77.0-120*		*10/03/2017 17:26*	WG1027344
(S) a,a,a-Trifluorotoluene(PID)	*94.6*		*75.0-128*		*10/03/2017 17:26*	WG1027344

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.9		1	10/03/2017 11:36	WG1027125

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.263	500	10/03/2017 17:04	WG1027344
Toluene	5.91		2.63	500	10/03/2017 17:04	WG1027344
Ethylbenzene	3.98		0.263	500	10/03/2017 17:04	WG1027344
Total Xylene	35.4		0.790	500	10/03/2017 17:04	WG1027344
TPH (GC/FID) Low Fraction	621		52.7	500	10/03/2017 17:04	WG1027344
(S) a,a,a-Trifluorotoluene(FID)	*86.1*		*77.0-120*		*10/03/2017 17:04*	WG1027344
(S) a,a,a-Trifluorotoluene(PID)	*98.3*		*75.0-128*		*10/03/2017 17:04*	WG1027344

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.8		1	10/03/2017 11:36	WG1027125

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.533	1000	10/03/2017 17:49	WG1027344
Toluene	18.9		5.33	1000	10/03/2017 17:49	WG1027344
Ethylbenzene	7.51		0.533	1000	10/03/2017 17:49	WG1027344
Total Xylene	68.1		1.60	1000	10/03/2017 17:49	WG1027344
TPH (GC/FID) Low Fraction	1540		107	1000	10/03/2017 17:49	WG1027344
(S) a,a,a-Trifluorotoluene(FID)	*85.5*		*77.0-120*		*10/03/2017 17:49*	WG1027344
(S) a,a,a-Trifluorotoluene(PID)	*98.8*		*75.0-128*		*10/03/2017 17:49*	WG1027344

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	75.6		1	10/03/2017 11:36	WG1027125

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		5.29	1	10/07/2017 11:18	WG1028273
C28-C40 Oil Range	ND		5.29	1	10/07/2017 11:18	WG1028273
(S) o-Terphenyl	*87.9*		*18.0-148*		*10/07/2017 11:18*	WG1028273

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.6		1	10/03/2017 11:36	WG1027125

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	303		4.23	1	10/07/2017 12:14	WG1028273
C28-C40 Oil Range	26.7		4.23	1	10/07/2017 12:14	WG1028273
(S) o-Terphenyl	*71.5*		*18.0-148*		*10/07/2017 12:14*	WG1028273

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.8		1	10/03/2017 11:36	WG1027125

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	510		21.3	5	10/08/2017 19:39	WG1028273
C28-C40 Oil Range	33.2		4.26	1	10/07/2017 12:29	WG1028273
(S) o-Terphenyl	*65.2*		*18.0-148*		*10/07/2017 12:29*	WG1028273
(S) o-Terphenyl	*90.5*		*18.0-148*		*10/08/2017 19:39*	WG1028273

Method Blank (MB)

(MB) R3254523-1 10/03/17 11:36

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.0012			

L940568-01 Original Sample (OS) • Duplicate (DUP)

(OS) L940568-01 10/03/17 11:36 • (DUP) R3254523-3 10/03/17 11:36

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	75.7	75.0	1	1		5

Laboratory Control Sample (LCS)

(LCS) R3254523-2 10/03/17 11:36

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85-115	

Method Blank (MB)

(MB) R3254454-3 10/03/17 15:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	0.000213	J	0.000120	0.000500
Toluene	0.000340	J	0.000150	0.00500
Ethylbenzene	0.000124	J	0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	0.0282	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*89.5*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*97.8*			*75.0-128*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3254454-1 10/03/17 14:28 • (LCSD) R3254454-2 10/03/17 14:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	4.92	4.84	89.5	87.9	70.0-136			1.80	20
(S) a,a,a-Trifluorotoluene(FID)				*106*	*105*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*113*	*112*	*75.0-128*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3254454-4 10/03/17 16:19 • (LCSD) R3254454-5 10/03/17 16:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0434	0.0438	86.9	87.6	71.0-121			0.830	20
Toluene	0.0500	0.0469	0.0471	93.8	94.2	72.0-120			0.440	20
Ethylbenzene	0.0500	0.0471	0.0480	94.3	96.0	76.0-121			1.78	20
Total Xylene	0.150	0.141	0.140	93.9	93.0	75.0-124			1.00	20
(S) a,a,a-Trifluorotoluene(FID)				*86.4*	*89.3*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*92.1*	*96.2*	*75.0-128*				

L940163-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L940163-01 10/03/17 18:19 • (MS) R3254454-6 10/03/17 22:49 • (MSD) R3254454-7 10/03/17 23:12

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	ND	22.4	22.3	89.4	89.0	500	10.0-146			0.460	29
Toluene	0.0500	ND	23.9	24.0	94.2	94.3	500	10.0-143			0.140	30
Ethylbenzene	0.0500	ND	27.2	27.0	109	108	500	10.0-147			0.650	31
Total Xylene	0.150	15.0	82.5	81.5	90.0	88.7	500	10.0-149			1.22	30
(S) a,a,a-Trifluorotoluene(FID)					*90.2*	*90.4*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*96.6*	*96.9*		*75.0-128*				

L940163-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L940163-01 10/03/17 18:19 • (MS) R3254454-8 10/03/17 23:34 • (MSD) R3254454-9 10/03/17 23:56

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	958	3300	3300	85.3	85.3	500	10.0-147			0.0200	30
(S) a,a,a-Trifluorotoluene(FID)					*101*	*101*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*108*	*108*		*75.0-128*				

Method Blank (MB)

(MB) R3255555-1 10/06/17 22:27

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*88.9*			*18.0-148*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3255555-2 10/06/17 22:41 • (LCSD) R3255555-3 10/06/17 22:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	60.0	35.3	32.7	58.9	54.6	50.0-150			7.61	20
(S) o-Terphenyl				*76.5*	*71.1*	*18.0-148*				

L940399-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L940399-01 10/07/17 06:32 • (MS) R3255555-4 10/07/17 06:47 • (MSD) R3255555-5 10/07/17 07:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	12.0	ND	48.9	55.9	48.7	60.4	5	50.0-150	J6		13.5	20
(S) o-Terphenyl					*8.00*	*79.5*		*18.0-148*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**

H242

XTO ENERGY
Western Division

Quote Number	**Page _1_ of _1_**
XTO Contact: James McDaniel	**XTO Contact Phone #:** (505) 419-0915
Email Results to: james_mcdaniel@xtoenergy.com; aager@ltenv.com; dhencmann@ltenv.com; dburns@ltenv.com	
Well Site/Location OH Randel #5	**API Number** / **Test Reason**
Collected By D. Burns	**Samples on Ice (Y / N)** Yes / **Turnaround**
Company LT Environmental, Inc.	**QA/QC Requested**
Signature D. Burns	**Gray Areas for Lab Use Only!**

Turnaround: ___ Standard; X Next Day (Same Day); ___ Two Day; ___ Three Day; ___ Std.5 Bus. Days(by contract); Date Needed _____

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

Sample ID	Sample Name	Media	Date	Time	Preservative	No. of Conts.	BTEX - Method 8021	TPH (GRO/DRO/ORO) - Method 8015	Sample Number
BH27 @ 35-40'		S	9/30/2017	11:00	NA	1	X	X	540 563-01
BH27 @ 40-45'		S	9/30/2017	11:30	NA	1	X	X	02
BH27 @ 45-50'		S	9/30/2017	12:00	NA	1	X	X	03

Media : Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

Relinquished By: (Signature) D. Burns	**Date:** 10-2-17	**Time:** 0800	**Received By: (Signature)**	**Number of Bottles** 3	**Sample Condition**
Relinquished By: (Signature)	**Date:** 10-2-17	**Time:** 1600	**Received By: (Signature)**	**Temperature:** 1.3 °C	**Other Information**
Relinquished By: (Signature)	**Date:**	**Time:**	**Received for Lab by: (Signature)** Jennifer Noyal	**Date:** 10-3-17 / **Time:** 8:45	COCSI

Comments Same Day

FedEx: 6777 0002 1380

* Sample ID will be the office and sampler-date-military time-sampler initials FARJM-MMDDYY-1200

ESC LAB SCIENCES
Cooler Receipt Form

Client: XTOXM	SDG#	940568
Cooler Received/Opened On: 10/ 3 /17	Temperature:	1.3
Received by : Jennifer Royal		
Signature: Jennifer Royal		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			