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

April 28, 2019

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

RCVD DIII 5/23/19

RE: Soil Delineation Report and Remediation Update
Hilcorp Energy Company
Bell Federal GC B #1,
API # 30-045-09772
NCS1729355513
San Juan County, New Mexico

Dear Mr. Smith:

LT Environmental, Inc. (LTE), on behalf of Hilcorp Energy Company (Hilcorp), presents the following summary report, to the New Mexico Oil Conservation Division (NMOCD) to document delineation soil sampling activities at the Bell Federal GC B #1 natural gas production well (Site). The Site is located west of the Farmington Glade near Farmington, New Mexico, in Unit A of Section 11 of Township 30 North and Range 13 West (Figure 1). The release response and subsequent fieldwork were completed while the Site was operated by XTO Energy, Inc. (XTO). Hilcorp acquired the asset in April 2018. This report and future remediation activities will occur under Hilcorp's direction.

BACKGROUND

On September 15, 2017, XTO discovered a bullet hole in the side of a condensate tank. The vandalized tank resulted in approximately 58 barrels (bbls) of condensate draining onto the ground and infiltrating into the subsurface. The release was contained within the bermed area; however no liquids were recovered. The release was reported to the NMOCD by XTO on a Form C-141 *Release Notification and Corrective Action Form* dated October 1, 2017.

The Site was previously ranked a zero pursuant to the NMOCD 1993 *Guidelines for Remediation of Leaks, Spills and Releases,* as the release occurred prior to August 14, 2018. However, subsequent conditions of approval set by the NMOCD required complete lateral and vertical delineation as described in New Mexico Administrative Code (NMAC) Title 19, Chapter 15, Part 29, Section 11 (19.15.29.12). Depth to groundwater at the Site is estimated to be greater than 100 feet below ground surface (bgs) based on the nearest water well data. The nearest permitted water well with depth to water is SJ 02647, located 4,110 feet to the south-southwest. Ground surface elevation at the water well location is approximately 5,759 feet, which is 121 feet lower in elevation than the Site. The water well has a depth to groundwater of 58 feet and a total depth

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Wednesday, July 3, 2019 3:02 PM
To: 'Devin Hencmann'
Cc: Jennifer Deal
Subject: RE: Bell Federal GC B#1 Q1 Remediation Report

All,

OCD approves the Quarterly report, with no additional conditions at this time.

As previously requested back in the 3rd Quarter of 18 these reports need to be submitted on a C-141 using the remediation page. ANY future reports not on a C-141 will be rejected.

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: Wednesday, May 22, 2019 3:41 PM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Cc: Jennifer Deal <jdeal@hilcorp.com>
Subject: [EXT] Bell Federal GC B#1 Q1 Remediation Report

Cory,

Please see the attached 2019 Quarter 1 Remediation report for the Bell Federal GC B#1 (NCS1729355513). Per your request this report includes a summary of additional delineation work conducted at the site.

Let me know if you have any questions.

Thank you,
Devin

LT Environmental, Inc.
Advancing Opportunity
25 YEARS

Devin Hencmann
Project Geologist
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of 76 feet. The closest continuously flowing water or significant watercourse to the Site is the Farmington Glade located approximately 2,420 feet southeast of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is greater than 1,000 feet from a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. Based on these criteria, in accordance with NMAC 19.15.29.12, Table 1, the following Closure Criteria for soils impacted by a release apply: 10 milligrams per kilogram (mg/kg) benzene; 50 mg/kg benzene, toluene, ethylbenzene, and total xylenes (BTEX); 2,500 mg/kg total petroleum hydrocarbons (TPH); and 1,000 mg/kg TPH-gasoline range organics (GRO) and TPH-diesel range organics (DRO).

XTO responded to the release by conducting an initial delineation investigation. Soil samples were collected from soil borings (BH-1 through BH-4) on September 18 and November 15 and 16, 2017. A solar soil vapor extraction (SVE) system was installed at the Site to address petroleum hydrocarbons in the subsurface. The solar SVE system was installed and started on January 16, 2018. The SVE system layout and soil boring locations are provided on Figure 2. The initial delineation and SVE system installation were reported to the NMOCD in a report, *Soil Delineation and Solar SVE System Installation*, dated February 28, 2018.

On March 26 and 27, 2018, LTE conducted an additional subsurface investigation. A hollow-stem auger drill rig was used to advance seven additional boreholes (BH-5 through BH-8A) outside of the bermed area. The additional delineation was reported to the NMOCD in a report, *Soil Delineation Report,* dated May 3, 2018.

ADDITIONAL DELINEATION ACTIVITIES

As reported in the, *Soil Delineation Report,* submitted to the NMOCD on May 3, 2018, the previous subsurface investigation and delineation activities, soil impacts were encountered in soil borings SVE-1, SVE-2, BH-1, BH-5. Soil impacts ranged from a depth of 5 feet below ground surface (bgs) to 40 feet bgs. Due to the unidentified vertical extent in soil boring SVE-1 additional delineation was required.

On January 10 and 11, 2019, LTE used a hollow-stem auger drill rig to advance three additional boreholes (BH-9 through BH-11) to delineate impacts to soil vertically and laterally to the north and the east. Continuous soil samples were logged by an LTE geologist and described using the Unified Soil Classification System (USCS). The intervals from immediately beneath the ground surface to 5 feet bgs were composited and then discrete samples for every 5-foot interval thereafter were screened for volatile aromatic hydrocarbons with a photo-ionizing detector (PID). Soil with the highest field screening results and soil from the bottom of the borings were collected for laboratory analysis. All samples were analyzed for BTEX by United States Environmental Protection Agency (EPA) Method 8021 and TPH-GRO, TPH-DRO, and TPH-motor oil range organics (MRO) by EPA Method 8015. All samples collected were placed on ice and

sealed in a cooler for delivery to Hall Environmental Analysis Laboratory (Hall) of Albuquerque, New Mexico, for analysis. Soil samples were labeled with the date and time of collection, sample name, sampler's name, and parameters to be analyzed. Strict chain-of-custody procedures were documented including the date and time sampled, sample number, type of sample, sampler's name and signature, preservative used, and analyses required. The locations of the boreholes are presented on Figure 2, and the laboratory results are summarized on Table 1. The soil boring logs are presented as Attachment 1 and the laboratory analytical reports are attached as Attachment 2.

SOIL SAMPLING RESULTS

Soil samples collected during advancement of the soil borings were predominantly composed of silty sand to sandy silt lithologies with occasional gravel and sand layers. Auger refusal occurred when sandstone of the Nacimiento Formation was encountered at approximately 35 feet to 40 feet bgs in borings BH-8, BH-8A, and BH-11. LTE attempted to bore through the sandstone; however, the auger was unable to penetrate through the sandstone. The attempts to auger into the sandstone did result in cuttings that LTE was able to describe as a light brown, medium grained, moderately cemented sandstone with no hydrocarbon staining or odor. Soil samples collected from the bottom of these borings reflect unconsolidated material above the sandstone.

Field-identified soil impacts consisting of visual staining, hydrocarbon odors, and/or elevated field screening results were observed in BH-1 (2 feet to 17 feet bgs), SVE-1 (0 feet to 40 feet bgs), SVE-2 (0 feet to 35 feet bgs), BH-5 (30 feet to 40 feet bgs), BH-7 (35 feet to 40 feet bgs), BH-8 (20 feet to 35 feet bgs), BH-8A (18 feet to 20 feet bgs), BH-9 (10 feet to 55 feet bgs), and BH-10 (30 feet to 50 feet bgs). Soil boring logs are included as Attachment 1.

Laboratory analytical results indicated that soil samples exceeded the NMOCD remediation action levels of 50 mg/kg for total BTEX and of 5,000 mg/kg for TPH at the following intervals.

- Borehole BH-1 at 5 feet bgs and at 17 feet bgs;
- Borehole SVE-1 at 5 feet bgs and at 40 feet bgs;
- Borehole SVE-2 at 5 feet bgs and at 35 feet bgs;
- Borehole BH-5 at 35 feet bgs; and
- Borehole BH-9 at 20 feet bgs

Samples collected from soil borings BH-2, BH-3, BH-7A, and BH-11 did not contain detectable concentrations of BTEX or TPH; although, BH-2 and BH-3 were limited in depth. Samples collected from other boreholes that did extend to the sandstone bedrock included BH-6, BH-7, BH-8, BH-8A, and BH-10, which contained detectable concentrations of BTEX and/or TPH that were compliant with the NMOCD closure criteria for the Site. The soil analytical results as compared

to the NMOCD remediation action levels are presented on Figure 2 and summarized in Table 1. The laboratory analytical reports are included as Attachment 2.

SOIL VAPOR EXTRACTION

The solar SVE system was installed on January 16, 2018, to remediate subsurface soil petroleum hydrocarbons following an act of vandalism, resulting in the release of approximately 58 bbls of condensate. The solar SVE system consists of a 1/3 horsepower blower capable of producing 22 cubic feet per minute (cfm) at 29 inches of water column vacuum. The blower is powered by four 12-volt deep cycle batteries that are charged throughout the day via three solar panels with a nominal maximum power output of 915 watts. The blower runs on a timer that is scheduled to maximize runtime that coincides with the seasonally available solar recharge, typically 10 hours in the winter and 12 hours in the summer for Farmington, New Mexico. After startup on January 16, 2018, the solar SVE system was set to run for 8 hours per day and was gradually increased to 10 and 12 hours of runtime throughout the spring and summer. Between startup and the last site visit on March 22, 2019, there have been 430 days of operations, with an estimated 4,843 total hours of available nominal daylight in which the solar SVE system should be in operation. Of the available runtime of 4,843 hours since installation, the system has an actual runtime of 4,682 hours, for an overall 96.9 percent (%) runtime efficiency. Below is a table of SVE runtime in comparison with nominal available daylight hours, per month, according to the National Oceanic and Atmospheric Administration's National Weather Service.

Month	January 12 to September 30, 2018	October 2018	November 2018	December 2018	January 2019	February 2019	March 1 to March 22, 2019
Days	251	31	30	31	31	28	22
Avg. Nominal Daylight Hrs	12	11	10	9	10	10	11
Available Runtime Hrs.	3,082	341	300	279	310	280	242
						Total Available Daylight Runtime Hours	**4,834**
						Actual Runtime Hours	**4,682**
						% Runtime	**96.9%**

An initial air sample was collected on January 24, 2018, from the solar SVE system discharge exhaust stack. A subsequent air sample was collected on August 17, 2018. No air sample was collected during the fourth quarter of 2018, due to the planned additional delineation in January 2019. Samples were collected in 1-liter Tedlar® bags and submitted to Hall for analysis of BTEX by EPA Method 8021, and total volatile petroleum hydrocarbons (TVPH) via EPA Method 8015. The annual sample collected March 22, 2019 was analyzed for volatile organic compounds by EPA method 8260 in accordance with the conditions of approval set forth by the NMOCD on March 12, 2018. The air sample analytical results are presented in Table 2.

Borehole BH-9 was left open and then completed as an additional SVE remediation well (SVE-4) to address the impact observed at depth in that boring. The SVE well was set at a depth of 50 feet bgs with a screened interval to 40 feet bgs. The SVE well was completed as previous wells, with 2 feet of sand above the screened interval, followed by 2 feet of hydrated bentonite seal, with bentonite cement grout to the surface. An air sample was collected in the first quarter of 2019 and was submitted to Hall for analysis of volatile organic compounds (VOCs) by EPA Method 8260.

Since the solar SVE system installation, a total of approximately 27 gallons of liquid-phase separated hydrocarbons (PSH) have been recovered from the SVE wells and liquid-vapor separator tank. Based on the air sample data collected to date, the estimated mass air emissions were calculated using an average of the air samples. The impacted mass source removal via the solar SVE system to date is an estimated 67.7 pounds (lbs.) of benzene and 1,190 lbs. of TVPH. Including the PSH and vapor phase hydrocarbons, an estimated total of 229.7 gallons or 5.4 bbls of condensate has been recovered. Soil vapor recovery and emissions are summarized on Table 3.

During the upcoming 2019 second quarter of operations, site visits will resume on a bi-weekly basis by Hilcorp and LTE personnel to ensure 90% runtime efficiency continues and that any maintenances issues are addressed. The average nominal daylight hours will increase throughout the spring and into summer, so the blower operation hours will be adjusted accordingly. An updated quarterly report with sample results, runtime, and mass source removal will be submitted under separate cover within 30 days of the end of the quarter.

CONCLUSIONS

Impact to soil at the Site is characterized by elevated BTEX and TPH concentrations in sandy lithology. The area containing BTEX and TPH concentrations exceeding NMOCD closure criteria extends from the surface to approximately 50 feet bgs at the source (BH-01, SVE-1, SVE-2 and BH-9) and appears to extend southeast to BH-5 at a depth of 35 feet bgs. While there is some impact to the northwest near BH-8 and BH-8A, concentrations detected in samples from those borings do not exceed NMOCD closure criteria. Lithologic observations, field screening results, and laboratory analytical results suggest liquids from the release were contained on the surface within the berm around the condensate tank and migrated vertically through the porous sandy lithology to a depth of 50 feet bgs. Additional vertical migration was likely restricted by the sandstone bedrock from the Nacimiento Formation. Thickness of the Nacimiento Formation in this area ranges from 418 feet to 2,232 feet and aquifers occur within the coarser and continuous sandstone bodies (Stone el al., 1983). Water wells drilled in the area do not encounter groundwater until approximately 150 feet in depth, suggesting the bedrock encountered during this investigation is not likely water-bearing or extremely porous. The bottom hole sample from borehole BH-9, within the source area, contained detectable concentrations of BTEX and TPH that are complaint with NMOCD Table 1 closure criteria, which indicate that vertical migration of

petroleum hydrocarbon impact is limited to the upper 60 feet of soil. Boreholes that were sampled for subsurface soil outward from the source area indicated vertical and lateral migration was limited to the sandy lithology and did not extend into the sandstone. SVE wells 1-4 are screened across 20-foot intervals in the subsurface, ranging from 3 feet to 46 feet bgs. The radius of influence is estimated to be 20 feet and the wells will allow Hilcorp to address the lateral extent of the identified impact as illustrated on Figure 2.

RECOMMENDATIONS

LTE recommends continuing operating the system with four total SVE wells, alternating between two active SVE wells at a time. Continued operations will comply with NMOCD conditions of approval dated March 12, 2018, including, maintaining a runtime greater than or equal to 90% per quarter for the maximum available hours, conducting annual gas sampling for a full list of analytes for EPA Method 8260, and submitting quarterly reports of remediation activities. Once a decline in VOC emissions from the SVE system exhaust are observed indicating that petroleum hydrocarbon impacts have been reduced, Hilcorp will submit a closure plan to the NMOCD for approval before commencing with closure activities.

LTE appreciates the opportunity to provide this report 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 Jenifer Deal at (505) 324-5128 or at jdeal@hilcorp.com.

Sincerely,

LT ENVIRONMENTAL, INC.

Devin Hencmann
Project Geologist

Ashley L. Ager, P.G.
Senior Geologist

References:

Stone, W.J., F.P. Lyford, P.F. Frenzel, N.H. Mizell, and E.T. Padgett, 1983, *Hydrogeology and Water Resources of the San Juan Basin, New Mexico*: HR-6 New Mexico Bureau of Geology and Mineral Resources Hydrology Report 6.

Attachments:

Figure 1	Site Location Map
Figure 2	Soil Analytical Results
Table 1	Soil Analytical Results

Table 2 Air Sample Analytical Results
Table 3 Soil Vapor Extraction System Recovery and Emissions Summary
Attachment 1 Soil Boring Logs
Attachment 2 Laboratory Analytical Reports

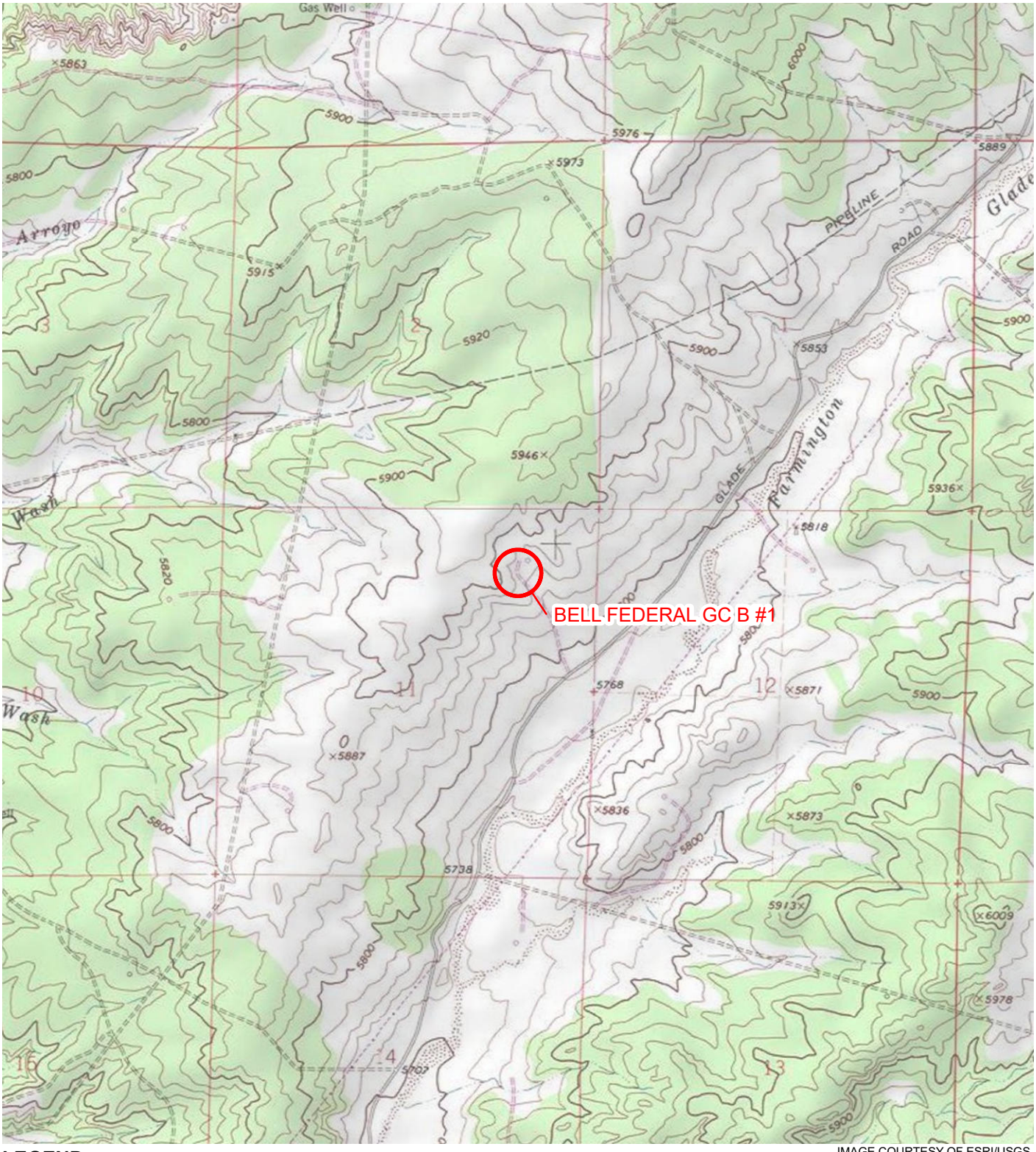

IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 2,000 4,000

Feet

N

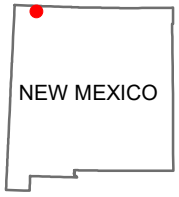

FIGURE 1
SITE LOCATION MAP
BELL FEDERAL GC B #1
NENE SEC 11 T30N R13W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

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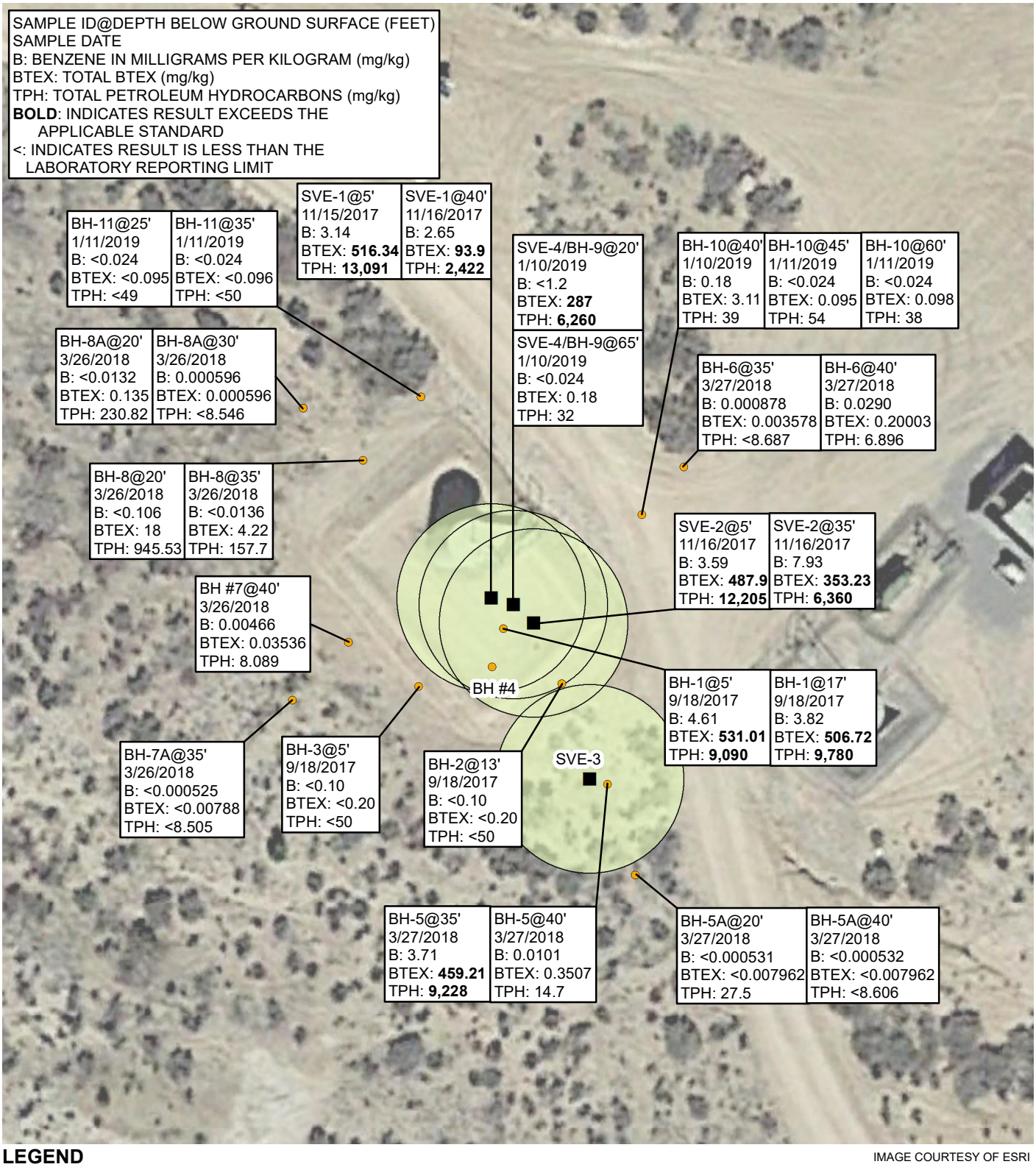


LEGEND

- BOREHOLE
- SOIL VAPOR EXTRACTION (SVE) WELL
- 20 FOOT RADIUS OF INFLUENCE

IMAGE COURTESY OF ESRI

0 30 60
Feet

N

FIGURE 2
PROPOSED SVE WELL MAP
BELL FEDERAL GC B#1
NENE SEC 11 T30N R13W
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

P:\Hilcorp\GIS\MXD\017818007_BELL FEDERAL\017818007_FIG03_SOIL_ANALY_JAN_2019.mxd

TABLE 1
SOIL ANALYTICAL RESULTS

BELL FEDERAL GC B #1
HILCORP ENERGY COMPANY
SAN JUAN COUNTY, NEW MEXICO

Soil Boring	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)	Combined GRO, DRO (mg/kg)	MRO (mg/kg)	TPH (mg/kg)
SVE-1	11/15/2017	5	4,195	3.14	52.9	26.3	434	**516.34**	7,280	4,880	**12,160**	931	**13,091**
	11/16/2017	40	2,782	2.65	18.1	6.25	66.9	**93.9**	1,210	999	**2,209**	213	2,422
SVE-2	11/16/2017	5	3,224	3.59	84.8	24.1	379	**487.9**	6,740	4,590	**11,330**	875	**12,205**
	11/16/2017	35	2,880	7.93	85.7	21.6	238	**353.23**	4,280	1,820	**6,100**	260	**6,360**
* BH-1	9/18/2017	5	2,259	4.61	97.4	37	392	**531.01**	3,660	4,420	**8,080**	1,010	**9,090**
	9/18/2017	17	4,187	3.82	87.8	35.1	380	**506.72**	3,070	5,420	**8,490**	1,290	**9,780**
* BH-2	9/18/2017	13	64	<0.10	<0.10	<0.10	<0.20	<0.20	<25	<25	<25	<50	<50
* BH-3	9/18/2017	5	43	<0.10	<0.10	<0.10	<0.20	<0.20	<25	<25	<25	<50	<50
BH-5	3/27/2018	35	2,124	3.71	74.7	35.8	345	**459.21**	4,870	3,940	**8,810**	418	**9,228**
		40	1,333	0.0101	0.0782	0.0214	0.241	0.3507	2.50	12.2	14.7	<4.28	14.7
BH-5A	3/27/2018	20	48.5	<0.000531	<0.00531	<0.000531	<0.00159	<0.007962	<0.106	21.7	21.7	5.80	27.5
		40	7.7	<0.000532	<0.00532	<0.000532	<0.00159	<0.007962	<0.106	<4.25	<4.25	<4.25	<8.606
BH-6	3/27/2018	35	450.8	0.000878	<0.00536	<0.000536	0.00270	0.003578	<0.107	<4.29	<4.29	<4.29	<8.687
		40	205.8	0.0290	0.140	0.00403	0.0270	0.20003	0.456	6.44	6.90	<4.31	6.896
BH-7	3/26/2018	40	2,628	0.00466	0.0143	0.00200	0.0144	0.03536	0.219	7.87	8.09	<4.32	8.089
BH-7A	3/26/2018	35	9.4	<0.000525	<0.00525	<0.000525	<0.00158	<0.00788	<0.105	<4.20	<4.20	<4.20	<8.505
BH-8	3/26/2018	20	1,932	<0.106	<1.06	<0.106	18.0	18.0	543	395	938	7.53	945.53
		35	1,484	<0.0136	0.259	0.391	3.57	4.220	94.2	63.5	157.7	<4.34	157.7
BH-8A	3/26/2018	20	1,215	<0.0132	<0.132	<0.0132	0.135	0.135	32.6	191	224	7.22	230.82
		30	25.0	0.000596	<0.00528	<0.000528	<0.00158	0.000596	<0.106	<4.22	<4.22	<4.22	<8.546
BH-9	1/10/2019	20	4,877	<1.2	29	18	240	**287**	3,000	2,600	**5,600**	660	**6,260**
		65	41.4	<0.024	0.070	<0.048	0.11	0.18	<4.8	32	32	<48	32
BH-10	1/10/2019	40	1,592	0.18	1.3	0.13	1.50	3.11	24	15	39	<49	39
	1/11/2019	45	317	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	54	54	<47	54
		60	4.8	<0.024	<0.049	<0.049	<0.098	<0.098	<4.9	38	38	<49	38
BH-11	1/11/2019	25	64.2	<0.024	<0.047	<0.047	<0.095	<0.095	<4.7	<9.9	<9.9	<49	<49
		35	12.6	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<9.9	<9.9	<50	<50
NMOCD Remediation Action Level				**10**	**NE**	**NE**	**NE**	**50**	**NE**	**NE**	**1,000**	**NE**	**2,500**

NOTES:

***** - Borehole advanced by XTO Energy, Inc.

Bold - indicates value exceeds stated NMOCD standard

BTEX - Benzene, Toluene, Ethylbenzene, Total Xylenes

DRO - diesel range organics

GRO - gasoline range organics

mg/kg - milligrams per kilogram

MRO - motor oil range organics

NE - Not Established

NMOCD - New Mexico Oil Conservation Division

ppm - parts per million

TPH- total petroleum hydrocarbons

TABLE 2
AIR SAMPLE ANALYTICAL RESULTS

BELL FEDERAL GC B#1
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Sample ID	Sample Date	Vapor (ppm)	Benzene (µg/L)	Toluene (µ/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
Bell Fed GC B#1 SVE	1/24/2018	1,435	280	200	*5.0*	38	30,000
Stack Exhaust 01	8/17/2018	1,873	160	380	21	320	18,000
SVE Effluent	3/22/2019	1,607	490	920	24	480	NA
	Percent change	12%	75%	360%	380%	1163%	-40%

NOTES:

µg/L - micrograms per liter

ppm - parts per million

NA - Not Analyzed

TVPH- total volatile petroleum hydrocarbons

Italics denote that the laboratory method detection limit was used for calculations for a non-detected result

TABLE 3
SOIL VAPOR EXTRACTION SYSTEM RECOVERY AND EMISSIONS SUMMARY

BELL FEDERAL GC B#1
SAN JUAN COUNTY, NEW MEXICO
HILCORP ENERGY COMPANY

Sample Information and Lab Analysis

Date	Total Flow (cf)	Delta Flow (cf)	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
1/24/2018	164,400	164,400	1,435	280	200	*5.0*	38	30,000
8/17/2018	2,059,584	1,895,184	1,873	160	380	21.0	320	18,000
3/22/2019	7,116,144	5,056,560	1,670	490	920	24.0	480	NA
		Average	1,654	220	290	13	179	24,000

Vapor Extraction Calculations

Date	Flow Rate (cfm)	Benzene (lb/hr)	Toluene (lb/hr)	Ethyl-benzene (lb/hr)	Total Xylenes (lb/hr)	TVPH (lb/hr)
1/24/2018	40	0.0419	0.0299	0.0007	0.0057	4.4921
8/17/2018	12	0.0072	0.0171	0.0009	0.0144	0.8086
3/22/2018	18	0.0330	0.0620	0.0016	0.0323	NA
Average	26	0.0274	0.0363	0.0011	0.0175	2.6503

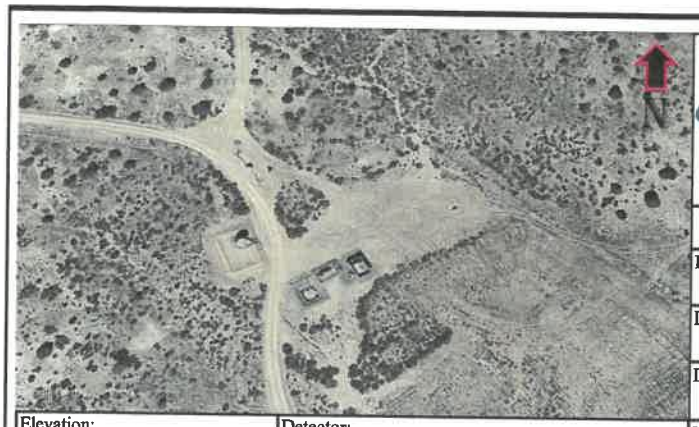
Pounds Extracted Over Total Operating Time

Date	Total Operational Hours	Delta Hours	Benzene (lbs)	Toluene (lbs)	Ethyl-benzene (lbs)	Total Xylenes (lbs)	TVPH (lbs)	TVPH (tons)
1/24/2018	68.5	68.5	2.9	2.1	0.1	0.4	307.7	0.2
8/17/2018	2,632.2	2,563.7	18.4	43.8	2.4	36.9	2,072.9	1.0
3/22/2019	4,682.0	2,049.8	67.7	127.1	3.3	66.3	NA	NA
Avg. Mass Extracted To Date			29.7	57.6	1.9	34.5	1,190.3	0.6
Total Extracted to Date (Linear Decay)			89.0	172.9	5.8	103.5	2,380.6	1.2

NOTES

cf - cubic feet
cfm - cubic feet per minute
lbs - pounds
lb/hr - pounds per hour
µg/L - microgram per liter
PID - photoionization detector
ppm - parts per million
TVPH - total volatile petroleum hydrocarbons
Italics denote that the laboratory method detection limit was used for calculations for a non-detected result

ATTACHMENT 1: SOIL BORING LOGS



Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-9		Project: Bell Federal GC B #1	
Date: 1/10/18		Project Number: 017818007	
Logged By: Eric Carroll		Drilled By: Geomat	
Elevation: 5,880	Detector: PID	Drilling Method: Hollow Stem Auger	Sampling Method: Continous/Split Spoon
Gravel Pack: 10-20 Silica Sand		Seal:	Grout:
Casing Type: Schedule 40 PVC		Diameter: 2" Length:	Hole Diameter: 8.25' / Depth to Liquid:
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2" Length:	Total Depth: / Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	moist		NO		0–1	1	60%	SP	moist, loose, dark reddish brown Sand, trace silt <5%	
		404		Composite 0-10'	2–5					
	Moist		NO		6–8	2	60%	SP	moist, loose, lt reddish brown, Sand, trace silt <5%, no stain, Slight odor.	
	moist	4570	NO	BH-9 13-15'	9–13	3	60%	SP	moist, loose, lt reddish brown, Sand, trace clay <5%, no stain Strong odor	

Advancing Opportunity

Boring/Well #	BH-9
Project:	Bell Federal GC B #1
Project #	017818007
Date	1/10/18

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	moist	4877	NO	BH-9 15-20'	15 16 17 18 19 20	4	70%	SP	moist, loose, lt. reddish brown, sand, no stain, strong odor	
	moist	3711	Yes		21 22	5	50%	CL	moist, stiff, dark green, clay and sand staining, strong odor. Clay ¼" thick	
									Switch to split spoon	
100	moist	3618	Yes		23 24 25		30%	SP	moist, medium dense, coarse sand, 30% fine gravel, HC staining slight odor. Staining stopped @ ~ 24'	
100	moist	3384	NO ~~Yes~~		26 27 28 29 30	6	50%	SP	moist, Dense, coarse sand, with fine gravel 30%, no stain, slight odor	
	Wet	1444	NO		31 32 33 34 35	7	40%		SAA, no stain, slight odor	
					36 37					

Advancing Opportunity

Boring/Well #	BH-9
Project:	Bell Federal GC B #1
Project #	01781007
Date	1/10/18

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
100	moist	660	NO		38 39 40	8	50 %	SP	moist, very dense, white and lt reddish brown, coarse sand no stain/odor	
100	DRY	3149	NO		41 42 43 44 45	9	80%	SP	SAA, no stain, slight odor	
100	Dry	1247	No		46 47 48 49 50	10	60 %	SP	SAA no stain, no odor	
100	DRY	465	NO		51 52 53 54 55	11		GP	Dry, very dense, dark brown, coarse gravel, with coarse sand no stain/odor	
	DRY	281	NO		56 57 58 59	12		GP	Dry, very dense, yellow brown gravel and coarse sand, coal layer @ 58' no stain/odor	

Advancing Opportunity

Boring/Well #	BH-9
Project:	Bell Federal GC B #1
Project #	017818007
Date	1/10/19

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					59					
	Dry	41.4	NO	BH-9 @ 60-65'	60 61 62 63 64 65	13		GP	Dry, very dense, gravel with coarse sand, no stain/odor TD = 65'	
					66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81					

Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-10	Project: Bell Federal GC B #1
Date: 1/10/19	Project Number: 017818007
Logged By: Eric Carroll	Drilled By: Geomat
Elevation: 5,880	Detector: PID
Drilling Method: Hollow Stem Auger	Sampling Method: Continous/Split Spoon
Gravel Pack: 10-20 Silica Sand	Seal:
Grout:	
Casing Type: Schedule 40 PVC	Diameter: 2" Length:
Hole Diameter: 8.25'	Depth to Liquid:
Screen Type: Schedule 40 PVC	Slot: 0.010" Diameter: 2" Length:
Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					0					
					1	1	100%	SP	moist, loose, lt reddish brown, sand coarse, < 5% fines, fine gravel	
	moist	0.0	NO	Composite 0-10'	2					
					3					
					4					
					5					
					6					
					7	2	100%	SP	SAA no stain/odor	
					8					
					9					
					10					
					11					
					12	3	100%	SP	moist, dense, lt reddish brown sand, some gravel < 15%, no stain/odor	
	Moist	0.0	NO		13					
					14					
					15				switch to split spoon	

Advancing Opportunity

Boring/Well #	BH-10
Project:	Bell Federal GC B #1
Project #	017818007
Date	1/10/18

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
100	moist	38.4	Yes ~~Slight~~		17	4	50%	SP	moist, dense, dark brown, sand and fine gravel, ~~HC~~ stain, slight odor	
					18					
					19					
					20					
					21					
					22					
100	moist	47.9	NP		23	5	50%	SP	SAA, no stain/odor	
					24					
					25					
					26					
					27				moist, dense, lt reddish brown, coarse sand, <5% fines	
	moist	9.9	NO		28	6			no stain/odor	
					29					
					30					
					31					
					32					
	moist	188	NP		33	7			SAA, no stain/odor	
					34					
					35					
					36					
					37					

Advancing Opportunity

Boring/Well #	BH-10
Project:	Bell Federal GC B#1
Project #	017818007
Date	1/10/18

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					37					
	moist	1597	NO	BH-10 38-40'	38 39 40	8		SP	moist, dense, very lt yellow brown coarse, sand, no stain, slight odor	
	moist	317	NO	BH-10 43-45'	41 42 43 44 45	9		SP	SAA, no stain/odor	
	Dry	95.4	NO		46 47 48 49 50	10		SP	Dry, dense, lt brown, coarse sand, no stain, no odor coal (organic) layer @ 49'	
	Dry	33.1	NO		51 52 53 54 55	11		SP	Dry, very dense, lt yellow brown Coarse sand w fine gravel no stain/odor	
		4.8		BH-10 58-60	56 57 58 59	12			SAA, no stain/odor TD = 60'	

Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: BH-11		Project: Bell Federal GC B #1	
Date: 1/11/18		Project Number: 017818007	
Logged By: Eric Carroll		Drilled By: Geomat	
Elevation: 5,880	Detector: PID	Drilling Method: Hollow Stem Auger	Sampling Method: Continous/Split Spoon
Gravel Pack: 10-20 Silica Sand		Seal:	Grout:
Casing Type: Schedule 40 PVC	Diameter: 2" Length:	Hole Diameter: 8.25'	Depth to Liquid:
Screen Type: Schedule 40 PVC	Slot: 0.010" Diameter: 2" Length:	Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	moist	0.0	NO		0 1 2 3 4 5 6 7 8 9 10	1 2			moist, loose, reddish brown, coarse sand, some fin gravel < 15%, < 5% fines, no stain/odor	
	moist	0.0	NO		11 12 13 14 15	3			SAA, no stain/odor. Switch to split spoon	

Advancing Opportunity

Boring/Well #	BH-10
Project:	Bell Federal GC B #1
Project #	017818007
Date	1/11/18

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	moist	17.6	NO		15–20	4			moist, dense, reddish brown, coarse Sand w fine gravel no Stain/odor	
	moist	64.2	NO	BH-11 23-25'	21–25				SAA, no Stain/odor	
	moist	47.6	NO		26–30				SAA, no Stain, slight odor	
	moist	12.6	NO	BH-11 33-35'	31–35				moist, very dense, lt reddish brown coarse Sand w/ fine gravel no Stain/odor	

ATTACHMENT 2: LABORATORY ANALYTICAL REPORTS

ANALYTICAL REPORT

December 05, 2017

XTO Energy - San Juan Division

Sample Delivery Group:	L952384
Samples Received:	11/20/2017
Project Number:	
Description:	Bell Federal B1

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

SVE-1 5' L952384-01 Solid

Collected by: JA | Collected date/time: 11/15/17 14:30 | Received date/time: 11/20/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1045104	1	11/21/17 06:29	11/21/17 06:30	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1045148	5000	11/21/17 08:03	11/21/17 15:16	JHH
Volatile Organic Compounds (GC) by Method 8021	WG1045148	250	11/21/17 08:03	11/21/17 13:41	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1045553	20	11/21/17 21:21	11/22/17 11:55	ACM

SVE-1 40' L952384-02 Solid

Collected by: JA | Collected date/time: 11/16/17 11:30 | Received date/time: 11/20/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1045104	1	11/21/17 06:29	11/21/17 06:30	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1045148	250	11/21/17 08:03	11/21/17 14:05	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1045553	20	11/21/17 21:21	11/22/17 11:30	ACM

SVE-2 5' L952384-03 Solid

Collected by: JA | Collected date/time: 11/16/17 15:15 | Received date/time: 11/20/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1045104	1	11/21/17 06:29	11/21/17 06:30	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1045148	5000	11/21/17 08:03	11/21/17 15:39	JHH
Volatile Organic Compounds (GC) by Method 8021	WG1045148	250	11/21/17 08:03	11/21/17 14:28	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1045553	20	11/21/17 21:21	11/22/17 12:07	ACM

SVE-2 35' L952384-04 Solid

Collected by: JA | Collected date/time: 11/16/17 16:30 | Received date/time: 11/20/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1045104	1	11/21/17 06:29	11/21/17 06:30	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1045148	5000	11/21/17 08:03	11/21/17 16:03	JHH
Volatile Organic Compounds (GC) by Method 8021	WG1045148	250	11/21/17 08:03	11/21/17 14:52	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1045553	20	11/21/17 21:21	11/22/17 11:42	ACM

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. 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	92.7		1	11/21/2017 06:30	WG1045104

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	3.14		0.135	250	11/21/2017 13:41	WG1045148
Toluene	52.9		1.35	250	11/21/2017 13:41	WG1045148
Ethylbenzene	26.3		0.135	250	11/21/2017 13:41	WG1045148
Total Xylene	434		8.09	5000	11/21/2017 15:16	WG1045148
TPH (GC/FID) Low Fraction	7280		539	5000	11/21/2017 15:16	WG1045148
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*11/21/2017 15:16*	WG1045148
(S) a,a,a-Trifluorotoluene(FID)	*93.4*		*77.0-120*		*11/21/2017 13:41*	WG1045148
(S) a,a,a-Trifluorotoluene(PID)	*106*		*75.0-128*		*11/21/2017 15:16*	WG1045148
(S) a,a,a-Trifluorotoluene(PID)	*103*		*75.0-128*		*11/21/2017 13:41*	WG1045148

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	4880		86.3	20	11/22/2017 11:55	WG1045553
C28-C40 Oil Range	931		86.3	20	11/22/2017 11:55	WG1045553
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*11/22/2017 11:55*	WG1045553

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.1		1	11/21/2017 06:30	WG1045104

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	2.65		0.139	250	11/21/2017 14:05	WG1045148
Toluene	18.1		1.39	250	11/21/2017 14:05	WG1045148
Ethylbenzene	6.25		0.139	250	11/21/2017 14:05	WG1045148
Total Xylene	66.9		0.416	250	11/21/2017 14:05	WG1045148
TPH (GC/FID) Low Fraction	1210		27.7	250	11/21/2017 14:05	WG1045148
(S) a,a,a-Trifluorotoluene(FID)	*95.8*		*77.0-120*		*11/21/2017 14:05*	WG1045148
(S) a,a,a-Trifluorotoluene(PID)	*104*		*75.0-128*		*11/21/2017 14:05*	WG1045148

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	999		88.7	20	11/22/2017 11:30	WG1045553
C28-C40 Oil Range	213		88.7	20	11/22/2017 11:30	WG1045553
(S) o-Terphenyl	*119*	J7	*18.0-148*		*11/22/2017 11:30*	WG1045553

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	94.0		1	11/21/2017 06:30	WG1045104

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	3.59		0.133	250	11/21/2017 14:28	WG1045148
Toluene	84.8		26.6	5000	11/21/2017 15:39	WG1045148
Ethylbenzene	24.1		0.133	250	11/21/2017 14:28	WG1045148
Total Xylene	379		7.98	5000	11/21/2017 15:39	WG1045148
TPH (GC/FID) Low Fraction	6740		532	5000	11/21/2017 15:39	WG1045148
(S) a,a,a-Trifluorotoluene(FID)	*94.6*		*77.0-120*		*11/21/2017 14:28*	WG1045148
(S) a,a,a-Trifluorotoluene(FID)	*101*		*77.0-120*		*11/21/2017 15:39*	WG1045148
(S) a,a,a-Trifluorotoluene(PID)	*104*		*75.0-128*		*11/21/2017 14:28*	WG1045148
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*11/21/2017 15:39*	WG1045148

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	4590		85.1	20	11/22/2017 12:07	WG1045553
C28-C40 Oil Range	875		85.1	20	11/22/2017 12:07	WG1045553
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*11/22/2017 12:07*	WG1045553

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.3		1	11/21/2017 06:30	WG1045104

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	7.93		0.134	250	11/21/2017 14:52	WG1045148
Toluene	85.7		26.8	5000	11/21/2017 16:03	WG1045148
Ethylbenzene	21.6		0.134	250	11/21/2017 14:52	WG1045148
Total Xylene	238		8.04	5000	11/21/2017 16:03	WG1045148
TPH (GC/FID) Low Fraction	4280		536	5000	11/21/2017 16:03	WG1045148
(S) a,a,a-Trifluorotoluene(FID)	*91.0*		*77.0-120*		*11/21/2017 14:52*	WG1045148
(S) a,a,a-Trifluorotoluene(FID)	*99.8*		*77.0-120*		*11/21/2017 16:03*	WG1045148
(S) a,a,a-Trifluorotoluene(PID)	*101*		*75.0-128*		*11/21/2017 14:52*	WG1045148
(S) a,a,a-Trifluorotoluene(PID)	*105*		*75.0-128*		*11/21/2017 16:03*	WG1045148

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	1820		85.8	20	11/22/2017 11:42	WG1045553
C28-C40 Oil Range	260		85.8	20	11/22/2017 11:42	WG1045553
(S) o-Terphenyl	*75.8*	J7	*18.0-148*		*11/22/2017 11:42*	WG1045553

Method Blank (MB)

(MB) R3267326-1 11/21/17 06:30

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.001			

L952057-12 Original Sample (OS) • Duplicate (DUP)

(OS) L952057-12 11/21/17 06:30 • (DUP) R3267326-3 11/21/17 06:30

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	86.2	84.4	1	2		5

Laboratory Control Sample (LCS)

(LCS) R3267326-2 11/21/17 06:30

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

Method Blank (MB)

(MB) R3267387-5 11/21/17 12:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	0.000170	J	0.000120	0.000500
Toluene	0.000272	J	0.000150	0.00500
Ethylbenzene	0.000287	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)	*103*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*105*			*75.0-128*

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

(LCS) R3267387-1 11/21/17 09:53 • (LCSD) R3267387-2 11/21/17 10:17

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	0.0545	0.0546	109	109	71.0-121			0.290	20
Toluene	0.0500	0.0563	0.0558	113	112	72.0-120			0.930	20
Ethylbenzene	0.0500	0.0559	0.0550	112	110	76.0-121			1.57	20
Total Xylene	0.150	0.173	0.170	115	113	75.0-124			1.98	20
(S) a,a,a-Trifluorotoluene(FID)				*102*	*102*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*103*	*104*	*75.0-128*				

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

(LCS) R3267387-3 11/21/17 10:41 • (LCSD) R3267387-4 11/21/17 11:05

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	5.55	5.33	101	96.8	70.0-136			4.13	20
(S) a,a,a-Trifluorotoluene(FID)				*107*	*107*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*122*	*120*	*75.0-128*				

L951532-22 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L951532-22 11/21/17 16:37 • (MS) R3267387-6 11/21/17 19:00 • (MSD) R3267387-7 11/21/17 19:23

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	0.0630	ND	0.0526	0.0584	83.4	92.7	1	10.0-146			10.5	29
Toluene	0.0630	ND	0.0525	0.0584	83.0	92.4	1	10.0-143			10.7	30
Ethylbenzene	0.0630	ND	0.0536	0.0584	84.7	92.3	1	10.0-147			8.56	31
Total Xylene	0.189	ND	0.167	0.181	87.9	95.2	1	10.0-149			7.90	30
(S) a,a,a-Trifluorotoluene(FID)					*101*	*101*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*103*	*103*		*75.0-128*				

L951532-22 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L951532-22 11/21/17 16:37 • (MS) R3267387-8 11/21/17 19:47 • (MSD) R3267387-9 11/21/17 20:11

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	6.93	ND	5.25	5.67	75.8	81.9	1	10.0-147			7.71	30
(S) a,a,a-Trifluorotoluene(FID)					*99.6*	*100*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*109*	*109*		*75.0-128*				

Method Blank (MB)

(MB) R3267672-1 11/22/17 10:03

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	*73.9*			*18.0-148*

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

(LCS) R3267672-2 11/22/17 10:16 • (LCSD) R3267672-3 11/22/17 10:28

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	46.0	53.4	76.7	89.0	50.0-150			14.9	20
(S) o-Terphenyl				*69.5*	*69.3*	*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.
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
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.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

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		

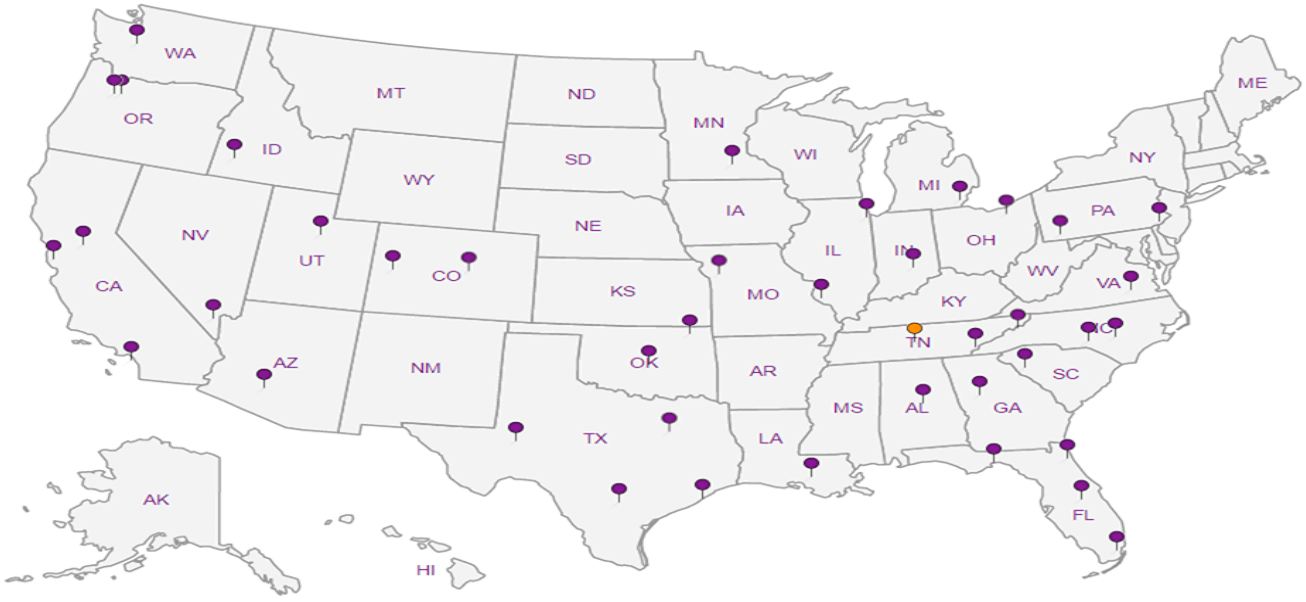
Third Party & Federal Accreditations

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.**



MW
~~L952274~~

H132

XTO ENERGY
Western Division

Quote Number		Page 1 of 1
XTO Contact: James Mcdaniels		XTO Contact Phone #
Email Results to: james_mcdaniels@xtoenergy.com		
Well Site/Location: Bell Federal B# 1	API Number	Test Reason
Collected By: JA	Samples on Ice (Y / N)	Turnaround: ___ Standard ___ Next Day ___ Two Day ___ Three Day ___ Std. 5 Bus. Days (by contract)
Company: LTE	QA/QC Requested	
Signature:	Gray Areas for Lab Use Only!	Date Needed:

Analysis

BTEX 8021	TPH 8015						
X	X						
X	X						
X	X						
X	X						

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.	Sample Number
SVE-1@5'		Soil	11-15-17	1430	cool	(2)40z	L952384-01
SVE-1@40'			11-6-17	1130			02
SVE-2@5'				1515			03
SVE-2@35'		↓	↓	1630	↓	↓	04

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: 11-17-17	Time:	Received By: (Signature)	Number of Bottles	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature:	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature) James Hayes 836	Date: 11.18.17 Time: 8:45	

Comments

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

FedEx: 5435 5509 6573

Sample Count: 8

4.5 mm 50

NCF

0176

ESC LAB SCIENCES
Cooler Receipt Form

Client: XTORUM	SDG#	L952384
~~Cooler Received/Opened On:~~ 11/16/17	Temperature:	4.5
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?			

Andy Vann

ESC Lab Sciences
Non-Conformance Form

Login #: L952384	Client:XTORNM	Date:11/18/17	Evaluated by: Matthew Lockhart

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time	X	Login Clarification Needed		**If Broken Container:**
	Improper temperature		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	Improper preservation		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Couri
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments:Client did not specify what TPH analysis to run.

Client informed by:		Call		Email		Voice Mail		Date:11/20/17	Time:1004
TSR Initials:DR	Client Contact:								

Login Instructions:

GRO, DRO

ANALYTICAL REPORT

April 05, 2018

XTO Energy - San Juan Division

Sample Delivery Group:	L981473
Samples Received:	03/29/2018
Project Number:	
Description:	Bell Federal GC B#1

Report To:

Logan Hixon
382 County Road 3100
Aztec, NM 87410

Entire Report Reviewed By:

Daphne R Richards

Daphne Richards
Technical Service Representative

TABLE OF CONTENTS

BH-7@33'-35' L981473-01 Solid

Collected by: Eric Carroll | Collected date/time: 03/26/18 10:00 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092620	1	04/03/18 16:04	04/03/18 16:14	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	1	03/30/18 09:11	04/02/18 13:19	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 00:56	DMW

BH-7A@38'-40' L981473-02 Solid

Collected by: Eric Carroll | Collected date/time: 03/26/18 11:15 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092620	1	04/03/18 16:04	04/03/18 16:14	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	1	03/30/18 09:11	04/02/18 13:41	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 01:13	DMW

BH-8@18'-20' L981473-03 Solid

Collected by: Eric Carroll | Collected date/time: 03/26/18 12:00 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092620	1	04/03/18 16:04	04/03/18 16:14	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	200	03/30/18 09:11	04/03/18 16:23	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 01:30	MTJ
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	5	04/02/18 09:00	04/03/18 11:39	MTJ

BH-8@33'-35' L981473-04 Solid

Collected by: Eric Carroll | Collected date/time: 03/26/18 13:00 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092620	1	04/03/18 16:04	04/03/18 16:14	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	25	03/30/18 09:11	04/03/18 16:45	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 01:47	DMW

BH-8A@18'-20' L981473-05 Solid

Collected by: Eric Carroll | Collected date/time: 03/26/18 14:00 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092620	1	04/03/18 16:04	04/03/18 16:14	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	25	03/30/18 09:11	04/03/18 17:52	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 02:03	DMW

BH-8A@28'-30' L981473-06 Solid

Collected by: Eric Carroll | Collected date/time: 03/26/18 14:15 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092620	1	04/03/18 16:04	04/03/18 16:14	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	1	03/30/18 09:11	04/02/18 15:10	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 02:20	DMW

BH-5@33'-35' L981473-07 Solid

Collected by: Eric Carroll | Collected date/time: 03/27/18 12:00 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092621	1	04/03/18 15:48	04/03/18 15:58	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	1000	03/30/18 09:11	04/02/18 15:32	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	50	04/02/18 09:00	04/03/18 11:55	DMW

BH-5@38'-40' L981473-08 Solid

Collected by: Eric Carroll | Collected date/time: 03/27/18 12:30 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092621	1	04/03/18 15:48	04/03/18 15:58	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	1	03/30/18 09:11	04/04/18 21:57	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 11:22	MTJ

BH-5A@18'-20' L981473-09 Solid

Collected by: Eric Carroll | Collected date/time: 03/27/18 14:00 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092621	1	04/03/18 15:48	04/03/18 15:58	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	1	03/30/18 09:11	04/02/18 16:16	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 03:11	DMW

BH-5A@38'-40' L981473-10 Solid

Collected by: Eric Carroll | Collected date/time: 03/27/18 14:30 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092621	1	04/03/18 15:48	04/03/18 15:58	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	1	03/30/18 09:11	04/02/18 16:38	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 03:27	DMW

BH-6@33'-35' L981473-11 Solid

Collected by: Eric Carroll | Collected date/time: 03/27/18 10:00 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092621	1	04/03/18 15:48	04/03/18 15:58	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	1	03/30/18 09:11	04/02/18 17:01	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 03:44	DMW

BH-6@38'-40' L981473-12 Solid

Collected by: Eric Carroll | Collected date/time: 03/27/18 11:00 | Received date/time: 03/29/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG1092621	1	04/03/18 15:48	04/03/18 15:58	JD
Volatile Organic Compounds (GC) by Method 8015/8021	WG1092307	1	03/30/18 09:11	04/02/18 17:23	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1092261	1	04/02/18 09:00	04/03/18 04:01	DMW

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, 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	92.7		1	04/03/2018 16:14	WG1092620

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00466		0.000539	1	04/02/2018 13:19	WG1092307
Toluene	0.0143		0.00539	1	04/02/2018 13:19	WG1092307
Ethylbenzene	0.00200		0.000539	1	04/02/2018 13:19	WG1092307
Total Xylene	0.0144		0.00162	1	04/02/2018 13:19	WG1092307
TPH (GC/FID) Low Fraction	0.219		0.108	1	04/02/2018 13:19	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*94.1*		*77.0-120*		*04/02/2018 13:19*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*95.7*		*75.0-128*		*04/02/2018 13:19*	WG1092307

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	7.87		4.32	1	04/03/2018 00:56	WG1092261
C28-C40 Oil Range	ND		4.32	1	04/03/2018 00:56	WG1092261
(S) o-Terphenyl	*99.0*		*18.0-148*		*04/03/2018 00:56*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	95.2		1	04/03/2018 16:14	WG1092620

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		0.000525	1	04/02/2018 13:41	WG1092307
Toluene	ND		0.00525	1	04/02/2018 13:41	WG1092307
Ethylbenzene	ND		0.000525	1	04/02/2018 13:41	WG1092307
Total Xylene	ND		0.00158	1	04/02/2018 13:41	WG1092307
TPH (GC/FID) Low Fraction	ND		0.105	1	04/02/2018 13:41	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*94.1*		*77.0-120*		*04/02/2018 13:41*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*95.0*		*75.0-128*		*04/02/2018 13:41*	WG1092307

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		4.20	1	04/03/2018 01:13	WG1092261
C28-C40 Oil Range	ND		4.20	1	04/03/2018 01:13	WG1092261
(S) o-Terphenyl	*114*		*18.0-148*		*04/03/2018 01:13*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.7		1	04/03/2018 16:14	WG1092620

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		0.106	200	04/03/2018 16:23	WG1092307
Toluene	ND		1.06	200	04/03/2018 16:23	WG1092307
Ethylbenzene	ND		0.106	200	04/03/2018 16:23	WG1092307
Total Xylene	18.0		0.317	200	04/03/2018 16:23	WG1092307
TPH (GC/FID) Low Fraction	543		21.1	200	04/03/2018 16:23	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*90.6*		*77.0-120*		*04/03/2018 16:23*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*100*		*75.0-128*		*04/03/2018 16:23*	WG1092307

Sample Narrative:

L981473-03 WG1092307: Non-target and 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	395		21.1	5	04/03/2018 11:39	WG1092261
C28-C40 Oil Range	7.53		4.23	1	04/03/2018 01:30	WG1092261
(S) o-Terphenyl	*106*		*18.0-148*		*04/03/2018 11:39*	WG1092261
(S) o-Terphenyl	*97.9*		*18.0-148*		*04/03/2018 01:30*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.1		1	04/03/2018 16:14	WG1092620

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		0.0136	25	04/03/2018 16:45	WG1092307
Toluene	0.259		0.136	25	04/03/2018 16:45	WG1092307
Ethylbenzene	0.391		0.0136	25	04/03/2018 16:45	WG1092307
Total Xylene	3.57		0.0407	25	04/03/2018 16:45	WG1092307
TPH (GC/FID) Low Fraction	94.2		2.71	25	04/03/2018 16:45	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*89.0*		*77.0-120*		*04/03/2018 16:45*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*100*		*75.0-128*		*04/03/2018 16:45*	WG1092307

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	63.5		4.34	1	04/03/2018 01:47	WG1092261
C28-C40 Oil Range	ND		4.34	1	04/03/2018 01:47	WG1092261
(S) o-Terphenyl	*88.7*		*18.0-148*		*04/03/2018 01:47*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.5		1	04/03/2018 16:14	WG1092620

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		0.0132	25	04/03/2018 17:52	WG1092307
Toluene	ND		0.132	25	04/03/2018 17:52	WG1092307
Ethylbenzene	ND		0.0132	25	04/03/2018 17:52	WG1092307
Total Xylene	0.135		0.0397	25	04/03/2018 17:52	WG1092307
TPH (GC/FID) Low Fraction	32.6		2.65	25	04/03/2018 17:52	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*92.7*		*77.0-120*		*04/03/2018 17:52*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*102*		*75.0-128*		*04/03/2018 17:52*	WG1092307

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	191		4.23	1	04/03/2018 02:03	WG1092261
C28-C40 Oil Range	7.22		4.23	1	04/03/2018 02:03	WG1092261
(S) o-Terphenyl	*92.5*		*18.0-148*		*04/03/2018 02:03*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.7		1	04/03/2018 16:14	WG1092620

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.000596		0.000528	1	04/02/2018 15:10	WG1092307
Toluene	ND		0.00528	1	04/02/2018 15:10	WG1092307
Ethylbenzene	ND		0.000528	1	04/02/2018 15:10	WG1092307
Total Xylene	ND		0.00158	1	04/02/2018 15:10	WG1092307
TPH (GC/FID) Low Fraction	ND		0.106	1	04/02/2018 15:10	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*93.4*		*77.0-120*		*04/02/2018 15:10*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*93.6*		*75.0-128*		*04/02/2018 15:10*	WG1092307

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	04/03/2018 02:20	WG1092261
C28-C40 Oil Range	ND		4.22	1	04/03/2018 02:20	WG1092261
(S) o-Terphenyl	*100*		*18.0-148*		*04/03/2018 02:20*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.3		1	04/03/2018 15:58	WG1092621

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	3.71		0.536	1000	04/02/2018 15:32	WG1092307
Toluene	74.7		5.36	1000	04/02/2018 15:32	WG1092307
Ethylbenzene	35.8		0.536	1000	04/02/2018 15:32	WG1092307
Total Xylene	345		1.61	1000	04/02/2018 15:32	WG1092307
TPH (GC/FID) Low Fraction	4870		107	1000	04/02/2018 15:32	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*88.8*		*77.0-120*		*04/02/2018 15:32*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*97.4*		*75.0-128*		*04/02/2018 15:32*	WG1092307

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	3940		214	50	04/03/2018 11:55	WG1092261
C28-C40 Oil Range	418		214	50	04/03/2018 11:55	WG1092261
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*04/03/2018 11:55*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.4		1	04/03/2018 15:58	WG1092621

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0101		0.000535	1	04/04/2018 21:57	WG1092307
Toluene	0.0782		0.00535	1	04/04/2018 21:57	WG1092307
Ethylbenzene	0.0214		0.000535	1	04/04/2018 21:57	WG1092307
Total Xylene	0.241		0.00161	1	04/04/2018 21:57	WG1092307
TPH (GC/FID) Low Fraction	2.50		0.107	1	04/04/2018 21:57	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*102*		*77.0-120*		*04/04/2018 21:57*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*107*		*75.0-128*		*04/04/2018 21:57*	WG1092307

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	12.2		4.28	1	04/03/2018 11:22	WG1092261
C28-C40 Oil Range	ND		4.28	1	04/03/2018 11:22	WG1092261
(S) o-Terphenyl	*114*		*18.0-148*		*04/03/2018 11:22*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.2		1	04/03/2018 15:58	WG1092621

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		0.000531	1	04/02/2018 16:16	WG1092307
Toluene	ND		0.00531	1	04/02/2018 16:16	WG1092307
Ethylbenzene	ND		0.000531	1	04/02/2018 16:16	WG1092307
Total Xylene	ND		0.00159	1	04/02/2018 16:16	WG1092307
TPH (GC/FID) Low Fraction	ND		0.106	1	04/02/2018 16:16	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*93.9*		*77.0-120*		*04/02/2018 16:16*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*94.0*		*75.0-128*		*04/02/2018 16:16*	WG1092307

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	21.7		4.24	1	04/03/2018 03:11	WG1092261
C28-C40 Oil Range	5.80		4.24	1	04/03/2018 03:11	WG1092261
(S) o-Terphenyl	*94.6*		*18.0-148*		*04/03/2018 03:11*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.0		1	04/03/2018 15:58	WG1092621

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		0.000532	1	04/02/2018 16:38	WG1092307
Toluene	ND		0.00532	1	04/02/2018 16:38	WG1092307
Ethylbenzene	ND		0.000532	1	04/02/2018 16:38	WG1092307
Total Xylene	ND		0.00159	1	04/02/2018 16:38	WG1092307
TPH (GC/FID) Low Fraction	ND		0.106	1	04/02/2018 16:38	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*93.8*		*77.0-120*		*04/02/2018 16:38*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*94.3*		*75.0-128*		*04/02/2018 16:38*	WG1092307

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		4.25	1	04/03/2018 03:27	WG1092261
C28-C40 Oil Range	ND		4.25	1	04/03/2018 03:27	WG1092261
(S) o-Terphenyl	*107*		*18.0-148*		*04/03/2018 03:27*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.3		1	04/03/2018 15:58	WG1092621

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.000878		0.000536	1	04/02/2018 17:01	WG1092307
Toluene	ND		0.00536	1	04/02/2018 17:01	WG1092307
Ethylbenzene	ND		0.000536	1	04/02/2018 17:01	WG1092307
Total Xylene	0.00270		0.00161	1	04/02/2018 17:01	WG1092307
TPH (GC/FID) Low Fraction	ND		0.107	1	04/02/2018 17:01	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*94.8*		*77.0-120*		*04/02/2018 17:01*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*94.5*		*75.0-128*		*04/02/2018 17:01*	WG1092307

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		4.29	1	04/03/2018 03:44	WG1092261
C28-C40 Oil Range	ND		4.29	1	04/03/2018 03:44	WG1092261
(S) o-Terphenyl	*112*		*18.0-148*		*04/03/2018 03:44*	WG1092261

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.8		1	04/03/2018 15:58	WG1092621

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.0290		0.000539	1	04/02/2018 17:23	WG1092307
Toluene	0.140		0.00539	1	04/02/2018 17:23	WG1092307
Ethylbenzene	0.00403		0.000539	1	04/02/2018 17:23	WG1092307
Total Xylene	0.0270		0.00162	1	04/02/2018 17:23	WG1092307
TPH (GC/FID) Low Fraction	0.456		0.108	1	04/02/2018 17:23	WG1092307
(S) a,a,a-Trifluorotoluene(FID)	*90.7*		*77.0-120*		*04/02/2018 17:23*	WG1092307
(S) a,a,a-Trifluorotoluene(PID)	*93.0*		*75.0-128*		*04/02/2018 17:23*	WG1092307

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	6.44		4.31	1	04/03/2018 04:01	WG1092261
C28-C40 Oil Range	ND		4.31	1	04/03/2018 04:01	WG1092261
(S) o-Terphenyl	*78.8*		*18.0-148*		*04/03/2018 04:01*	WG1092261

Method Blank (MB)

(MB) R3298885-1 04/03/18 16:14

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00100			

L981458-06 Original Sample (OS) • Duplicate (DUP)

(OS) L981458-06 04/03/18 16:14 • (DUP) R3298885-3 04/03/18 16:14

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	94.7	92.9	1	1.94		5

Laboratory Control Sample (LCS)

(LCS) R3298885-2 04/03/18 16:14

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) R3298883-1 04/03/18 15:58

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00100			

L981487-01 Original Sample (OS) • Duplicate (DUP)

(OS) L981487-01 04/03/18 15:58 • (DUP) R3298883-3 04/03/18 15:58

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	77.1	78.0	1	1.15		5

Laboratory Control Sample (LCS)

(LCS) R3298883-2 04/03/18 15:58

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) R3298681-5 04/02/18 11:25

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	U		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)	*96.8*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*97.3*			*75.0-128*

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

(LCS) R3298681-1 04/02/18 09:33 • (LCSD) R3298681-2 04/02/18 09:55

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 %
Benzene	0.0500	0.0500	0.0506	99.9	101	71.0-121			1.19	20
Toluene	0.0500	0.0522	0.0522	104	104	72.0-120			0.0860	20
Ethylbenzene	0.0500	0.0521	0.0522	104	104	76.0-121			0.247	20
Total Xylene	0.150	0.159	0.159	106	106	75.0-124			0.000	20
(S) a,a,a-Trifluorotoluene(FID)				*96.2*	*96.3*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*95.5*	*96.0*	*75.0-128*				

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

(LCS) R3298681-3 04/02/18 10:18 • (LCSD) R3298681-4 04/02/18 10:40

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	5.28	5.43	96.1	98.8	70.0-136			2.78	20
(S) a,a,a-Trifluorotoluene(FID)				*102*	*104*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*109*	*109*	*75.0-128*				

Method Blank (MB)

(MB) R3298571-1 04/02/18 22:10

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	*113*			*18.0-148*

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

(LCS) R3298571-2 04/02/18 22:26 • (LCSD) R3298571-3 04/02/18 22:43

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	50.0	48.7	50.8	97.4	102	50.0-150			4.20	20
(S) o-Terphenyl				*111*	*122*	*18.0-148*				

L981871-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L981871-01 04/02/18 23:00 • (MS) R3298571-4 04/02/18 23:17 • (MSD) R3298571-5 04/02/18 23:33

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	50.0	ND	44.2	42.3	88.5	84.7	1	50.0-150			4.39	20
(S) o-Terphenyl					*89.4*	*84.0*		*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
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

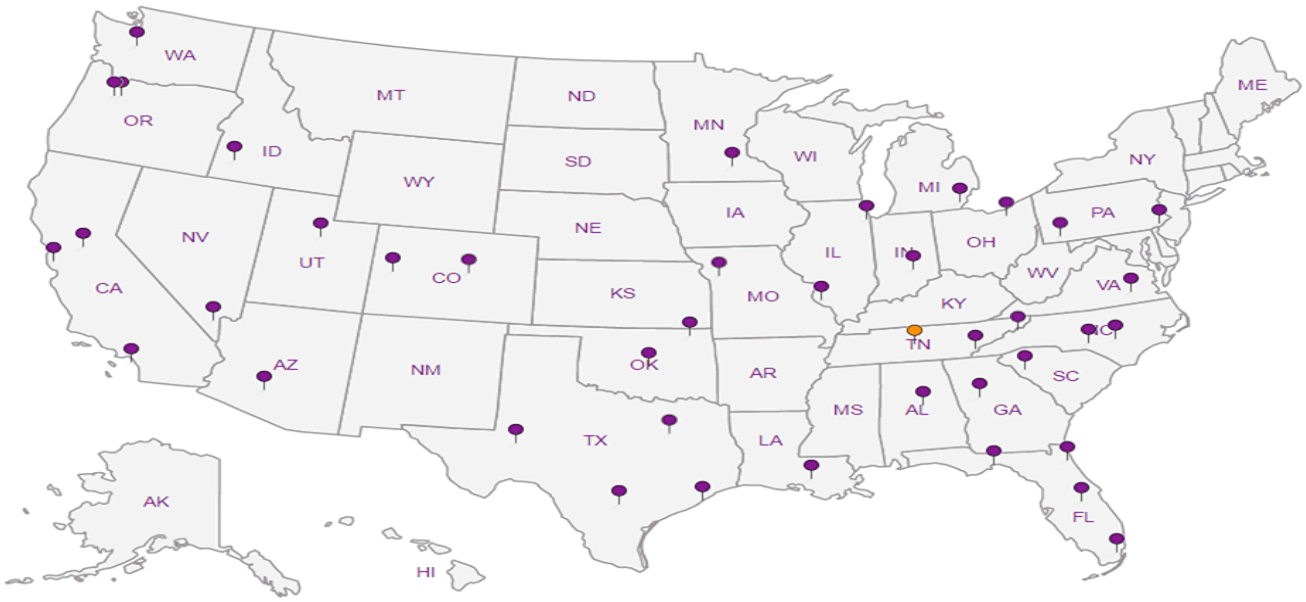
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater 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.



C054

XTO ENERGY
Western Division

Quote Number	Page 1 of 1
XTO Contact: Logan Hixon	XTO Contact Phone #: 505-386-8018
Email Results to: logan_hixon@xtoenergy.com; dburns@ltenv.com; dhercmann ltenv.com	
Well Site/Location: Bell Federal GC B#1	API Number / Test Reason
Collected By: Eric Carroll	Samples on Ice (Y / N) / Turnaround: X Standard; ___ Next Day; ___ Two Day; ___ Three Day; ___ Std. 5 Bus. Days (by contract)
Company: LTE	QA/QC Requested
Signature: Eric Carroll	Gray Areas for Lab Use Only! / Date Needed: ___

Analysis: 8015, BTEX (WO/MTBE'S); 8021, TPH, MRO, DRO, GRO

Lab Information: L981473

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.	Sample Number
	BH-7@35'-35'	soil	3-26-18	1000	cool	1	-01
	BH-7A@38'-40'			1115			-02
	BH-8@18'-20'			1200			-03
	BH-8@33'-35'			1300			-04
	BH-8A@18'-20'			1400			-05
	BH-8A@28'-30'		↓	1415			-06
	BH-5@33'-35'		3-27-18	1200			-07
	BH-5@38'-40'			1230			-08
	BH-5A@18'-20'			1400			-09
	BH-5A@38'-40'			1430			-10
	BH-6@33'-35'			1000			-11
	BH-6@38'-40'	↓		1100	↓	↓	-12
	~~KTB-01 Trip Blank~~						

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) Eric Carroll	Date: 3-28-2018	Time: 1400	Received By: (Signature) Kelly Thomas 3/29/18 0845	Number of Bottles: 12x4oz	Sample Condition
Relinquished By: (Signature)	Date:	Time:	Received By: (Signature)	Temperature: 2°	Other Information
Relinquished By: (Signature)	Date:	Time:	Received for Lab by: (Signature)	Date: / Time:	

Comments

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

Tracking #: 771861612782

0163

ESC LAB SCIENCES
Cooler Receipt Form

Client:	SDG#	L981473
Cooler Received/Opened On: 03/29/18	Temperature:	0.6
Received By: Kelly Mercer		
Signature: Kelly Mercer		

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?			

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

January 17, 2019

Jennifer Deal
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX

RE: Bell Federal GC B1 OrderNo.: 1901480

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 7 sample(s) on 1/12/2019 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 qualifiers 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1901480**
Date Reported: **1/17/2019**

CLIENT: HILCORP ENERGY
Client Sample ID: BH-9 15-20'
Project: Bell Federal GC B1
Collection Date: 1/10/2019 12:00:00 PM
Lab ID: 1901480-001 **Matrix:** SOIL
Received Date: 1/12/2019 12:00:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**
Diesel Range Organics (DRO)	2600	98		mg/Kg	10	1/16/2019 1:04:05 PM
Motor Oil Range Organics (MRO)	660	490		mg/Kg	10	1/16/2019 1:04:05 PM
Surr: DNOP	0	50.6-138	S	%Rec	10	1/16/2019 1:04:05 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	3000	240		mg/Kg	50	1/15/2019 9:45:27 AM
Surr: BFB	397	73.8-119	S	%Rec	50	1/15/2019 9:45:27 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	1.2		mg/Kg	50	1/15/2019 9:45:27 AM
Toluene	29	2.4		mg/Kg	50	1/15/2019 9:45:27 AM
Ethylbenzene	18	2.4		mg/Kg	50	1/15/2019 9:45:27 AM
Xylenes, Total	240	4.8		mg/Kg	50	1/15/2019 9:45:27 AM
Surr: 4-Bromofluorobenzene	124	80-120	S	%Rec	50	1/15/2019 9:45:27 AM

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
PQL	Practical Quanitative Limit	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: HILCORP ENERGY
Client Sample ID: BH-9 63-65'
Project: Bell Federal GC B1
Collection Date: 1/10/2019 2:00:00 PM
Lab ID: 1901480-002 **Matrix:** SOIL **Received Date:** 1/12/2019 12:00:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**
Diesel Range Organics (DRO)	32	9.5		mg/Kg	1	1/16/2019 1:28:09 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/16/2019 1:28:09 PM
Surr: DNOP	101	50.6-138		%Rec	1	1/16/2019 1:28:09 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/15/2019 11:19:47 AM
Surr: BFB	106	73.8-119		%Rec	1	1/15/2019 11:19:47 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/15/2019 11:19:47 AM
Toluene	0.070	0.048		mg/Kg	1	1/15/2019 11:19:47 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/15/2019 11:19:47 AM
Xylenes, Total	0.11	0.096		mg/Kg	1	1/15/2019 11:19:47 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/15/2019 11:19:47 AM

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
PQL	Practical Quanitative Limit	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: HILCORP ENERGY
Client Sample ID: BH-10 38-40'
Project: Bell Federal GC B1
Collection Date: 1/10/2019 4:00:00 PM
Lab ID: 1901480-003 **Matrix:** SOIL **Received Date:** 1/12/2019 12:00:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**
Diesel Range Organics (DRO)	15	9.8		mg/Kg	1	1/16/2019 11:51:21 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/16/2019 11:51:21 AM
Surr: DNOP	112	50.6-138		%Rec	1	1/16/2019 11:51:21 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	24	4.7		mg/Kg	1	1/15/2019 11:43:16 AM
Surr: BFB	165	73.8-119	S	%Rec	1	1/15/2019 11:43:16 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	0.18	0.024		mg/Kg	1	1/15/2019 11:43:16 AM
Toluene	1.3	0.047		mg/Kg	1	1/15/2019 11:43:16 AM
Ethylbenzene	0.13	0.047		mg/Kg	1	1/15/2019 11:43:16 AM
Xylenes, Total	1.5	0.094		mg/Kg	1	1/15/2019 11:43:16 AM
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	1/15/2019 11:43:16 AM

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
PQL	Practical Quanitative Limit	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: HILCORP ENERGY
Client Sample ID: BH-10 43-45'
Project: Bell Federal GC B1
Collection Date: 1/11/2019 9:15:00 AM
Lab ID: 1901480-004 **Matrix:** SOIL
Received Date: 1/12/2019 12:00:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**
Diesel Range Organics (DRO)	54	9.4		mg/Kg	1	1/16/2019 12:15:36 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/16/2019 12:15:36 PM
Surr: DNOP	118	50.6-138		%Rec	1	1/16/2019 12:15:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/15/2019 12:06:40 PM
Surr: BFB	105	73.8-119		%Rec	1	1/15/2019 12:06:40 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/15/2019 12:06:40 PM
Toluene	ND	0.047		mg/Kg	1	1/15/2019 12:06:40 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/15/2019 12:06:40 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/15/2019 12:06:40 PM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/15/2019 12:06:40 PM

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
PQL	Practical Quanitative Limit	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: HILCORP ENERGY
Client Sample ID: BH-10 58-60'
Project: Bell Federal GC B1
Collection Date: 1/11/2019 10:45:00 AM
Lab ID: 1901480-005 **Matrix:** SOIL
Received Date: 1/12/2019 12:00:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**
Diesel Range Organics (DRO)	38	9.7		mg/Kg	1	1/16/2019 1:52:32 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/16/2019 1:52:32 PM
Surr: DNOP	97.6	50.6-138		%Rec	1	1/16/2019 1:52:32 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/15/2019 12:30:13 PM
Surr: BFB	102	73.8-119		%Rec	1	1/15/2019 12:30:13 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/15/2019 12:30:13 PM
Toluene	ND	0.049		mg/Kg	1	1/15/2019 12:30:13 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/15/2019 12:30:13 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/15/2019 12:30:13 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	1/15/2019 12:30:13 PM

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
PQL	Practical Quanitative Limit	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: HILCORP ENERGY
Client Sample ID: BH-11 23-25'
Project: Bell Federal GC B1
Collection Date: 1/11/2019 12:30:00 PM
Lab ID: 1901480-006 **Matrix:** SOIL
Received Date: 1/12/2019 12:00:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/16/2019 2:16:43 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/16/2019 2:16:43 PM
Surr: DNOP	107	50.6-138		%Rec	1	1/16/2019 2:16:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/15/2019 12:53:48 PM
Surr: BFB	102	73.8-119		%Rec	1	1/15/2019 12:53:48 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/15/2019 12:53:48 PM
Toluene	ND	0.047		mg/Kg	1	1/15/2019 12:53:48 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/15/2019 12:53:48 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/15/2019 12:53:48 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	1/15/2019 12:53:48 PM

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
PQL	Practical Quanitative Limit	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: HILCORP ENERGY
Client Sample ID: BH-11 33-35'
Project: Bell Federal GC B1
Collection Date: 1/11/2019 2:00:00 PM
Lab ID: 1901480-007 **Matrix:** SOIL **Received Date:** 1/12/2019 12:00:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/16/2019 2:41:05 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/16/2019 2:41:05 PM
Surr: DNOP	111	50.6-138		%Rec	1	1/16/2019 2:41:05 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/15/2019 1:17:20 PM
Surr: BFB	99.3	73.8-119		%Rec	1	1/15/2019 1:17:20 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	1/15/2019 1:17:20 PM
Toluene	ND	0.048		mg/Kg	1	1/15/2019 1:17:20 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/15/2019 1:17:20 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/15/2019 1:17:20 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/15/2019 1:17:20 PM

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
PQL	Practical Quanitative Limit	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#: **1901480**

17-Jan-19

Client: HILCORP ENERGY

Project: Bell Federal GC B1

Sample ID	**LCS-42581**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID:	**42581**		RunNo:	**57004**				
Prep Date:	**1/14/2019**	Analysis Date:	**1/15/2019**		SeqNo:	**1907015**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	85.2	63.9	124			
Surr: DNOP	4.2		5.000		83.9	50.6	138			

Sample ID	**MB-42581**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID:	**42581**		RunNo:	**57004**				
Prep Date:	**1/14/2019**	Analysis Date:	**1/15/2019**		SeqNo:	**1907016**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		92.7	50.6	138			

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
PQL	Practical Quanitative Limit	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#: **1901480**

17-Jan-19

Client: HILCORP ENERGY

Project: Bell Federal GC B1

Sample ID	**MB-42579**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**PBS**	Batch ID:	**42579**		RunNo:	**57015**				
Prep Date:	**1/14/2019**	Analysis Date:	**1/15/2019**		SeqNo:	**1907269**	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	1000		1000		100	73.8	119			

Sample ID	**LCS-42579**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**LCSS**	Batch ID:	**42579**		RunNo:	**57015**				
Prep Date:	**1/14/2019**	Analysis Date:	**1/15/2019**		SeqNo:	**1907270**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	98.7	80.1	123			
Surr: BFB	1100		1000		115	73.8	119			

Sample ID	**MB-42555**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**PBS**	Batch ID:	**42555**		RunNo:	**57016**				
Prep Date:	**1/11/2019**	Analysis Date:	**1/15/2019**		SeqNo:	**1907340**	Units:	**%Rec**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	910		1000		90.6	73.8	119			

Sample ID	**LCS-42555**	SampType:	**LCS**		TestCode:	**EPA Method 8015D: Gasoline Range**				
Client ID:	**LCSS**	Batch ID:	**42555**		RunNo:	**57016**				
Prep Date:	**1/11/2019**	Analysis Date:	**1/15/2019**		SeqNo:	**1907341**	Units:	**%Rec**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		115	73.8	119			

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
PQL	Practical Quanitative Limit	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#: **1901480**

17-Jan-19

Client: HILCORP ENERGY

Project: Bell Federal GC B1

Sample ID **MB-42579**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **42579**	RunNo: **57015**
Prep Date: **1/14/2019**	Analysis Date: **1/15/2019**	SeqNo: **1907310** 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	1.0		1.000		101	80	120			

Sample ID **LCS-42579**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **42579**	RunNo: **57015**
Prep Date: **1/14/2019**	Analysis Date: **1/15/2019**	SeqNo: **1907311** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	88.8	80	120			
Toluene	0.94	0.050	1.000	0	94.4	80	120			
Ethylbenzene	0.95	0.050	1.000	0	95.0	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.8	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		106	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
PQL	Practical Quanitative Limit	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: **HILCORP ENERGY FAR** Work Order Number: **1901480** RcptNo: 1

Received By: **Isaiah Ortiz** **1/12/2019 12:00:00 PM** I-OK

Completed By: **Isaiah Ortiz** **1/14/2019 7:38:01 AM** I-OK

Reviewed By: VVZ 1/14/19
LB DAD 1/14/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. 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: DAD 1/14/19

Special Handling (if applicable)

15. 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: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.0	Good	Yes			

Chain-of-Custody Record

Client: Hilcorp Energy
Jennifer Deal
Mailing Address:

Phone #: 970 - 385 - 1096
email or Fax#: JDeal@Hilcorp.com
QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☒ EDD (Type) PDF

Turn-Around Time:
☒ Standard ☐ Rush
Project Name: Bell Federal GC B#1
Project #:
Project Manager: Jennifer Deal - Hilcorp
Devin Hencmann - LTE
Sampler: Eric Carroll
On Ice: ~~☐~~ Yes ☐ No
Sample Temperature: 1.0°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1901480	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)
1/10/19	1200	Soil	BH-9 15-20'	1 4oz	Cool	001	X		X													
1/10/19	1400		BH-9 63-65'			002	X		X													
1/10/19	1600		BH-10 39-40'			003	X		X													
1/11/19	0915		BH-10 43-45'			004	X		X													
1/11/19	1045		BH-10 58-60'			005	X		X													
↓	1230		BH-11 23-25'			006	X		X													
↓	1400		BH-11 33-35'	↓	↓	007	X		X													

Date:	Time:	Relinquished by:	Received by:	Date	Time
1/11/19	1500	Eric Carroll	Christy Walker	1/11/19	1500
1/11/19	1800	Christy Walker	FED EX CDO	1/12/19	1200

Remarks: Please CC: dhencmann@ltenv.com
ecarroll@ltenv.com

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.