



October 11, 2016

Mr. Ken Raymond  
Senior Environmental Health and Safety Specialist  
SandRidge Exploration and Production, LLC  
123 Robert S. Kerr Avenue  
Oklahoma City, Oklahoma 73102

RE: **Supplemental Environmental Site Investigation  
Former EE3 Production Facility – Coalmont 3-13H (API # 05-057-06508)  
Jackson County, Colorado**

Dear Mr. Raymond

LT Environmental, Inc. (LTE), under the direction of SandRidge Exploration and Production, LLC (SandRidge), conducted a subsurface environmental site investigation (ESI) at the Coalmont 3-13H location (Site), API # 05-057-06508. This report includes a summary of previous work at the Site, a discussion of the ESI's field activities, hydrogeological records, laboratory analytical results and cost estimates for source removal remediation.

The Site is located approximately 0.25 mile east of County Road 26 and 0.65 miles south of County Road 24 north of Coalmont, Colorado. The legal site description is the southwest quarter of the southwest quarter of Section 13, Township 7 North, Range 81 West, 6<sup>th</sup> Principal Meridian. The Site Location Map is provided as Figure 1 and the Site Map is provided as Figure 2.

### **Site History**

In May, 2016, Fremont Environmental, Inc. (Fremont) on behalf of the Colorado Oil and Gas Conservation Commission (COGCC), conducted an ESI at the Site. Fremont advanced a total of six soil borings (A through F) as part of the ESI and collected soil samples from two of the soil borings (C and D). The laboratory analytical results indicated that total petroleum hydrocarbons (TPH) exceeded the COGCC Table 910-1 allowable concentration in the soil sample collected from sample point C at a concentration of 6,378 mg/kg. Additionally, electrical conductivity (EC) in the soil sample collected from soil boring C exceeded the COGCC Table 910-1 applicable standard at 4.30 millimhos per centimeter (mmhos/cm). Finally, arsenic exceeded the COGCC Table 910-1 allowable concentration in both of the soil samples, ranging from 0.972 mg/kg (C) to 3.75 mg/kg (D). A complete summary of the ESI is discussed in the COGCC report titled *Soil Sampling Report, Former EE3/SandRidge LLC Locations* and dated June 8, 2016.

At the request of SandRidge, LTE reviewed the ESI data and determined that developing an appropriate remediation strategy would require additional subsurface investigation to adequately delineate the vertical and lateral extent of environmental impact at the Site.



## **Subsequent Environmental Site Investigation**

On September 8, 2016, LTE, under the direction of SandRidge, conducted a supplemental ESI to delineate environmental impacts at the Site. Ten soil borings were advanced with a truck mounted Geoprobe® using direct push drilling technology by Elite Drilling Services, LLC. (Elite) of Denver, Colorado. LTE observed the continuous soil samples for evidence of environmental impacts and screened the soils for volatile organic compounds (VOCs) using a photo ionization detector (PID). The soil borings were advanced to a minimum of 5 feet below any evidence of environmental impacts including soil staining, odor, and elevated PID readings, or until refusal. The soil boring depths ranged from 6 feet to 11 feet below ground surface (bgs). LTE collected one soil sample from each of the soil borings for laboratory analysis from the interval with the highest PID reading, or demonstrated evidence of hydrocarbon impacts including staining or odor.

One soil boring (SBC-R) was advanced at the approximate location of sample location C, where elevated soil TPH concentrations were observed during the initial ESI, in order to determine the vertical extent of hydrocarbon impacts. Soil borings SB01 through SB04 were advanced from within the vicinity of the former pit location in order to explore for evidence of hydrocarbon impacts. Soil borings SB05 through SB09 were advanced in cardinal directions of sample location C, where elevated soil TPH concentrations were observed during the initial ESI, in order to determine the lateral extent of hydrocarbon impacts. The soil boring locations are provided on Figure 2. The soil boring lithologic logs are included as Attachment 1.

LTE collected the soil samples in laboratory provided sample containers, placed them on ice, and submitted them, with a completed chain of custody form, to Summit Scientific (Summit), of Golden, Colorado, for analysis. Summit analyzed the soil samples for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and TPH – gasoline range organics (GRO) under United States Environmental Protection Agency (EPA) method 8260, and TPH – diesel range organics (DRO) under EPA method 8015.

## **Field Summary**

Field observations indicated hydrocarbon staining, odor, and elevated PID readings at soil borings SB04 and SB05. No evidence of hydrocarbon impact was observed in the remaining soil borings. Evidence of hydrocarbon impacts ranged in depth from 2.5 to 6 feet bgs at SB04 and 2.5 to 4 feet bgs at SB05. The maximum VOCs concentrations measured in the soil borings ranged from 2.8 parts per million (ppm) at 5 feet bgs (SB04) to 318.0 ppm at 3 feet bgs (SB05). The lithology of the material exhibiting evidence of hydrocarbon impact consisted of clayey sand between approximately 2.5 to 6 feet bgs. Drilling refusal was encountered between 10.5 and 11 feet bgs and groundwater was not encountered in any of the soil borings.

## **Soil Analytical Results**

The COGCC Table 910-1 standards for BTEX and TPH in soil are 0.17 mg/kg, 85 mg/kg, 100 mg/kg, 175 mg/kg, and 500 mg/kg, respectively. Soil sample SB05@3' exceeded the COGCC Table 910-1 allowable concentration for TPH at 1,104.4 mg/kg. All other soil sample analytical results were within the COGCC Table 910-1 allowable concentrations. The soil sample analytical



results are presented on Figure 3 and summarized in Table 1. The laboratory analytical report is attached.

## **Discussion**

The laboratory analytical results of the soil samples collected from soil borings C and D by Freemont during the initial ESI had arsenic concentrations of 0.972 mg/kg and 3.75 mg/kg respectively. SandRidge collected background soil samples from seven sites within the region. The highest background arsenic concentrations observed at each of these sites ranged from 0.677 mg/kg to 6.09 mg/kg, and averaged 3.46 mg/kg. The COGCC has reviewed the background arsenic concentrations, and based on frequently asked question #31 of the COGCC 2008 Rule Making, has determined that the maximum allowable arsenic concentration of the samples collected during the initial ESI is not to exceed 3.80 mg/kg or 10% above of the average of the highest background arsenic concentrations observed at each location. The highest arsenic concentration of the samples collected during the initial ESI was 3.75 mg/kg which is below the COGCC determined maximum allowable concentration of 3.80 mg/kg. Based on these data, LTE recommends that SandRidge request a decision of No Further Action for arsenic impact with the COGCC. A map of the regional arsenic data collected by SandRidge is presented on Figure 4.

The laboratory analytical results of the soil sample collected from soil boring C by Freemont during the initial ESI had an EC measurement of 4.30 mmhos/cm which exceeded the COGCC Table 910-1 applicable standard of 4 mmhos/cm. However, this EC measurement is within 7% of the COGCC Table 910-1 standard. Additionally, the soil adsorption ratio (SAR) of this sample was 3.04 which is significantly less than the COGCC Table 910-1 applicable standard of 12. This data indicates inorganic soil impact is likely related to chlorides, instead of sodium, yielding a much easier anion to mitigate through natural processes. Finally, the inorganic constituents of the COGCC Table 910-1 are typically addressed during reclamation activities associated with plug and abandonment (P&A) activities. Based on this information, LTE recommends that SandRidge request a decision of No Further Action with the COGCC on the elevated EC measurement, and state that inorganics will be monitored during P&A activities where affected topsoil will require compliance with state regulations to provide revegetation and site closure.

The initial ESI indicated TPH concentrations in exceedance of the COGCC Table 910-1 allowable concentration at soil boring C and elevated PID readings at soil boring D. The supplemental ESI observed TPH concentrations at one location (SB05) in exceedance of the COGCC Table 910-1 allowable concentration. Field observations indicated that the majority of the vertical extent of impact is constrained to between ground surface and 6 feet bgs. The approximate lateral extent of hydrocarbon impact is 50 feet in a general north-south direction and 100 feet in a general east-west direction. The lateral extent of hydrocarbon impact at the site was adequately delineated in the surrounding step-out borings drilled during this supplemental ESI. No groundwater was encountered in any of the soil borings. The defined lateral extent of impact is provided on Figure 3.

Based on the analytical results and field observations of the initial and supplemental ESI, LTE estimates that the volume of hydrocarbon impacted soil existing at the site is 750 cubic yards. TPH



concentrations in soil samples demonstrating evidence of hydrocarbon impact ranged from 73 mg/kg (D@3') to 6,378 mg/kg (C@2.5').

### **Source Removal Excavation**

SandRidge will secure an earthworks contractor to excavate the delineated impact and transport it to a properly permitted landfill facility for final disposal. LTE will oversee the source removal excavation to observe for hydrocarbon impacts, including soil staining and/or odor, and screen the excavated soils for VOCs using a PID and a PetroFlag<sup>®</sup> kit (field test for heavy organics). LTE will determine the extent of impacts and direct the earthworks contractor to segregate the impacted soils from the clean soils based on these observations.

Upon completion of the source removal activities, LTE will collect confirmation soil samples from the sidewalls and floor of each excavation. These confirmation soil samples will be representative of the excavation and, in general, spaced at 30 foot centers. The confirmation soil samples will be collected in laboratory provided sample containers, placed on ice, and submitted to Summit, under chain of custody protocol, for BTEX and TPH-GRO analysis using EPA method 8260B, and TPH-DRO analysis using EPA method 8015. The soil samples will be completed under 24-hour turnaround times in order to expedite source removal activities. The source removal excavation will be backfilled with clean fill upon verification that the confirmation soil samples are within the COGCC Table 910-1 allowable concentrations.

LTE, on behalf of SandRidge, will draft a Remediation Summary Report to provide the details of the remediation activities and confirmation sampling analytical results. The report will include a text summary, data tables, figures, and laboratory reports. SandRidge will submit the Remediation Summary Report with a Form 4 Sundry Notice to the COGCC to request closure with LTE support.

LTE anticipates that excavation activities will begin within two weeks upon receiving notice to proceed from SandRidge, and require three 10-hour days to complete the field tasks listed above. The cost for source removal excavation based on a time and materials structure, is estimated to be \$81,730 (Table 2) and includes the following assumptions:

- A lump sum cost of \$5,000 for the excavation subcontractor to conduct source removal was assumed;
- A cost of \$57 per ton for transportation and disposal of the impacted materials was assumed;
- A lump sum cost of \$11,000 for imported backfill material was assumed;
- Source removal excavation can be completed in 3 days;
- Eight confirmation soil samples will be required; and
- The source removal area has been completely delineated and no additional impacts will be discovered during excavation.



## **Soil Shredding**

LTE will secure an earthworks contractor to excavate the delineated impact and treat the impacted material utilizing soil shredding and chemical oxidation remediation technology. LTE will oversee the source removal excavation to observe for hydrocarbon impacts, including soil staining and/or odor, and screen the excavated soils for VOCs using a PID and a PetroFlag® kit (field test for heavy organics). LTE will determine the extent of impacts and direct the earthworks contractor to segregate the impacted soils from the clean soils based on these observations.

Upon completion of the source removal activities, LTE will collect confirmation soil samples from the sidewalls and floor of each excavation. These confirmation soil samples will be representative of the excavation and, in general, spaced at 30 foot centers. The confirmation soil samples will be collected in laboratory provided sample containers, placed on ice, and submitted to Summit, under chain of custody protocol, for BTEX and TPH-GRO analysis using EPA method 8260B, and TPH-DRO analysis using EPA method 8015. The soil samples will be completed under 24-hour turnaround times in order to expedite source removal activities.

Soil treatment of the impacted material will be initiated as soon as possible, and conducted to efficiently treat all soil impacts. It is expected that soil treatment will be completed in approximately two working days. Soil will be treated by mechanical agitation, shredding, and ex-situ chemical oxidation. Shortly after impacted soils are mechanically shredded, soils are treated with concentrated hydrogen peroxide (3-7% typically), and windrowed onsite.

Following treatment, the soil will need to be allowed to sit for a minimum of 24 hours prior to confirmation soil sampling to ensure that chemical reactions were complete and equilibrium in soil is established. LTE, under the direction of SandRidge, will collect one 20-point composite confirmation soil sample representative of each approximately 100 cubic yard interval. Each composite sample will be field screened using a PID to verify the reduction in VOCs prior to laboratory analysis. Following receipt of confirmation sampling results indicating compliance with cleanup goals, the treated soil will be backfilled in the excavation. Stockpiled topsoil or import topsoil will be utilized in the upper three feet.

LTE, on behalf of SandRidge, will draft a Remediation Summary Report to provide the details of the remediation activities and confirmation sampling analytical results. The report will include a text summary, data tables, figures, and laboratory reports. SandRidge will submit the Remediation Summary Report with a Form 4 Sundry Notice to the COGCC to request closure with LTE support.

LTE anticipates that excavation activities will begin within two weeks upon receiving notice to proceed from SandRidge, and require three 10-hour days to complete the field tasks listed above. The cost for source removal excavation, soil shredding, and chemical oxidation treatment based on a unit rate price structure, is estimated to be \$66.6 per cubic yard totaling \$49,966 and includes the following assumptions:

- 16 confirmation soil samples will be required;
- Soil shredding remediation activities will take three days;



- The site will be completed in conjunction in line with the other sites requiring remediation, thereby reducing mobilization costs;
- Unlimited Construction Services will agree upon a fixed price for treatment based on the total quantities of impacted materials at all 4 Sites; and
- The source removal area has been completely delineated and no additional impacts will be discovered during excavation.

LTE appreciates the opportunity to provide environmental services to SandRidge. Please feel free to contact the undersigned at 303-433-9788 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in blue ink that reads 'Jess Alexander'.

Jess Alexander  
Project Environmental Scientist

A handwritten signature in blue ink that reads 'Brett Forkner'.

Brett Forkner  
Project Environmental Scientist

#### Attachments

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Soil Sample Analytical Results
Figure 4	Regional Background Arsenic Concentration Map
Table 1	Soil Sample Analytical Results
Table 2	Source Removal Excavation Cost Estimate
Table 3	Soil Shredding Cost Estimate
Attachment 1	Soil Lithologic Boring Logs
Attachment 2	Laboratory Analytical Report

## FIGURES



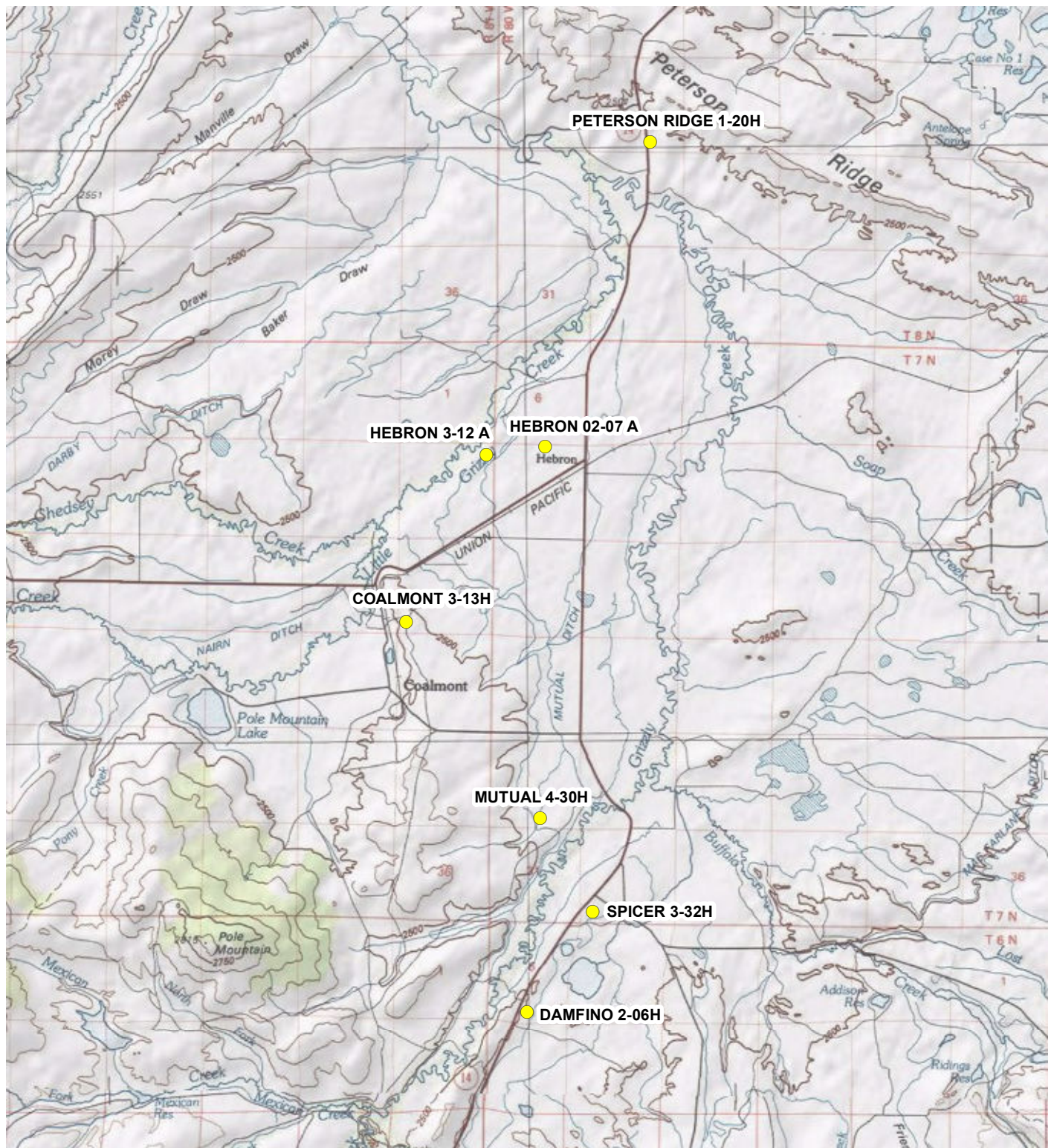
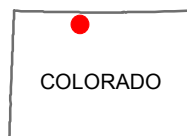


IMAGE COURTESY OF ESRI/USGS

## LEGEND

● SITE LOCATION



COLORADO

FIGURE 1  
SITE LOCATION MAP  
SANDRIDGE WELLSITES  
JACKSON COUNTY, COLORADO

SANDRIDGE EXPLORATION AND PRODUCTION, LLC







# LEGEND

- SOIL BORING

IMAGE COURTESY OF ESRI

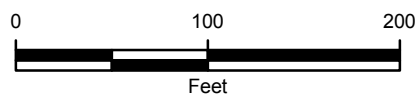


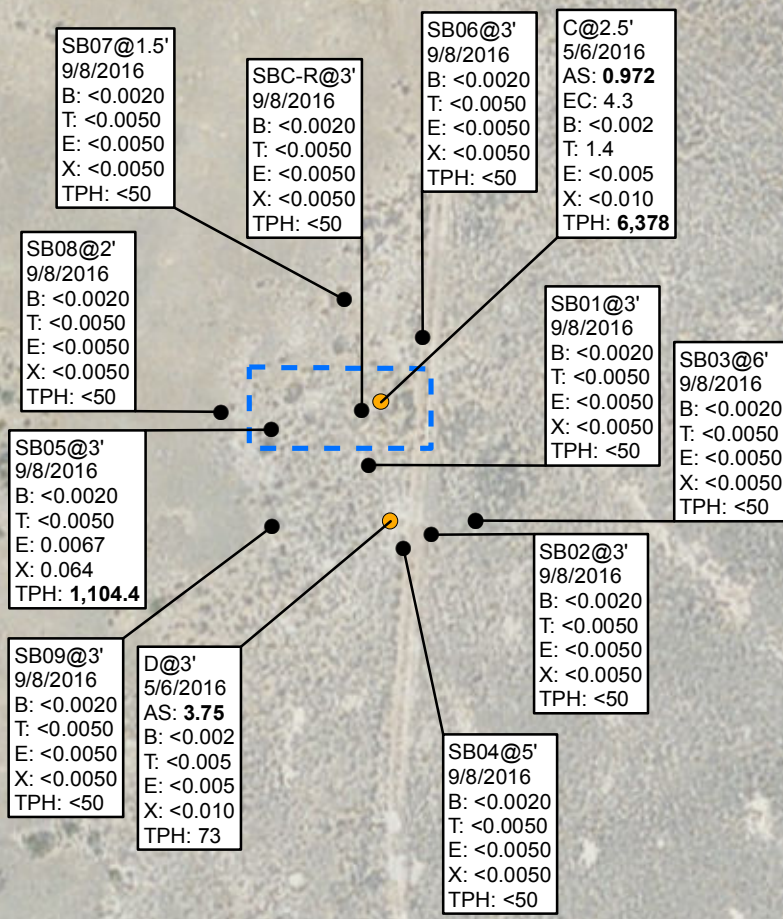
FIGURE 2  
SITE MAP  
COALMONT 3-13H  
JACKSON COUNTY, COLORADO

SANDRIDGE EXPLORATION AND PRODUCTION, LLC





SAMPLE ID@DEPTH BELOW GROUND SURFACE IN FEET  
 SAMPLE DATE  
 AS: ARSENIC IN MILLIGRAMS PER KILOGRAM (mg/kg)  
 EC: ELECTRICAL CONDUCTIVITY (mmhos/cm)  
 B: BENZENE (mg/kg)  
 T: TOLUENE (mg/kg)  
 E: ETHYLBENZENE (mg/kg)  
 X: TOTAL XYLENES (mg/kg)  
 TPH: TOTAL PETROLEUM HYDROCARBONS (mg/kg)  
 <: INDICATES RESULT IS LESS THAN THE  
 LABORATORY REPORTING LIMIT  
**BOLD** INDICATES THE RESULT EXCEEDED  
 THE APPLICABLE STANDARD



# LEGEND

- SOIL BORING
- PREVIOUS COGCC SOIL SAMPLE
- [ ] EXTENT OF IMPACT

IMAGE COURTESY OF ESRI

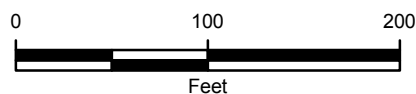
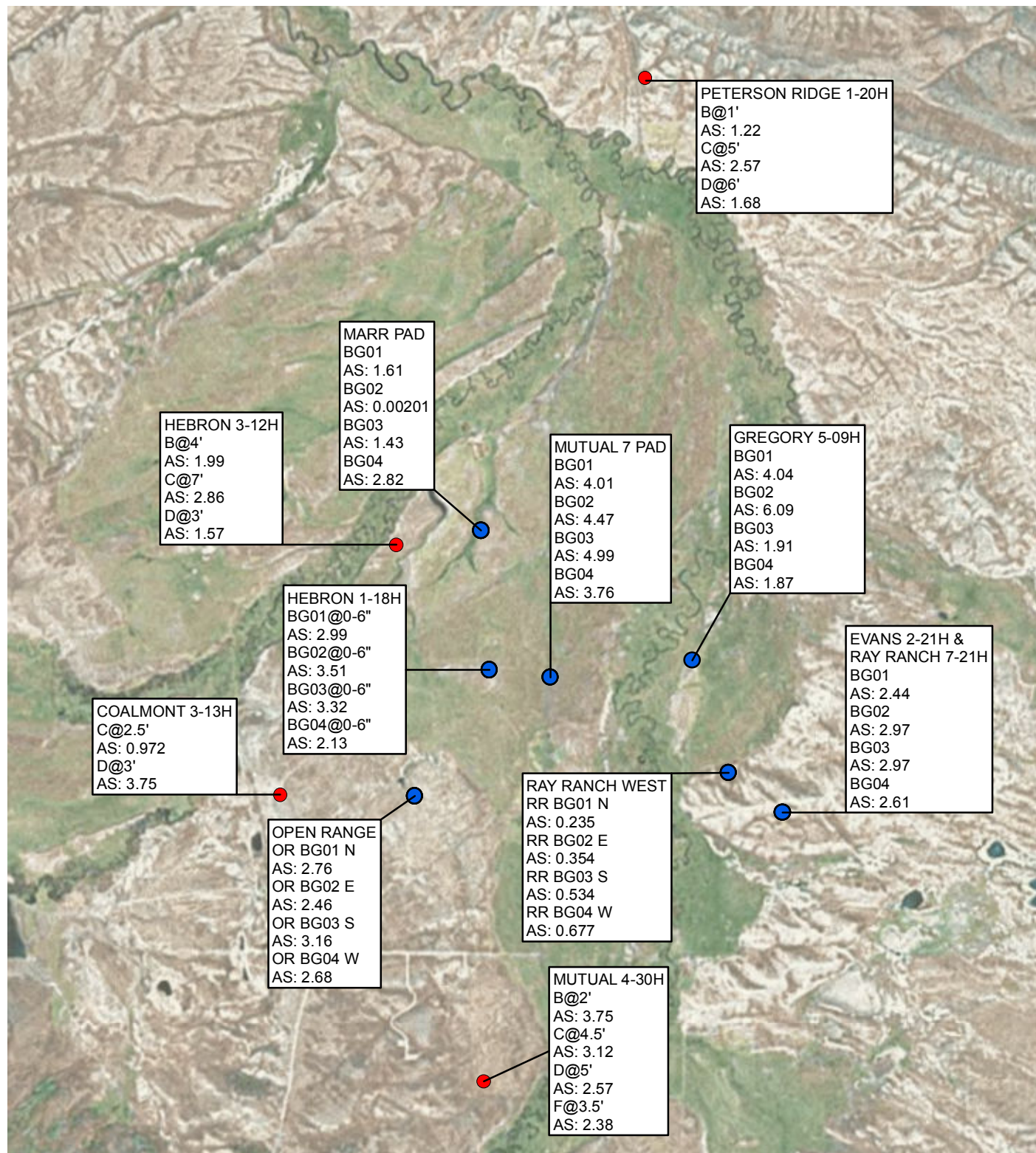


FIGURE 3  
 SOIL ANALYTICAL RESULTS  
 COALMONT 3-13H  
 JACKSON COUNTY, COLORADO

SANDRIDGE EXPLORATION AND PRODUCTION, LLC







# LEGEND

- BACKGROUND ARSENIC SAMPLE (mg/kg)
- SANDRIDGE REMEDIATION SITE LOCATION



IMAGE COURTESY OF ESRI



FIGURE 4  
 ARSENIC SITE MAP  
 JACKSON COUNTY, COLORADO

SANDRIDGE EXPLORATION AND PRODUCTION, LLC



## TABLES

**TABLE 1**  
**SOIL ANALYTICAL RESULTS**

**COALMONT 3-13H**  
**JACKSON COUNTY, COLORADO**  
**SANDRIDGE EXPLORATION AND PRODUCTION, LLC**

Sample ID	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)
C@2.5'	5/6/2016	<0.0020	1.4	<0.005	<0.010	78	6300	<b>6,378</b>
D@3'	5/6/2016	<0.002	<0.005	<0.005	<0.010	<0.50	73	73
SBC-R@3'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB01@3'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB02@3'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB03@6'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB04@5'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB05@3'	9/8/2016	<0.0020	<0.0050	0.0067	0.064	4.4	1,100	<b>1,104.4</b>
SB06@3'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB07@1.5'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB08@2'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
SB09@3'	9/8/2016	<0.0020	<0.0050	<0.0050	<0.0050	<0.50	<50	<50
<b>COGCC Table 910-1 Allowable Concentration</b>		<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>--</b>	<b>--</b>	<b>500</b>

**Notes:**

COGCC - Colorado Oil and Gas Conservation Commission

DRO - diesel range organics analyzed by EPA Method 8015

GRO - gasoline range organics analyzed by EPA Method 8260

mg/kg - milligrams per kilogram

TPH - total petroleum hydrocarbons is the sum of GRO and DRO

-- - not applicable

< indicates result is less than the stated laboratory method reporting limit

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260

**Bold** indicates the result exceeds the applicable standard



**TABLE 2**  
**COST ESTIMATE**  
**SOURCE REMOVAL EXCAVATION**  
**COALMONT 3-13H**  
**JACKSON COUNTY, COLORADO**  
**SANDRIDGE EXPLORATION AND PRODUCTION, LLC**

LABOR				Principal	Project Scientist I	Staff II Geologist/Eng.	GIS Specialist	Admin/ Clerical
TASK 1: Project Management				2	6			0.5
TASK 2: Excavation					3	38		
TASK 3: Reporting				2	10	2	2	0.5
TOTAL HOURS				4	19	40	2	1
RATE (\$)				\$140	\$110	\$83	\$72	\$55
LABOR COST				\$560	\$2,090	\$3,320	\$144	\$55
LABOR SUBTOTAL								\$6,169

SUBCONTRACTOR		QTY.	COST/UNIT		UNIT TOTAL
SandRidge Excavation Contractor					
TASK 2: Excavation					
Transportation and Disposal		975 Tons	\$57.00 /ton		\$55,575
Contractor		1 Lump Sum	\$5,000.00 /each		\$5,000
Import Backfill Material		1 Lump Sum	\$11,000.00 /each		\$11,000
Summit Scientific					
TASK 2: Confirmation Soil Samples (Rush Turnaround)		BTEX/GRO	8	\$140.00 /sample	\$1,120
		DRO	8	\$160.00 /sample	\$1,280
SUBCONTRACTOR SUBTOTAL					\$74,215

OTHER DIRECT COSTS (ODCs)		QTY.	COST/UNIT		UNIT TOTAL
TASK 2: Supplemental ESI Soil Borings		Truck	4	\$110.00 /day	\$440
		Organic Vapor Meter	2	\$50.00 /day	\$100
		Trimble GPS	2	\$60.00 /day	\$120
		LTE Per Diem	4	\$160.00 /day	\$640
		Misc. Field Supplies	2	\$23.00 /day	\$46
		PetroFlag	8	\$20.00 /each	\$160
ODC SUBTOTAL					\$1,346
PROJECT TOTAL					\$81,730

**TABLE 3**  
**COST ESTIMATE**  
**EXCAVATION, SOIL SHREDDING, BACKFILL**  
**COALMONT 3-13H**  
**JACKSON COUNTY, COLORADO**  
**SANDRIDGE EXPLORATION AND PRODUCTION, LLC**

LABOR		Principal	Project Scientist I	Staff II Geologist/Eng.	GIS Specialist	Admin/ Clerical
TASK 1: Project Management		2	6			0.5
TASK 2: Excavation, Soil Shredding, Backfill			3	38		
TASK 3: Reporting		2	10	2	2	0.5
TOTAL HOURS		4	19	40	2	1
RATE (\$)		\$140	\$110	\$83	\$72	\$55
LABOR COST		\$560	\$2,090	\$3,320	\$144	\$55
LABOR SUBTOTAL						\$6,169

SUBCONTRACTOR		QTY.	COST/UNIT	UNIT TOTAL
Unlimited Construction				
TASK 2: Excavation, Soil Shredding, Backfill				
	Soil Shredding	750 Yards	\$45.00 /yard	\$33,750
Summit Scientific				
TASK 2: Excavation Confirmation Soil Samples (Rush				
	BTEX/GRO	8	\$140.00 /sample	\$1,120
	DRO	8	\$160.00 /sample	\$1,280
TASK 2: Soil Shredding Confirmation Soil Samples (Rush				
	BTEX/GRO	8	\$140.00 /sample	\$1,120
	DRO	8	\$160.00 /sample	\$1,280
SUBCONTRACTOR SUBTOTAL				\$42,405

OTHER DIRECT COSTS (ODCs)		QTY.	COST/UNIT	UNIT TOTAL
TASK 2: Excavation, Soil Shredding, Backfill				
	Truck	4	\$110.00 /day	\$440
	Organic Vapor Meter	2	\$50.00 /day	\$100
	Trimble GPS	2	\$60.00 /day	\$120
	LTE Per Diem	4	\$160.00 /day	\$640
	Misc. Field Supplies	4	\$23.00 /day	\$92
	PetroFlag	8	\$20.00 /each	\$160
ODC SUBTOTAL				\$1,392
PROJECT TOTAL				\$49,966
PROJECT TOTAL PER YARD				\$66.62

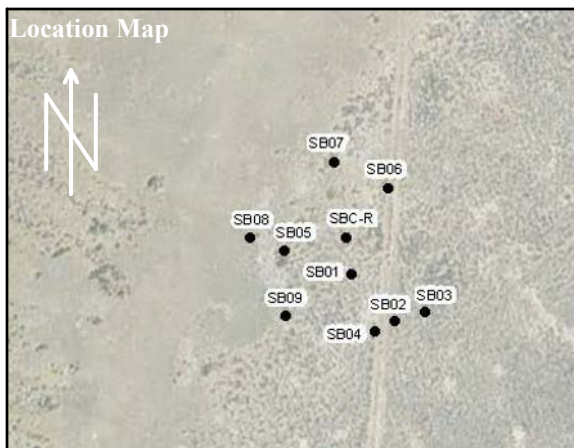
**ATTACHEMENT 1**  
**SOIL LITHOLOGIC BORING LOGS**



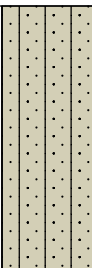








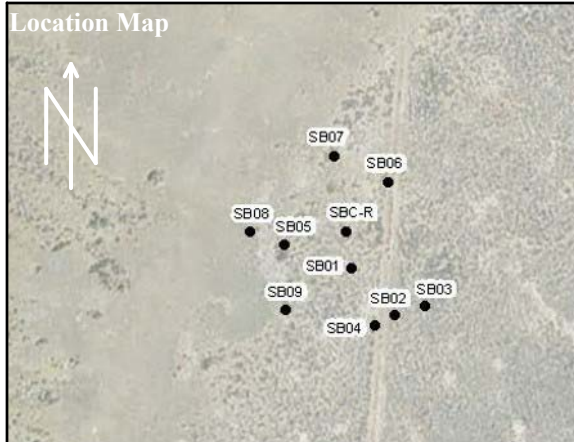


## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
1.00		Moist	SB02 @3'		0	SM		SILTY SAND - 0.0' - 2.0' - brown, fine grained, some clay, some fine gravel, moist, no odor, no staining	
0.20		Moist		3/4	CH		CLAY - 2.0' - 8.0' - dark orangeish brown, some silt, moist, no odor, iron oxide staining, saprolitic claystone		
0.40									
0.50									
					5				
					1/4				
0.20									







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

### BORING LOG/MONITORING WELL COMPLETION DIAGRAM

**HOLE DIAMETER:** 2.25"  
**WELL DIAMETER:** NA  
**CASING TYPE:** NA  
**SCREEN TYPE:** NA

**PROJECT NAME:** Coalmont 3-13H  
**PROJECT NO:** 065816006 **LOGGED BY:** Jeremy Pike  
**BORING/WELL ID:** SB05 **SAMPLE METHOD:** Continuous  
**COMPLETION DATE:** 09/08/2016 **DRILL METHOD:** Direct Push  
**TD (ft bgs):** 10.5' **DRILLED BY:** Elite Drilling  
**DTW (ft bgs):** Not encountered **DETECTOR:** MiniRAE 3000  
**SCREEN SLOT:** NA **FILTER PACK:** NA  
**CASING LENGTH:** NA **ANNULUS SEAL:** NA  
**SCREEN LENGTH:** NA **SURFACE SEAL:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
1.00		Moist			0	SC		CLAYEY SAND - 0.0' - 4.0' - brown, fine grained, some fine gravel, some clay, moist, hydrocarbon odor, hydrocarbon staining from 2.5' to 4' bgs	
174.00				3/4					
318.00			SB05 @3'						
1.70		Moist				CH		CLAY - 4.0' - 10.5' - dark orangeish brown, some silt, moist, no odor, iron oxide staining, saprolitic claystone, refusal at 10.5' bgs	
2.20					5				
1.90				4/4					
3.10									
2.50									
2.50				2/2.5					
1.80					10				

A grayscale aerial photograph of a coastal area. In the top left corner, there is a white north arrow pointing upwards, labeled with a large 'N'. Scattered across the land area are several black dots, each representing a sampling point. These points are labeled with text: SB07, SB06, SB08, SBC-R, SB05, SB01, SB09, SB02, SB03, and SB04. The points are clustered in the central and right portions of the image, with some points (SB01, SB02, SB03, SB04) located closer to the coastline than others (SB07, SB08).



**LT Environmental, Inc.**  
**4600 W. 60th Avenue**  
**Arvada, Colorado 80003**

<b>PROJECT NAME:</b>	Coalmont 3-13H		
<b>PROJECT NO:</b>	065816006	<b>LOGGED BY:</b>	Jeremy Pike
<b>BORING/WELL ID:</b>	SB06	<b>SAMPLE METHOD:</b>	Continuous
<b>COMPLETION DATE:</b>	09/08/2016	<b>DRILL METHOD:</b>	Direct Push
<b>TD (ft bgs):</b>	8'	<b>DRILLED BY:</b>	Elite Drilling
<b>DTW (ft bgs):</b>	Not encountered	<b>DETECTOR:</b>	MiniRAE 3000
<b>SCREEN SLOT:</b>	NA	<b>FILTER PACK:</b>	NA
<b>CASING LENGTH:</b>	NA	<b>ANNULUS SEAL:</b>	NA
<b>SCREEN LENGTH:</b>	NA	<b>SURFACE SEAL:</b>	NA

**SCREEN TYPE:** NA

[illegible]





A grayscale aerial photograph of a coastal area. In the top left corner, there is a white north arrow pointing upwards. Scattered across the land area are several black dots, each labeled with a site identifier: SB01, SB02, SB03, SB04, SB05, SB06, SB07, SB08, SB09, and SBC-R. The sites are clustered in the central and right portions of the image. The surrounding area shows a mix of land and water, with some vegetation and a coastline visible on the left.

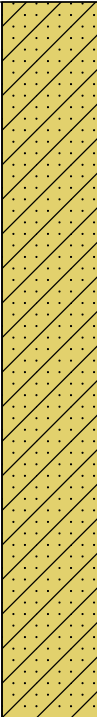

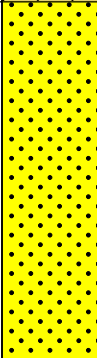


## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

**SCREEN TYPE:** NA

**SCREEN LENGTH:** NA

**SURFACE SEAL:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (ft/ft)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction	
0.30		Moist	SB08 @2'	3/4	0	SC		CLAYEY SAND - 0.0' - 4.0' - brown, fine grained, some fine gravel, moist, no odor, no staining		
0.60										
0.60										
0.60										
0.10		Moist	1/2	5	SP		SAND - 4.0' - 6.0'- orangeish brown, fine to medium grained, moist, no odor, iron oxide staining, refusal at 6' bgs			
0.10										



**ATTACHMENT 2**  
**LABORATORY ANALYTICAL REPORT**



# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 07, 2016

Jess Alexander  
LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada, CO 80003  
RE: Coalmont 3-13H

Enclosed are the results of analyses for samples received by Summit Scientific on 09/09/16 16:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury  
President





LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

**Reported:**  
10/07/16 18:10

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SBC-R@3'	1609059-01	Soil	09/08/16 12:50	09/09/16 16:40
SB01@3'	1609059-02	Soil	09/08/16 13:10	09/09/16 16:40
SB02@3'	1609059-03	Soil	09/08/16 13:25	09/09/16 16:40
SB03@6'	1609059-04	Soil	09/08/16 14:25	09/09/16 16:40
SB04@5'	1609059-05	Soil	09/08/16 15:00	09/09/16 16:40
SB05@3'	1609059-06	Soil	09/08/16 15:30	09/09/16 16:40
SB06@3'	1609059-07	Soil	09/08/16 15:50	09/09/16 16:40
SB07@1.5'	1609059-08	Soil	09/08/16 16:05	09/09/16 16:40
SB08@2'	1609059-09	Soil	09/08/16 16:25	09/09/16 16:40
SB09@3'	1609059-10	Soil	09/08/16 16:40	09/09/16 16:40

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H

Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

# Summit Scientific 1609059.1

741 Corporate Circle Suite F • Golden, Colorado 80401  
303-277-9310 • 303-374-5933 Fax

Page 1 of 2

Client: LT ENVIRONMENTAL

Address: 6400 W 60th Ave

City/State/Zip: Arvada, CO 80003

Phone: 303-433-9244 Fax:

Sampler Name: JEREMY PIKE

Project Manager: JESS ALEXANDER / BRETT FORNER

E-Mail: JALEXANDER@LTENV.COM / BFORNER@LTENV.COM

Project Name: COALMONT 3-13H

Project Number: 065816008

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix		Analyze For:				Special Instructions	
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Container Serial #	Other (Specify)	GBTEX 8260	TPA-200 8015		
S8C-R @ 3'	9/16/16	1250	1			X									
S801 @ 3'		1310	1			X									
S802 @ 3'		1325	1			X									
S803 @ 6'		1425	1			X									
S804 @ 5'		1500	1			X									
S805 @ 3'		1530	1			X									
S806 @ 3'		1550	1			X									
S807 @ 1.5'		1605	1			X									
S808 @ 2'		1625	1			X									
S809 @ 3'		1640	1			X									
Relinquished by: <i>[Signature]</i> Date/Time: 9/16/16 Received by: <i>[Signature]</i> Date/Time: 9/16/16:40				Turn Around Time (Check)				Notes:							
Relinquished by:				Date/Time:				Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/>				Standard <input checked="" type="checkbox"/>			
Relinquished by:				Date/Time:				24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/>							
Relinquished by:				Date/Time:				Sample Integrity:							
Relinquished by:				Date/Time:				Received in Lab by:							
Relinquished by:				Date/Time:				Temperature Upon Receipt: 5.3°C							
Relinquished by:				Date/Time:				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				on ice			

www.s2scientific.com

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Page 3 of 18



LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

### Sample Receipt Checklist

S2 Work Order: 1609059

Client: LTE

Client Project ID: Coalmont 3-13H

Shipped Via: HD  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: \_\_\_\_\_

Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	<u>5.3°C</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

Aindy Mack  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

9/9/16 16:43  
Date/Time

[Signature]



LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

**Reported:**  
10/07/16 18:10

**SBC-R@3'**  
**1609059-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**SB01@3'**  
**1609059-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 13:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 13:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 13:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 13:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.7 %	21-167		"	"	"	"	

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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**SB02@3'**  
**1609059-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 13:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	21-167		"	"	"	"	

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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**SB03@6'**  
**1609059-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.3 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.8 %	21-167		"	"	"	"	

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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**SB04@5'**  
**1609059-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.6 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 15:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.3 %	21-167		"	"	"	"	

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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**SB05@3'**  
**1609059-06 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1100	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	09/13/16	"	
Ethylbenzene	0.0067	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.064	0.0050	"	"	"	"	09/13/16	"	
Gasoline Range Hydrocarbons	4.4	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 15:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	21-167		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**SB06@3'**  
**1609059-07 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.4 %	21-167		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**SB07@1.5'**  
**1609059-08 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 16:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**SB08@2'**  
**1609059-09 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 16:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 16:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 16:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 16:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.2 %	21-167		"	"	"	"	

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Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**SB09@3'**  
**1609059-10 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/16 16:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609088	09/13/16	09/13/16	8015M	

Date Sampled: **09/08/16 16:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/16 16:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1609090	09/13/16	09/13/16	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/08/16 16:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.2 %	21-167		"	"	"	"	

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Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 1609088 - EPA 3550A**

**Blank (1609088-BLK1)**

Prepared & Analyzed: 09/13/16

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 13.2 " 12.5 105 30-150

**LCS (1609088-BS1)**

Prepared & Analyzed: 09/13/16

C10-C28 (DRO) 487 50 mg/kg 499 97.6 73-134

Surrogate: o-Terphenyl 12.8 " 12.5 102 30-150

**Matrix Spike (1609088-MS1)**

Source: 1609059-01

Prepared & Analyzed: 09/13/16

C10-C28 (DRO) 566 50 mg/kg 491 21.6 111 50-148

Surrogate: o-Terphenyl 12.9 " 12.3 105 30-150

**Matrix Spike Dup (1609088-MSD1)**

Source: 1609059-01

Prepared & Analyzed: 09/13/16

C10-C28 (DRO) 513 50 mg/kg 498 21.6 98.7 50-148 9.74 20

Surrogate: o-Terphenyl 13.5 " 12.5 108 30-150

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Arvada CO, 80003

Project: Coalmont 3-13H  
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Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 1609090 - EPA 5030 Soil MS**

**Blank (1609090-BLK1)**

Prepared & Analyzed: 09/13/16

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0385		"	0.0400		96.2	23-173			
Surrogate: Toluene-d8	0.0382		"	0.0400		95.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0376		"	0.0400		94.0	21-167			

**LCS (1609090-BS1)**

Prepared & Analyzed: 09/13/16

Benzene	0.110	0.0020	mg/kg	0.100		110	58-130			
Toluene	0.112	0.0050	"	0.100		112	61-134			
Ethylbenzene	0.111	0.0050	"	0.0992		112	74-139			
m,p-Xylene	0.226	0.010	"	0.200		113	73-137			
o-Xylene	0.127	0.0050	"	0.0980		129	73-141			
Xylenes (total)	0.353	0.0050	"				30-150			
Gasoline Range Hydrocarbons	2.19	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0418		"	0.0400		104	23-173			
Surrogate: Toluene-d8	0.0384		"	0.0400		96.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0380		"	0.0400		94.9	21-167			

**Matrix Spike (1609090-MS1)**

Source: 1609059-01

Prepared & Analyzed: 09/13/16

Benzene	0.0995	0.0020	mg/kg	0.100	ND	99.5	30-131			
Toluene	0.101	0.0050	"	0.100	ND	101	30-134			
Ethylbenzene	0.0986	0.0050	"	0.0992	ND	99.4	22-153			
m,p-Xylene	0.202	0.010	"	0.200	ND	101	10-159			
o-Xylene	0.111	0.0050	"	0.0980	ND	114	31-151			
Xylenes (total)	0.313	0.0050	"		ND		30-150			
Gasoline Range Hydrocarbons	1.92	0.50	"		ND		30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0433		"	0.0400		108	23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0400		98.2	21-167			

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Arvada CO, 80003

Project: Coalmont 3-13H  
Project Number: 065816008  
Project Manager: Jess Alexander

Reported:  
10/07/16 18:10

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 1609090 - EPA 5030 Soil MS**

Matrix Spike Dup (1609090-MSD1)	Source: 1609059-01			Prepared & Analyzed: 09/13/16						
Benzene	0.0922	0.0020	mg/kg	0.0998	ND	92.4	30-131	7.64	34	
Toluene	0.0948	0.0050	"	0.0998	ND	95.0	30-134	6.59	30	
Ethylbenzene	0.0903	0.0050	"	0.0990	ND	91.2	22-153	8.77	24	
m,p-Xylene	0.184	0.010	"	0.199	ND	92.4	10-159	9.28	68	
o-Xylene	0.104	0.0050	"	0.0978	ND	106	31-151	6.76	38	
Xylenes (total)	0.288	0.0050	"		ND		30-150	8.38	20	
Gasoline Range Hydrocarbons	1.75	0.50	"		ND		30-150	9.43	20	
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0399		110	23-173			
Surrogate: Toluene-d8	0.0387		"	0.0399		96.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0399		98.3	21-167			

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Project: Coalmont 3-13H

Project Number: 065816008  
Project Manager: Jess Alexander

**Reported:**  
10/07/16 18:10

### Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference