District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company **ConocoPhillips Company**	Contact **Clara Cardoza**
Address **3401 East 30th St, Farmington, NM**	Telephone No. **(505) 564-0733**
Facility Name: **Jicarilla D 20**	Facility Type: **Gas Well**

Surface Owner **Jicarilla**	Mineral Owner **Jicarilla**	API No. **3003923477**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	**31**	**26N**	**03W**	**1120**	**South**	**1760**	**West**	**Rio Arriba**

Latitude 36.43872 Longitude -107. 1882

NATURE OF RELEASE

Type of Release **Condensate**	Volume of Release **31bbl**	Volume Recovered **0**
Source of Release **Production Tank**	Date and Hour of Occurrence **Unknown**	Date and Hour of Discovery **06/07/2017 @ 10:24 a.m.**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **Jicarilla Officials & NMOCD via email**	
By Whom? **Bobby Spearman**	Date and Hour **06/08/2017 @ 7:56 a.m.**	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. **N/A**	

OIL CONS. DIV DIST. 3

SEP 27 2017

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

Describe Cause of Problem and Remedial Action Taken.*
Over-the-top condensate release from Production Tank. Release remained in berm area. Well as shut in and truck called to pull remaining tank fluids.

Describe Area Affected and Cleanup Action Taken.*
ConocoPhillips will assess the soil to determine a path forward for clean-up if necessary.
On July 27, 2017, ConocoPhillips Environmental contractor collected eight five-point composite (4 corners/ 1 center) soil samples from the final excavation, at a depth of approximately 8 inches. Sample was placed in a laboratory supplied 4oz glass jar and maintained on ice until delivery to Hall Environmental Laboratory. Sample analytical results are below applicable NMOCD action levels. Approximately 300 c/yds of surface stained soil was removed and transported to Envirotech land farm. No further work will be performed. The final report is attached for review.

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

Signature: Clara Cardoza	OIL CONSERVATION DIVISION Approved by Environmental Specialist:
Printed Name: **Clara Cardoza**	
Title: **Environmental Specialist**	Approval Date: 10/3/17 Expiration Date:
E-mail Address: **ccardoza@hilcorp. com**	Conditions of Approval: Attached ☐
Date: **September 25, 2017** Phone: **(505) 564-0733**	

* Attach Additional Sheets If Necessary

NVF1718149913

Jicarilla D #20 Release Report

Unit Letter N, Section 31, Township 26 North, Range 3 West
Rio Arriba County, New Mexico

August 22, 2017

Prepared for:
Hilcorp Energy Company
5525 Highway 64
Farmington, New Mexico 87401

Prepared by:
Rule Engineering, LLC
501 Airport Drive, Suite 205
Farmington, New Mexico 87401

Rule Engineering, LLC
Solutions to Regulations for Industry

Hilcorp Energy Company
Jicarilla D #20 Release Report

Prepared for:

Hilcorp Energy Company
5525 Highway 64
Farmington, New Mexico 87401

Prepared by:

Rule Engineering, LLC
501 Airport Drive, Suite 205
Farmington, New Mexico 87401

Heather M. Woods

Heather M. Woods, P.G., Area Manager

Reviewed by:

Russell Knight, PG, Principal Hydrogeologist

August 22, 2017

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Appendix A Analytical Laboratory Reports

1.0 Introduction

The Hilcorp Energy Company (Hilcorp) Jicarilla D #20 release site is located in Unit Letter N, Section 31, Township 26 North, Range 3 West, in Rio Arriba County, New Mexico, on the Jicarilla Apache Nation. The release of approximately 30 barrels of condensate was discovered on June 7, 2017, and was the result of over-topping of the production tank.

A topographic map of the location reproduced from the United States Geological Society quadrangle map of the area is included as Figure 1 and an aerial site map is included as Figure 2.

2.0 Release Summary

Site Name	Jicarilla D #20		
Site Location Description	Unit Letter N, Section 31, Township 26 North, Range 3 West		
Wellhead GPS Location	N36.43882 and W107.18863	***Release GPS Location***	N36.43860 and W107.18889
Land Jurisdiction	Jicarilla Apache Nation		
Release Source	Production Tank	***Estimated Volume Released***	30 Barrels
JANEPO/NMOCD Site Rank	10		
Distance to Nearest Surface Water	An unnamed, ephemeral tributary to Tapicito Creek is located approximately 700 feet north of the release location		
Estimated Depth to Groundwater	Greater than 100 feet below ground surface (bgs)	***Distance to Nearest Water Well or Spring***	Greater than 1,000 feet

3.0 JANEPO/NMOCD Site Ranking

The release site is located on the Jicarilla Apache Nation which utilizes the recommendations from the New Mexico Oil Conservation Division (NMOCD) for release response guidelines with oversight provided by the Jicarilla Apache Nation Environmental Protection Office (JANEPO). In accordance with the NMOCD Guidelines for Remediation of Leaks, Spills, and Releases (August 1993), this site was assigned a ranking score of 10 (Table 1).

Depth to groundwater at the site is estimated to be greater than 100 feet bgs based on the elevation differential between the release location and local drainages as well as the depths to groundwater reported for local registered water wells.

A review was completed of the New Mexico Office of the State Engineer (NMOSE) online New Mexico Water Rights Reporting System (NMWRRS) and no water wells were identified within a 1,000 foot radius of the location. No water wells were observed within a 1,000 foot radius of the location during a visual inspection.

An unnamed, ephemeral tributary to Tapicito Creek is located approximately 700 feet north of the release location.

Based on the ranking score of 10, action levels for remediated soils at the site are as follows: 10 milligrams per kilogram (mg/kg) benzene, 50 mg/kg total benzene, toluene, ethylbenzene, and total xylenes (BTEX), and 1,000 mg/kg total petroleum hydrocarbons (TPH).

4.0 Site Assessment

4.1 Field Activities

A site assessment was conducted to determine the approximate horizontal and vertical extents of the release. On June 19, 2017, Rule personnel advanced 12 soil borings (SB-1 through SB-12) in the release area utilizing a hand auger. Soil borings were advanced to approximately 3.75 to 5 feet bgs where refusal was encountered on shale bedrock.

Soil boring locations are illustrated on Figure 2.

4.2 Soil Sampling

Rule collected soil samples from each soil boring at selected intervals or at changes in lithology or contamination. The lithology encountered at the site included interbedded sandy lean clay and silty clayey sand underlain by weathered shale to the maximum depths reached.

A portion of each sample was field screened for VOCs and selected samples were also field analyzed for TPH. Field screening for VOC vapors was conducted with a MiniRAE 3000 photoionization detector (PID). Prior to field screening, the PID was calibrated with 100 parts per million (ppm) isobutylene gas. Field analysis for TPH was conducted for selected samples per United States Environmental Protection Agency (USEPA) Method 418.1, utilizing a Buck Scientific HC-404 total hydrocarbon analyzer. Prior to field analysis, the analyzer was calibrated following the manufacturer's procedure which includes calculation of a calibration curve using known concentration standards. Rule's practical quantitation limit for USEPA Method 418.1 is 20 mg/kg.

Site assessment field screening results are summarized in Table 2.

4.3 Field Screening Results

Field screening results for samples collected from soil borings SB-1 through SB-12 indicated VOC concentrations ranging from 1.25 ppm to greater than 14,000 ppm. Field

screening results for selected samples indicated TPH concentrations ranging from 29.7 mg/kg to greater than 2,500 mg/kg.

5.0 Excavation Confirmation Sampling

5.1 Field Activities

Rule personnel collected eight excavation confirmation samples (SC-1 through SC-8) on July 27, 2017, from the final excavation measuring approximately 28 feet by 51 feet by 7 feet in depth. Excavated hydrocarbon impacted soils were transported to a local NMOCD approved landfarm for disposal/remediation and the excavation was backfilled with clean, imported material. A depiction of the final excavation with sample locations is included on Figure 3.

5.2 Soil Sampling

Rule collected eight composite confirmation soil samples (SC-1 through SC-8) on July 27, 2017. Each confirmation soil sample is a representative composite comprised of five equivalent portions of soil collected from the sampled area.

A portion of each sample was field screened for VOCs and field analyzed for TPH utilizing the same methods as described in Section 4.2.

Soil samples collected for laboratory analysis were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico. Samples were analyzed for BTEX per USEPA Method 8021B, and TPH per USEPA Method 8015M/D.

Field screening and laboratory analytical results are summarized in Table 3. The analytical laboratory reports are included in Appendix A.

5.3 Field Screening Results

Field screening results for soil confirmation samples SC-1 through SC-8 indicated VOC concentrations ranging from 0.1 ppm to 4,800 ppm. Field TPH concentration results for these samples ranged from less than 20 mg/kg to 170 mg/kg.

5.4 Laboratory Analytical Results

Laboratory analytical results for final excavation confirmation samples SC-1 through SC-8 reported benzene concentrations below the laboratory reporting limits, which are below the applicable JANEPO/NMOCD action level. Total BTEX concentrations for samples SC-1 through SC-8 ranged from below the laboratory reporting limits to 0.49 mg/kg, which are below the applicable JANEPO/NMOCD action levels. Laboratory analytical results for final excavation samples SC-1 though SC-8 reported TPH concentrations ranging from

below the laboratory reporting limits to 136 mg/kg, which are below the JANEPO/NMOCD action level of 1,000 mg/kg for a site rank of 10.

6.0 Conclusions

Hydrocarbon impacted soils associated with a condensate release due to over-topping of the production tank at the Hilcorp Jicarilla D #20 have been excavated and transported to a JANEPO/NMOCD approved landfarm for disposal/remediation. Laboratory analytical results for samples collected from the final excavation sidewalls and base indicated that concentrations of benzene, total BTEX, and TPH are below JANEPO/NMOCD action levels for a site rank of 10. Therefore, no further work is recommended at this time.

7.0 Closure and Limitations

This report has been prepared for the exclusive use of Hilcorp and is subject to the terms, conditions, and limitations stated in Rule's report and Service Agreement with Hilcorp. All work has been performed in accordance with generally accepted professional environmental consulting practices. No other warranty is expressed or implied.

Tables

Table 1. JANEPO/NMOCD Site Ranking Determination
Hicorp Energy Company
Jicarilla D #20
Rio Arriba County, New Mexico

Ranking Criteria	Ranking Score	Site-Based Ranking Score	Basis for Determination	Data Sources
Depth to Groundwater				
<50 feet	20	0	Depth to groundwater is estimated to be greater than 100 feet below ground surface based on elevation differential between the location and local drainages and the depths to groundwater reported for local registered water wells.	NMOCD Online database, Schmitz Ranch Quadrangle, Google Earth, and Visual Inspection
50-99 feet	10			
>100 feet	0			
Wellhead Protection Area				
<1,000 feet from a water source, or <200 feet from private domestic water source	20 (Yes)	0	No water source or recorded water wells within 1,000 foot radius of location.	NMOSE NMWRRS, Schmitz Ranch Quadrangle, Google Earth, and Visual Inspection
	0 (No)			
Distance to Surface Water Body				
<200 horizontal feet	20	10	An unnamed, ephemeral tributary to Tapicito Creek is located approximately 700 feet to the north of the release location.	Schmitz Ranch Quadrangle, Google Earth, and Visual Inspection
200 to 1,000 horizontal feet	10			
>1,000 horizontal feet	0			
Site Based Total Ranking Score		**10**		

Table 2. Site Assessment Field Screening Results
Hilcorp Energy Company
Jicarilla D #20
Rio Arriba County, New Mexico

Sample Name	Date	Approximate Sample Depth (ft bgs)	Field VOCs by PID (ppm)	Field TPH by 418.1 (mg/kg)
JANEPO/NMOCD Action Level*			100	1,000
SB-1	6/19/2017	0.5	**>14,000**	--
		1	**>14,000**	--
		2	**>14,000**	--
		3	**>14,000**	**>2,500**
		4	**>12,400**	**1,550**
		4.5	**4,878**	528
SB-2	6/19/2017	0.5	16.1	--
		1	**109**	--
		2	**3,361**	--
		3	**4,170**	850
		3.75	**2,537**	--
SB-3	6/19/2017	0.5	2.9	--
		1	2.8	--
		2	2.8	--
		3	4.0	
		3.75	2.7	--
SB-4	6/19/2017	0.5	3.1	--
		1	8.9	--
		2	4.9	--
		3	3.4	--
		4	1.6	--
SB-5	6/19/2017	0.5	**2,050**	--
		1	**2,488**	--
		2	**1,768**	--
		3	**2,512**	**1,340**
		4	**703**	33.8
SB-6	6/19/2017	1	38.2	--
		2	10.8	--
		3	9.3	--
		4	17.3	--
		4.5	**578**	220
SB-7	6/19/2017	0.5	1.8	--
		1	11.2	--
		2	1.2	--
		3	4.6	--
		4	18.8	--
		5	1.3	--

Table 2. Site Assessment Field Screening Results
Hilcorp Energy Company
Jicarilla D #20
Rio Arriba County, New Mexico

Sample Name	Date	Approximate Sample Depth (ft bgs)	Field VOCs by PID (ppm)	Field TPH by 418.1 (mg/kg)
JANEPO/NMOCD Action Level*			100	1,000
SB-8	6/19/2017	0.5	51.2	--
		1	**387**	--
		2	**840**	--
		3	**2,552**	750
		4	**776**	29.7
SB-9	6/19/2017	0.5	2.3	--
		1	1.4	--
		2	6.2	--
		3	2.5	--
		4.5	1.2	--
SB-10	6/19/2017	0.5	1.9	--
		1	1.6	--
		2	1.5	--
		3	2.2	--
		4	2.0	--
SB-11	6/19/2017	1	1.3	--
		2	1.7	--
		3	3.3	--
		4	3.5	--
		4.5	3.0	--
SB-12	6/19/2017	1	2.3	--
		2	3.5	--
		3	2.4	--
		4	2.6	--
SB-13	6/19/2017	1	**>14,000**	--
		2	**>14,000**	--
		3	**>14,000**	--
		3.25	**>14,000**	**>2,500**

Notes: All borings were terminated at auger refusal weathered shale bedrock.
VOCs - volatile organic compounds
PID - photoionization detector
ft bgs - feet below grade surface
ppm - parts per million
mg/kg - milligrams per kilogram
TPH - total petroleum hydrocarbons
JANEPO - Jicarilla Apache Nation Environmental Protection Office
NMOCD - New Mexico Oil Conservation Division
*Based on the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases (August 1993)*
**Based on a site ranking of 0.

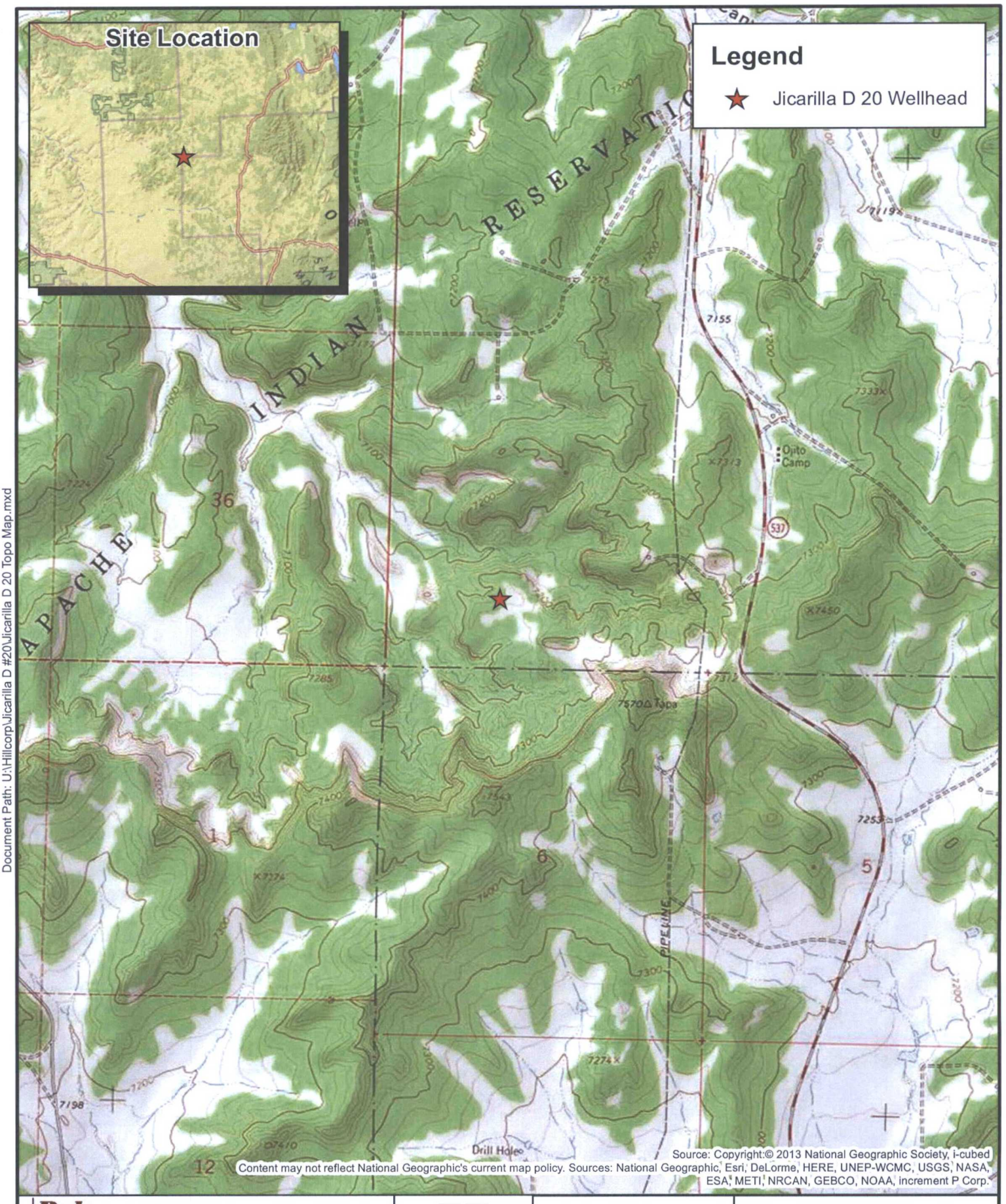
Table 3. Excavation Confirmation Field Screening and Laboratory Analytical Results
Hilcorp Energy Company
Jicarilla D #20
Rio Arriba County, New Mexico

Sample Name	Date	Sample Location	Approximate Sample Depth (ft bgs)	Field Screening		Laboratory Analytical Results							
				Field VOCs per PID (ppm)	Field TPH per 418.1 (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylben-zene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH as GRO (mg/kg)	TPH as DRO (mg/kg)	TPH as MRO (mg/kg)
JANEPO/NMOCD Action Level*				**NE**	**1,000**	**10**	**NE**	**NE**	**NE**	**50**		**1,000****	
SC-1	7/27/2017	North Wall - West	0 to 5	4,800	170	<0.087	<0.17	<0.17	0.49	0.49	54	55	<46
SC-2	7/27/2017	North Wall - East	0 to 7	450	<20	<0.023	<0.046	<0.046	<0.093	ND	<4.6	35	<49
SC-3	7/27/2017	East Wall	0 to 7	4.9	<20	<0.024	<0.048	<0.048	<0.096	ND	<4.8	54	82
SC-4	7/27/2017	South Wall - East	0 to 7	8.2	<20	<0.024	<0.047	<0.047	<0.095	ND	<4.7	<10	<50
SC-5	7/27/2017	East Base	6 to 7	3,600	78	<0.019	<0.037	<0.0.37	0.095	0.095	14	26	<49
SC-6	7/27/2017	West Wall	0 to 5	0.1	<20	<0.024	<0.048	<0.048	<0.096	ND	<4.8	<9.8	<49
SC-7	7/27/2017	South Wall - West	0 to 5	1.5	<20	<0.024	<0.048	<0.048	<0.095	ND	<4.8	<9.4	<47
SC-8	7/27/2017	West Base	5 to 6	11.9	<20	<0.023	<0.047	<0.047	<0.094	ND	<4.7	<9.7	<48

Notes:
ft bgs - feet below grade surface
mg/kg - milligrams per kilogram
JANEPO - Jicarillo Apache Nation Environmental Protection Office
NMOCD - New Mexico Oil Conservation Division
NE - not-established
ND - not detected above laboratory reporting limits
*Based on the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases (August 1993)*
**Based on a site ranking of 10.

BTEX - benzene, toluene, ethylbenzene, and xylenes
TPH - total petroleum hydrocarbons
GRO - gasoline range organics
DRO - diesel range organics
MRO - mineral oil range organics

Figures



Document Path: U:\Hilcorp\Jicarilla D #20\Jicarilla D 20 Topo Map.mxd

Rule Engineering, LLC
Solutions to Regulations for Industry

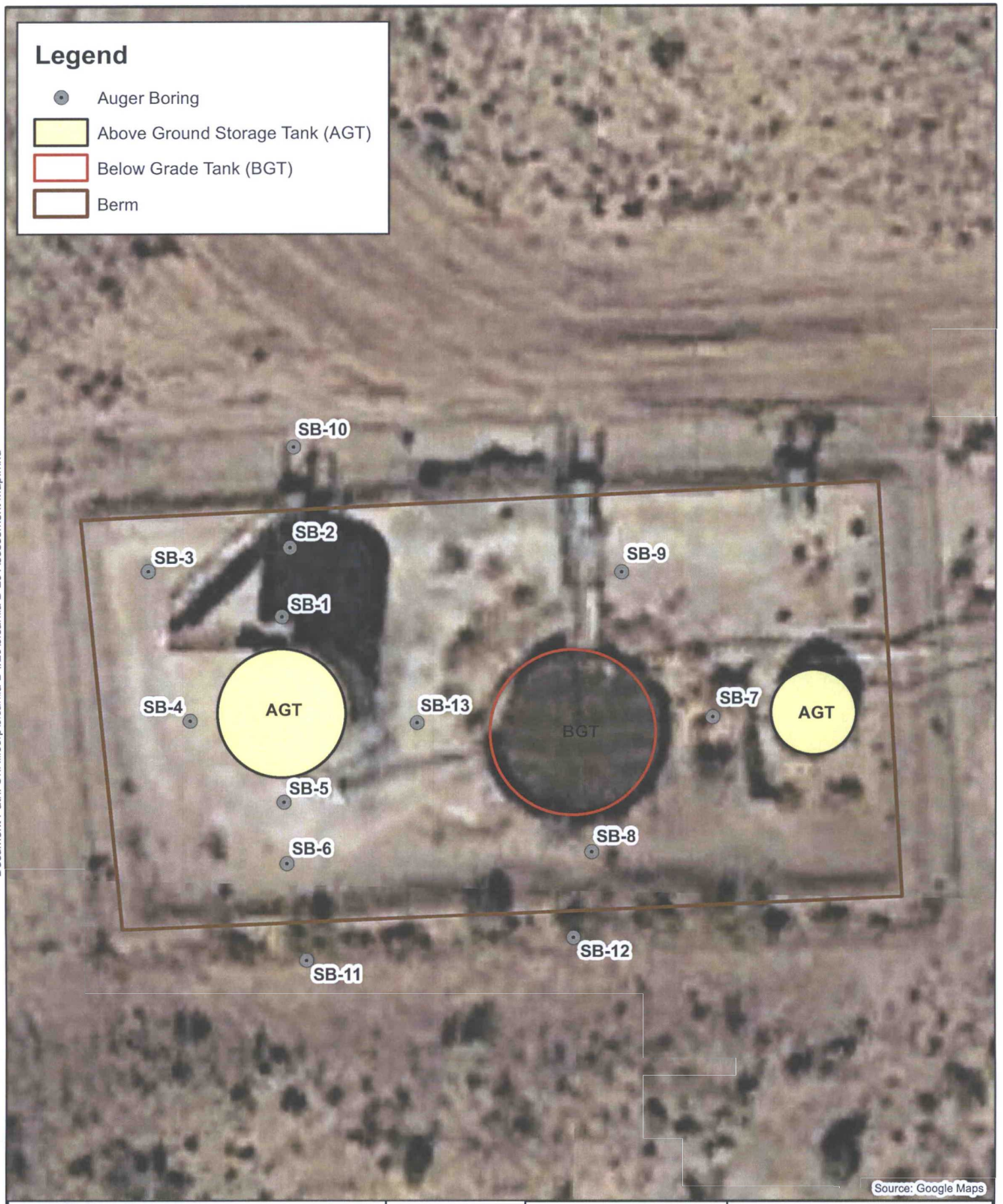
0 0.2 0.4 0.8 Miles

Schmitz Ranch Quadrangle
1:24,000

Hilcorp

N-S31-T26N-R03W
N36.43882, W107.18863
Rio Arriba County, NM
API: 30-039-23477

Figure 1
Topographic Site Map
Jicarilla D #20



Document Path: U:\Hilcorp\Jicarilla D #20\Jicarilla D 20 Assessment Map.mxd

Rule Engineering, LLC
Solutions to Regulations for Industry

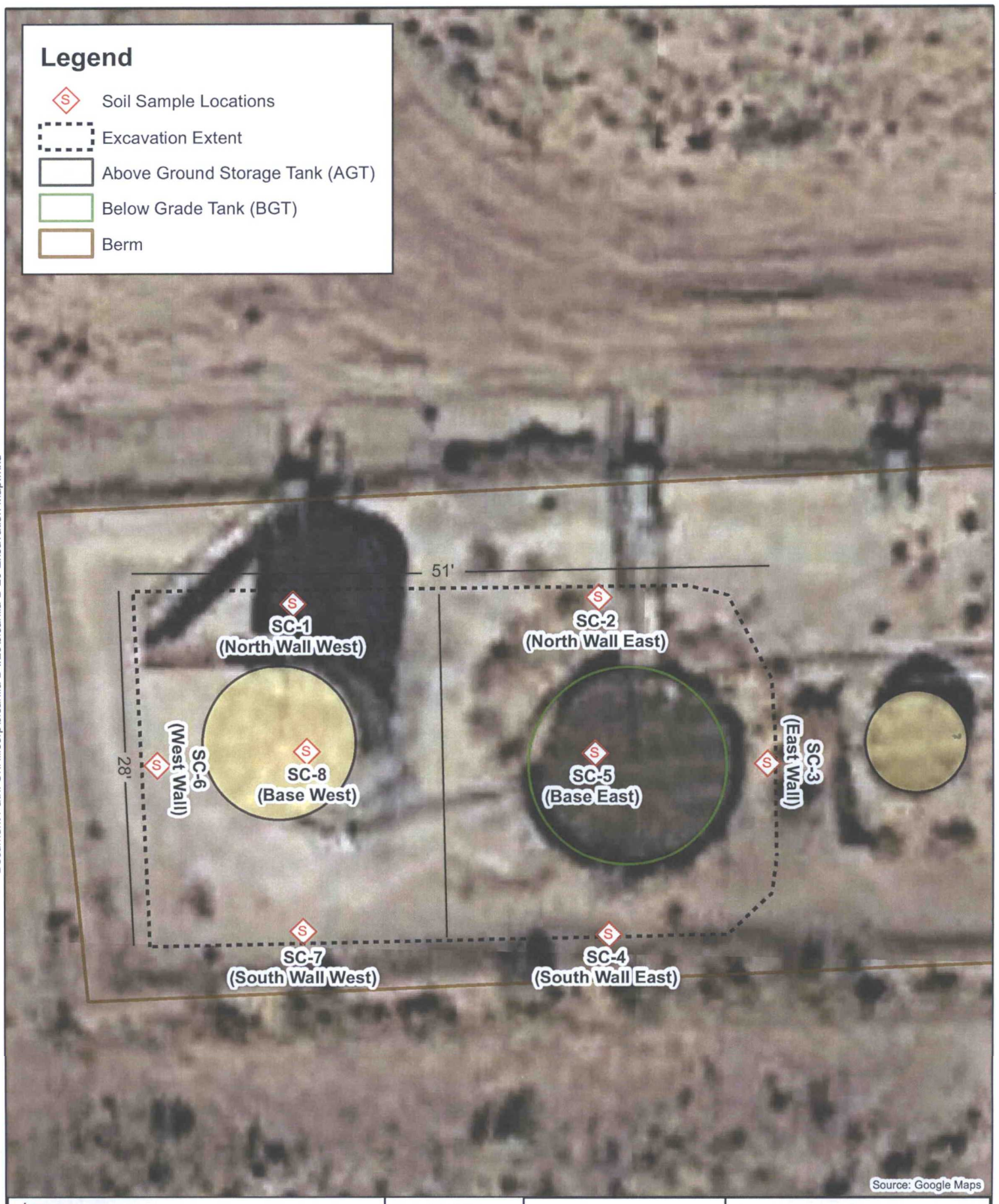
0 3 6 12 18 24 Feet

1 inch = 12 feet

Hilcorp

N-S31-T26N-R03W
N36.43882, W107.18863
Rio Arriba County, NM
API: 30-039-23477

Figure 2
Release Assessment Map
Jicarilla D #20



Document Path: U:\Hilcorp\Jicarilla D #20\Jicarilla D 20 Excavation Map.mxd

Rule Engineering, LLC
Solutions to Regulations for Industry

0 2.5 5 10 15 20 Feet

1 inch = 10 feet

Hilcorp

N-S31-T26N-R03W
N36.43882, W107.18863
Rio Arriba County, NM
API: 30-039-23477

Figure 3
Excavation Map
Jicarilla D #20

Appendix A

Analytical Laboratory Reports

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

July 31, 2017

Heather Woods
Rule Engineering LLC
501 Airport Dr., Ste 205
Farmington, NM 87401
TEL: (505) 325-1055
FAX

RE: COP Jicarilla D 20 OrderNo.: 1707E28

Dear Heather Woods:

Hall Environmental Analysis Laboratory received 2 sample(s) on 7/28/2017 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 #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1707E28**
Date Reported: **7/31/2017**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Rule Engineering LLC
Client Sample ID: SC-1
Project: COP Jicarilla D 20
Collection Date: 7/27/2017 10:00:00 AM
Lab ID: 1707E28-001
Matrix: MEOH (SOIL)
Received Date: 7/28/2017 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	55	9.1		mg/Kg	1	7/28/2017 10:37:04 AM	33061
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/28/2017 10:37:04 AM	33061
Surr: DNOP	96.4	70-130		%Rec	1	7/28/2017 10:37:04 AM	33061
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	54	17		mg/Kg	5	7/28/2017 9:53:16 AM	G44585
Surr: BFB	205	54-150	S	%Rec	5	7/28/2017 9:53:16 AM	G44585
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.087		mg/Kg	5	7/28/2017 9:53:16 AM	B44585
Toluene	ND	0.17		mg/Kg	5	7/28/2017 9:53:16 AM	B44585
Ethylbenzene	ND	0.17		mg/Kg	5	7/28/2017 9:53:16 AM	B44585
Xylenes, Total	0.49	0.35		mg/Kg	5	7/28/2017 9:53:16 AM	B44585
Surr: 4-Bromofluorobenzene	119	66.6-132		%Rec	5	7/28/2017 9:53:16 AM	B44585

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: Rule Engineering LLC
Client Sample ID: SC-5
Project: COP Jicarilla D 20
Collection Date: 7/27/2017 10:20:00 AM
Lab ID: 1707E28-002
Matrix: MEOH (SOIL)
Received Date: 7/28/2017 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	26	9.7		mg/Kg	1	7/28/2017 11:01:41 AM	33061
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/28/2017 11:01:41 AM	33061
Surr: DNOP	107	70-130		%Rec	1	7/28/2017 11:01:41 AM	33061
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	14	3.7		mg/Kg	1	7/28/2017 10:16:58 AM	G44585
Surr: BFB	217	54-150	S	%Rec	1	7/28/2017 10:16:58 AM	G44585
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.019		mg/Kg	1	7/28/2017 10:16:58 AM	B44585
Toluene	ND	0.037		mg/Kg	1	7/28/2017 10:16:58 AM	B44585
Ethylbenzene	ND	0.037		mg/Kg	1	7/28/2017 10:16:58 AM	B44585
Xylenes, Total	0.095	0.075		mg/Kg	1	7/28/2017 10:16:58 AM	B44585
Surr: 4-Bromofluorobenzene	117	66.6-132		%Rec	1	7/28/2017 10:16:58 AM	B44585

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#: **1707E28**

31-Jul-17

Client: Rule Engineering LLC

Project: COP Jicarilla D 20

Sample ID **LCS-33061**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **33061**	RunNo: **44578**
Prep Date: **7/28/2017**	Analysis Date: **7/28/2017**	SeqNo: **1409395** 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	86.2	73.2	114			
Surr: DNOP	4.0		5.000		80.2	70	130			

Sample ID **MB-33061**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **33061**	RunNo: **44578**
Prep Date: **7/28/2017**	Analysis Date: **7/28/2017**	SeqNo: **1409398** 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	9.7		10.00		97.4	70	130			

Sample ID **1707E28-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SC-1**	Batch ID: **33061**	RunNo: **44578**
Prep Date: **7/28/2017**	Analysis Date: **7/28/2017**	SeqNo: **1409594** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	100	9.4	47.21	55.44	102	55.8	122			
Surr: DNOP	4.6		4.721		97.7	70	130			

Sample ID **1707E28-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **SC-1**	Batch ID: **33061**	RunNo: **44578**
Prep Date: **7/28/2017**	Analysis Date: **7/28/2017**	SeqNo: **1409595** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	100	9.5	47.71	55.44	98.5	55.8	122	0.987	20	
Surr: DNOP	4.3		4.771		91.1	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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#: **1707E28**

31-Jul-17

Client: Rule Engineering LLC

Project: COP Jicarilla D 20

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **G44585**	RunNo: **44585**
Prep Date:	Analysis Date: **7/28/2017**	SeqNo: **1409798** 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		101	54	150			

Sample ID **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **G44585**	RunNo: **44585**
Prep Date:	Analysis Date: **7/28/2017**	SeqNo: **1409799** 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	99.2	76.4	125			
Surr: BFB	1100		1000		109	54	150			

Sample ID **1707E28-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SC-1**	Batch ID: **G44585**	RunNo: **44585**
Prep Date:	Analysis Date: **7/28/2017**	SeqNo: **1409800** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	140	17	86.86	53.92	103	77.8	128			
Surr: BFB	8200		3474		235	54	150			S

Sample ID **1707E28-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SC-1**	Batch ID: **G44585**	RunNo: **44585**
Prep Date:	Analysis Date: **7/28/2017**	SeqNo: **1409801** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	150	17	86.86	53.92	112	77.8	128	5.47	20	
Surr: BFB	8200		3474		237	54	150	0	0	S

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#: **1707E28**

31-Jul-17

Client: Rule Engineering LLC

Project: COP Jicarilla D 20

Sample ID **RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **B44585**	RunNo: **44585**
Prep Date:	Analysis Date: **7/28/2017**	SeqNo: **1409814** 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	1.1		1.000		113	66.6	132			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **B44585**	RunNo: **44585**
Prep Date:	Analysis Date: **7/28/2017**	SeqNo: **1409815** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.85	0.025	1.000	0	85.0	80	120			
Toluene	0.85	0.050	1.000	0	84.6	80	120			
Ethylbenzene	0.86	0.050	1.000	0	86.3	80	120			
Xylenes, Total	2.6	0.10	3.000	0	86.4	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		115	66.6	132			

Sample ID **1707E28-002AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **SC-5**	Batch ID: **B44585**	RunNo: **44585**
Prep Date:	Analysis Date: **7/28/2017**	SeqNo: **1409816** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.71	0.019	0.7474	0	95.0	80.9	132			
Toluene	0.70	0.037	0.7474	0	93.5	79.8	136			
Ethylbenzene	0.74	0.037	0.7474	0	99.3	79.4	140			
Xylenes, Total	2.3	0.075	2.242	0.09529	97.5	78.5	142			
Surr: 4-Bromofluorobenzene	0.92		0.7474		123	66.6	132			

Sample ID **1707E28-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **SC-5**	Batch ID: **B44585**	RunNo: **44585**
Prep Date:	Analysis Date: **7/28/2017**	SeqNo: **1409817** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.70	0.019	0.7474	0	93.1	80.9	132	2.09	20	
Toluene	0.68	0.037	0.7474	0	90.7	79.8	136	3.01	20	
Ethylbenzene	0.72	0.037	0.7474	0	96.1	79.4	140	3.26	20	
Xylenes, Total	2.2	0.075	2.242	0.09529	95.5	78.5	142	2.00	20	
Surr: 4-Bromofluorobenzene	0.90		0.7474		121	66.6	132	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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: RULE ENGINEERING LL Work Order Number: 1707E28 RcptNo: 1

Received By: Erin Melendrez 7/28/2017 8:50:00 AM

Completed By: Ashley Gallegos 7/28/2017 9:01:24 AM

Reviewed By: 7/28/17

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.1	Good	Yes			

Chain-of-Custody Record

Client: Rule Engineering

Mailing Address: 501 Airport Dr. Ste 205
Farmington, NM 87401

Phone #: (505) 716-2787

email or Fax#: hwoods@ruleengineering.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☐ Standard ☒ Rush Same Day

Project Name:
Cor Jicarilla D #20

Project #:

Project Manager:
Heather Woods

Sampler: Heather Woods

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.1

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1707E28	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
7/27/17	1000	Soil	SC-1	(1) 4oz Glass	Cold	-001	X		X									
7/27/17	1020	Soil	SC-5	(1) 4oz Glass	Cold	-002	X		X									

Date:	Time:	Relinquished by:	Received by:	Date	Time
7/27/17	1712	Heather M. Woods	Christine Walters	7/27/17	1712
7/27/17	1838	Christine Walters		7/28/17	0850

Remarks:
Direct Bill to ConocoPhillips

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.

Courier

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

August 01, 2017

Heather Woods
Rule Engineering LLC
501 Airport Dr., Ste 205
Farmington, NM 87401
TEL: (505) 325-1055
FAX

RE: COP Jicarilla D 20 OrderNo.: 1707E32

Dear Heather Woods:

Hall Environmental Analysis Laboratory received 6 sample(s) on 7/28/2017 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 #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Rule Engineering LLC
Client Sample ID: SC-2
Project: COP Jicarilla D 20
Collection Date: 7/27/2017 10:05:00 AM
Lab ID: 1707E32-001
Matrix: SOIL
Received Date: 7/28/2017 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	7/31/2017 1:09:36 PM	33074
Surr: BFB	86.6	70-130		%Rec	1	7/31/2017 1:09:36 PM	33074
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	35	9.8		mg/Kg	1	7/31/2017 8:34:02 PM	33075
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/31/2017 8:34:02 PM	33075
Surr: DNOP	91.8	70-130		%Rec	1	7/31/2017 8:34:02 PM	33075
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.023		mg/Kg	1	7/31/2017 1:09:36 PM	33074
Toluene	ND	0.046		mg/Kg	1	7/31/2017 1:09:36 PM	33074
Ethylbenzene	ND	0.046		mg/Kg	1	7/31/2017 1:09:36 PM	33074
Xylenes, Total	ND	0.093		mg/Kg	1	7/31/2017 1:09:36 PM	33074
Surr: 1,2-Dichloroethane-d4	80.7	70-130		%Rec	1	7/31/2017 1:09:36 PM	33074
Surr: 4-Bromofluorobenzene	85.4	70-130		%Rec	1	7/31/2017 1:09:36 PM	33074
Surr: Dibromofluoromethane	80.1	70-130		%Rec	1	7/31/2017 1:09:36 PM	33074
Surr: Toluene-d8	89.7	70-130		%Rec	1	7/31/2017 1:09:36 PM	33074

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: Rule Engineering LLC
Project: COP Jicarilla D 20
Lab ID: 1707E32-002 **Matrix:** SOIL

Client Sample ID: SC-3
Collection Date: 7/27/2017 10:10:00 AM
Received Date: 7/28/2017 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/31/2017 2:39:40 PM	33074
Surr: BFB	87.3	70-130		%Rec	1	7/31/2017 2:39:40 PM	33074
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	54	9.8		mg/Kg	1	7/31/2017 9:02:30 PM	33075
Motor Oil Range Organics (MRO)	82	49		mg/Kg	1	7/31/2017 9:02:30 PM	33075
Surr: DNOP	93.8	70-130		%Rec	1	7/31/2017 9:02:30 PM	33075
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.024		mg/Kg	1	7/31/2017 2:39:40 PM	33074
Toluene	ND	0.048		mg/Kg	1	7/31/2017 2:39:40 PM	33074
Ethylbenzene	ND	0.048		mg/Kg	1	7/31/2017 2:39:40 PM	33074
Xylenes, Total	ND	0.096		mg/Kg	1	7/31/2017 2:39:40 PM	33074
Surr: 1,2-Dichloroethane-d4	81.1	70-130		%Rec	1	7/31/2017 2:39:40 PM	33074
Surr: 4-Bromofluorobenzene	81.2	70-130		%Rec	1	7/31/2017 2:39:40 PM	33074
Surr: Dibromofluoromethane	84.7	70-130		%Rec	1	7/31/2017 2:39:40 PM	33074
Surr: Toluene-d8	93.4	70-130		%Rec	1	7/31/2017 2:39:40 PM	33074

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: Rule Engineering LLC
Client Sample ID: SC-4
Project: COP Jicarilla D 20
Collection Date: 7/27/2017 10:15:00 AM
Lab ID: 1707E32-003
Matrix: SOIL
Received Date: 7/28/2017 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/31/2017 3:09:46 PM	33074
Surr: BFB	86.7	70-130		%Rec	1	7/31/2017 3:09:46 PM	33074
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/31/2017 9:31:00 PM	33075
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/31/2017 9:31:00 PM	33075
Surr: DNOP	89.4	70-130		%Rec	1	7/31/2017 9:31:00 PM	33075
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.024		mg/Kg	1	7/31/2017 3:09:46 PM	33074
Toluene	ND	0.047		mg/Kg	1	7/31/2017 3:09:46 PM	33074
Ethylbenzene	ND	0.047		mg/Kg	1	7/31/2017 3:09:46 PM	33074
Xylenes, Total	ND	0.095		mg/Kg	1	7/31/2017 3:09:46 PM	33074
Surr: 1,2-Dichloroethane-d4	83.5	70-130		%Rec	1	7/31/2017 3:09:46 PM	33074
Surr: 4-Bromofluorobenzene	86.1	70-130		%Rec	1	7/31/2017 3:09:46 PM	33074
Surr: Dibromofluoromethane	85.0	70-130		%Rec	1	7/31/2017 3:09:46 PM	33074
Surr: Toluene-d8	90.7	70-130		%Rec	1	7/31/2017 3:09:46 PM	33074

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: Rule Engineering LLC
Client Sample ID: SC-6
Project: COP Jicarilla D 20
Collection Date: 7/27/2017 11:20:00 AM
Lab ID: 1707E32-004
Matrix: SOIL
Received Date: 7/28/2017 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/31/2017 3:39:45 PM	33074
Surr: BFB	86.2	70-130		%Rec	1	7/31/2017 3:39:45 PM	33074
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	7/31/2017 9:59:17 PM	33075
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/31/2017 9:59:17 PM	33075
Surr: DNOP	92.4	70-130		%Rec	1	7/31/2017 9:59:17 PM	33075
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.024		mg/Kg	1	7/31/2017 3:39:45 PM	33074
Toluene	ND	0.048		mg/Kg	1	7/31/2017 3:39:45 PM	33074
Ethylbenzene	ND	0.048		mg/Kg	1	7/31/2017 3:39:45 PM	33074
Xylenes, Total	ND	0.096		mg/Kg	1	7/31/2017 3:39:45 PM	33074
Surr: 1,2-Dichloroethane-d4	79.7	70-130		%Rec	1	7/31/2017 3:39:45 PM	33074
Surr: 4-Bromofluorobenzene	85.5	70-130		%Rec	1	7/31/2017 3:39:45 PM	33074
Surr: Dibromofluoromethane	81.0	70-130		%Rec	1	7/31/2017 3:39:45 PM	33074
Surr: Toluene-d8	93.1	70-130		%Rec	1	7/31/2017 3:39:45 PM	33074

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: Rule Engineering LLC
Client Sample ID: SC-7
Project: COP Jicarilla D 20
Collection Date: 7/27/2017 11:25:00 AM
Lab ID: 1707E32-005
Matrix: SOIL
Received Date: 7/28/2017 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/31/2017 4:09:36 PM	33074
Surr: BFB	87.6	70-130		%Rec	1	7/31/2017 4:09:36 PM	33074
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	7/31/2017 10:28:05 PM	33075
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/31/2017 10:28:05 PM	33075
Surr: DNOP	92.4	70-130		%Rec	1	7/31/2017 10:28:05 PM	33075
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.024		mg/Kg	1	7/31/2017 4:09:36 PM	33074
Toluene	ND	0.048		mg/Kg	1	7/31/2017 4:09:36 PM	33074
Ethylbenzene	ND	0.048		mg/Kg	1	7/31/2017 4:09:36 PM	33074
Xylenes, Total	ND	0.095		mg/Kg	1	7/31/2017 4:09:36 PM	33074
Surr: 1,2-Dichloroethane-d4	81.8	70-130		%Rec	1	7/31/2017 4:09:36 PM	33074
Surr: 4-Bromofluorobenzene	88.3	70-130		%Rec	1	7/31/2017 4:09:36 PM	33074
Surr: Dibromofluoromethane	81.3	70-130		%Rec	1	7/31/2017 4:09:36 PM	33074
Surr: Toluene-d8	92.6	70-130		%Rec	1	7/31/2017 4:09:36 PM	33074

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: Rule Engineering LLC
Client Sample ID: SC-8
Project: COP Jicarilla D 20
Collection Date: 7/27/2017 11:30:00 AM
Lab ID: 1707E32-006 **Matrix:** SOIL **Received Date:** 7/28/2017 8:50:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/31/2017 4:39:16 PM	33074
Surr: BFB	88.9	70-130		%Rec	1	7/31/2017 4:39:16 PM	33074
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/31/2017 10:56:42 PM	33075
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/31/2017 10:56:42 PM	33075
Surr: DNOP	97.1	70-130		%Rec	1	7/31/2017 10:56:42 PM	33075
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.023		mg/Kg	1	7/31/2017 4:39:16 PM	33074
Toluene	ND	0.047		mg/Kg	1	7/31/2017 4:39:16 PM	33074
Ethylbenzene	ND	0.047		mg/Kg	1	7/31/2017 4:39:16 PM	33074
Xylenes, Total	ND	0.094		mg/Kg	1	7/31/2017 4:39:16 PM	33074
Surr: 1,2-Dichloroethane-d4	80.9	70-130		%Rec	1	7/31/2017 4:39:16 PM	33074
Surr: 4-Bromofluorobenzene	88.8	70-130		%Rec	1	7/31/2017 4:39:16 PM	33074
Surr: Dibromofluoromethane	81.2	70-130		%Rec	1	7/31/2017 4:39:16 PM	33074
Surr: Toluene-d8	92.9	70-130		%Rec	1	7/31/2017 4:39:16 PM	33074

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#: **1707E32**

01-Aug-17

Client: Rule Engineering LLC

Project: COP Jicarilla D 20

Sample ID **LCS-33075**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **33075**	RunNo: **44604**
Prep Date: **7/28/2017**	Analysis Date: **7/31/2017**	SeqNo: **1410830** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	91.2	73.2	114			
Surr: DNOP	4.4		5.000		87.2	70	130			

Sample ID **MB-33075**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **33075**	RunNo: **44604**
Prep Date: **7/28/2017**	Analysis Date: **7/31/2017**	SeqNo: **1410831** 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	8.5		10.00		85.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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#: **1707E32**

01-Aug-17

Client: Rule Engineering LLC

Project: COP Jicarilla D 20

Sample ID **mb-33074**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **33074**	RunNo: **44623**
Prep Date: **7/28/2017**	Analysis Date: **7/31/2017**	SeqNo: **1410839** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.050								
Benzene	ND	0.025								
1,2-Dichloroethane (EDC)	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
1,2-Dibromoethane (EDB)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
Naphthalene	ND	0.10								
2-Methylnaphthalene	ND	0.20								
1-Methylnaphthalene	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.40		0.5000		79.4	70	130			
Surr: 4-Bromofluorobenzene	0.43		0.5000		85.3	70	130			
Surr: Dibromofluoromethane	0.41		0.5000		81.6	70	130			
Surr: Toluene-d8	0.46		0.5000		92.2	70	130			

Sample ID **lcs-33074**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS**	Batch ID: **33074**	RunNo: **44623**
Prep Date: **7/28/2017**	Analysis Date: **7/31/2017**	SeqNo: **1410840** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.97	0.050	1.000	0	96.7	70	130			
Benzene	1.0	0.025	1.000	0	105	70	130			
Toluene	1.1	0.050	1.000	0	111	70	130			
Ethylbenzene	1.0	0.050	1.000	0	101	70	130			
Xylenes, Total	2.9	0.10	3.000	0	96.1	70	130			
1,2,4-Trimethylbenzene	0.94	0.050	1.000	0	94.1	70	130			
1,3,5-Trimethylbenzene	0.99	0.050	1.000	0	98.7	70	130			
Naphthalene	1.0	0.10	1.000	0	99.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.41		0.5000		81.3	70	130			
Surr: 4-Bromofluorobenzene	0.43		0.5000		86.7	70	130			
Surr: Dibromofluoromethane	0.41		0.5000		82.8	70	130			
Surr: Toluene-d8	0.45		0.5000		90.5	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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#: **1707E32**

01-Aug-17

Client: Rule Engineering LLC

Project: COP Jicarilla D 20

Sample ID	mb-33074	SampType:	MBLK		TestCode:	EPA Method 8015D Mod: Gasoline Range				
Client ID:	PBS	Batch ID:	33074		RunNo:	44623				
Prep Date:	7/28/2017	Analysis Date:	7/31/2017		SeqNo:	1410804	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	430		500.0		86.9	70	130			

Sample ID	lcs-33074	SampType:	LCS		TestCode:	EPA Method 8015D Mod: Gasoline Range				
Client ID:	LCSS	Batch ID:	33074		RunNo:	44623				
Prep Date:	7/28/2017	Analysis Date:	7/31/2017		SeqNo:	1410805	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	30	5.0	25.00	0	120	70	130			
Surr: BFB	460		500.0		92.7	70	130			

Sample ID	1707e32-001ams	SampType:	MS		TestCode:	EPA Method 8015D Mod: Gasoline Range				
Client ID:	SC-2	Batch ID:	33074		RunNo:	44623				
Prep Date:	7/28/2017	Analysis Date:	7/31/2017		SeqNo:	1410809	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	4.6	23.02	3.620	104	63.2	128			
Surr: BFB	410		460.4		89.2	70	130			

Sample ID	1707e32-001amsd	SampType:	MSD		TestCode:	EPA Method 8015D Mod: Gasoline Range				
Client ID:	SC-2	Batch ID:	33074		RunNo:	44623				
Prep Date:	7/28/2017	Analysis Date:	7/31/2017		SeqNo:	1410810	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	30	4.8	24.18	3.620	108	63.2	128	7.04	20	
Surr: BFB	440		483.6		90.8	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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: **RULE ENGINEERING LL** Work Order Number: **1707E32** RcptNo: **1**

Received By: **Erin Melendrez** **7/28/2017 8:50:00 AM**

Completed By: **Ashley Gallegos** **7/28/2017 9:33:59 AM**

Reviewed By: 7/28/17 @ 1025

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.1	Good	Yes			

Chain-of-Custody Record

Client: Rule Engineering

Mailing Address: 501 Airport Dr. Ste 205
Farmington, NM 87401

Phone #: (505) 716-2787

email or Fax#: hwoods@ruleengineering.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☐ Standard ☒ Rush 3-Day

Project Name:
CoP Jicarilla D #20

Project #:

Project Manager:
Heather Woods

Sampler: Heather Woods

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.1

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. 1707E32	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
7/27/17	1005	Soil	SC-2	(1) 4oz Glass	Cold	-001	X		X													
7/27/17	1010	Soil	SC-3	(1) 4oz Glass	Cold	-002	X		X													
7/27/17	1015	Soil	SC-4	(1) 4oz Glass	Cold	-003	X		X													
7/27/17	1120	Soil	SC-6	(1) 4oz Glass	Cold	-004	X		X													
7/27/17	1125	Soil	SC-7	(1) 4oz Glass	Cold	-005	X		X													
7/27/17	1130	Soil	SC-8	(1) 4oz Glass	Cold	-006	X		X													

Date:	Time:	Relinquished by:	Received by:	Date	Time
7/27/17	1712	Heather M. Woods		7/27/17	1712
7/27/17	1838			7/28/17	0850

Remarks:
Direct Bill to ConocoPhillips

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.