

# R. T. HICKS CONSULTANTS, LTD.

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Midland, TX ▲ Durango, CO ▲ Carlsbad, NM ▲ Artesia, NM

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

November 29, 2016

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

RE: **Remediation Plan/Final Closure Report**  
ASAU 149 Trunk line Release Site, Lime Rock Resources  
T18S R26E Section 14 Unit Letter O, Eddy County NM  
**2RP-3940**

Dear Ms. Patterson & Mr. Bratcher,

On behalf of Lime Rock Resources, R.T. Hicks Consultants (Hicks Consultants) is pleased to present the following **Remediation Plan/Final Closure Report** for the ASAU 149 Trunk line release site.

## ***Incident History***

The release associated with the ASAU 149 Trunk line was discovered on September 30, 2016. The source of the release was from below-grade fiber glass production line. The below-grade line was immediately taken out of service. The release volume is unknown. The release is located on fee land owned by Chuck Morgan, located due west of Fanning Road (CR-44).

**Site Characteristics:** The Pecos River is located 1.5 miles due east of the ASAU 149 Trunk line release and the Penasco draw is located less than 1000-feet due north. The impacted area is located in pasture land bordered by lease roads and well locations. The OSE database reports the ground water to be an average depth of 56' below ground surface in the area of the release.

**Actions Taken:** On October 5, 2016 immediately following the discovery of the pipeline release and the placement of a one call, excavation of impacted material began. A hydro vacuum was brought to the site and the 8" low-pressure pipeline owned by DCP was delighted. The affected area is divided by this gas line which was measured to be 6-feet below ground surface (BGS). The impacted area is bordered on the north by a DCP high pressure gas line. A backhoe was utilized to excavate visible impacted material from the release to 10 feet BGS. Removed impacted material was transported to Lea Land LLC, an NMOCD-approved landfill for disposal.

On **10/6/2016** soil samples were collected from the bottom of the excavated area at 10-feet BGS and from a trench excavated below the bottom of the excavated area to 14-feet bgs. Soil samples were also collected from the sidewalls of the excavation which were labeled **S-3 East wall 6' bgs, S-4 North Wall, S-5 West Wall, and S-6 South Wall.**

The soil samples were delivered to Cardinal laboratories in Hobbs and were tested for BTEX EPA 8021B, GRO/DRO 8015M, and Chloride SM 4500. Table 1 below presents lab results for samples collected on October 6, 2016. The complete lab reports are included in Appendix A.

**Cardinal Lab analytical testing results dated 10/6/2016 reported the following results:**

Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	Ext. DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	Lat/ Long
S-1 10' deep	448	1740	6700		174	4.36	10/6/2016	32.74267- 104.34835
S-2 14' deep	592	<10.0	422		0.426	<0.050	10/6/2016	32.74267- 104.34835
S-3 East. wall	32.0	<10.0	<10.0		<0.300	<0.050	10/6/2016	32.74268- 104.34837
S-4 North wall	2640	<10.0	46.8		<0.300	<0.050	10/6/2016	32.74271- 104.34043
S-5 West wall	64.0	217	4310		9.61	<0.050	10/6/2016	32.74266- 104.34846
S-6 South wall	<16.0	<10.0	293		0.407	<0.050	10/6/2016	32.74266- 104.34843

Table 1

As shown in Table 1, the extent of impact for GRO/DRO, BTEX on the north and east side walls were captured within the excavation.

On October 24, 2016 after completing further excavation and removal of impacted materials, soil samples were collected for analysis.

**Cardinal Lab analytical testing results dated 10/24/2016 reported the following results:**

Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	Ext. DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	
S-7 North wall	3520						10/24/2016	32.74278- 104.34840
S-8 West wall		<10.0	26.7				10/24/2016	32.74268- 104.84840
S-9 South wall		<10.0	<10.0				10/24/2016	32.74265- 104.34843
S-10 Bottom -14' N. dcp PL	2440	<10.0	<10.0		<0.300	<0.050	10/24/2016	32.74269- 104.34838
S-11 Bottom 15' S. dcp P.L.	320	<10.0	57.3		<0.300	<0.050	10/24/2016	32.74264- 104.34841

Table 2

As shown in Table 2 the extent of impact on the west side wall and south side wall were captured within the excavation. Analysis reported the GRO/DRO to be 57 mg/kg to <10.0 mg/kg in soil samples collected from 14' to 15' (BGS).

On November 2, 2016 after completing additional excavation and removal of impacted material from the north side wall, soil samples were collected for analysis.

**Cardinal Lab analytical testing results dated 11/2/2016 reported the following results:**

Sampling location and depth	Chloride Mg/kg	GRO Mg/kg	DRO Mg/kg	Ext. DRO Mg/kg	BTEX Mg/kg	Benzene Mg/kg	Sampling date	
S-12 Bottom 15' S.dcp PL	320						11/2/2016	32.74280- 104.34838
S-13 East wall 11' bgs	432	<10.0	<10.0		<0.300	<0.050	11/2/2016	32.74267-- 104.34833
S-14 Bottom 14' N. dcp PL	992						11/2/2016	32.74271- 104.34836
S-15 Bottom 14' N. dcp P/L	1680						11/2/2016	32.74870- 104.34838
S-16 Bottom 15' N. dcp PL	800						11/2/2016	32.74270- 104.34845
S-17 North wall	48						11/2/2016	32.74274- 104.34841

Table 3

As shown in Table 3, the extent of impact on the east wall, north side walls and bottom were captured within the excavation.

### ***Hydrogeologic Data***

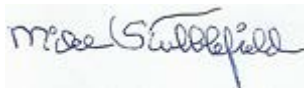
- A review of the New Mexico Office of State Engineer WATERS database found the nearest water well to be located in Sec. 14, Township 18S Range 26E. The depth to water was reported to be 1849' (bgs). OSE data base reported a water well located in sec. 14 T-18S-R26E with a total depth to 150' and depth to water at 23'. The average depth to water in the area of the release was reported to be 56'.
- There are no water sources or water wells located with-in one-thousand feet of the release area.
- There is no surface water located within one thousand feet of the release area.

### ***Remediation Actions and Recommendations***

- Impacted material in the release area was excavated to a depth of 14' to 15' (BGS) and then transported to Lea Land LLC.
- On October 6, October 24, and November 2, 2016 soil sample were collected from the excavated area of release and submitted to Cardinal Laboratories. (Tables 1, 2, 3, Appendix A)
- Analytical testing results report chloride in the bottom of the excavation on north side of the DCP pipeline at 14' (BGS) to be 800-1680 mg/kg. Chloride on the south side of the DCP pipeline at 15' (BGS) was 320 mg/kg.
- Analytical testing results received from Cardinal laboratories reported the combined GRO/DRO for total TPH in the excavated area to be 57.3 mg/kg or less. BTEX was reported <0.300 mg/kg (the method detection limit), benzene was reported to be <0.050 mg/kg.
- Lime Rock proposes to place a 20-MiL, string-reinforced liner on north side and south side of the DCP pipeline with all liners placed below the DCP pipeline.
- The excavated area will be backfilled using like material from the surrounding area and seeded with a blend of vegetation approved by the surface owner.

Upon approval for this Remediation plan/Final Closure Report by NMOCD and when the excavated area is backfilled to surface, Lime Rock Resources will submit a Final C-141 form requesting closure for this release that occurred on September 30, 2016 at the ASAU 149 Trunk line. Please contact me if further information is required.

Sincerely,  
R.T. Hicks Consultants, Ltd.



Mike Stubblefield  
R.T. Hicks Consultants  
575-365-5034bmit

Copy: Mike Barrett, Lime Rock Resources

## Appendix A



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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October 14, 2016

MIKE STUBBLEFIELD

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: ASAU 149 TRUNK LINE RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 10/07/16 15:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 R T HICKS CONSULTANTS  
 MIKE STUBBLEFIELD  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104  
 Fax To: NONE

Received:	10/07/2016	Sampling Date:	10/06/2016
Reported:	10/14/2016	Sampling Type:	Soil
Project Name:	ASAU 149 TRUNK LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	30.015.00204	Sample Received By:	Jodi Henson
Project Location:	UTO SEC. 14-T18S-R26E		

**Sample ID: S-1 BOTTOM 10' (H602267-01)**

BTEX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>4.36</b>	1.00	10/11/2016	ND	2.18	109	2.00	1.38	
<b>Toluene*</b>	<b>24.7</b>	1.00	10/11/2016	ND	2.27	114	2.00	1.12	
<b>Ethylbenzene*</b>	<b>38.5</b>	1.00	10/11/2016	ND	2.21	110	2.00	1.03	
<b>Total Xylenes*</b>	<b>107</b>	3.00	10/11/2016	ND	6.66	111	6.00	0.694	
<b>Total BTEX</b>	<b>174</b>	6.00	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 114 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>448</b>	16.0	10/12/2016	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>GRO C6-C10</b>	<b>1740</b>	50.0	10/10/2016	ND	188	94.1	200	3.55		
<b>DRO &gt;C10-C28</b>	<b>6700</b>	50.0	10/10/2016	ND	214	107	200	4.52		

Surrogate: 1-Chlorooctane 155 % 35-147

Surrogate: 1-Chlorooctadecane 177 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

 R T HICKS CONSULTANTS  
 MIKE STUBBLEFIELD  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104  
 Fax To: NONE

 Received: 10/07/2016  
 Reported: 10/14/2016  
 Project Name: ASAU 149 TRUNK LINE RELEASE  
 Project Number: 30.015.00204  
 Project Location: UTO SEC. 14-T18S-R26E

 Sampling Date: 10/06/2016  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: S-2 BOTTOM 14' (H602267-02)**

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38	
Toluene*	0.130	0.050	10/11/2016	ND	2.27	114	2.00	1.12	
Ethylbenzene*	0.067	0.050	10/11/2016	ND	2.21	110	2.00	1.03	
Total Xylenes*	0.229	0.150	10/11/2016	ND	6.66	111	6.00	0.694	
Total BTEx	0.426	0.300	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	592	16.0	10/12/2016	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	422	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 94.5 % 35-147

Surrogate: 1-Chlorooctadecane 107 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
MIKE STUBBLEFIELD  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: ASAU 149 TRUNK LINE RELEASE  
Project Number: 30.015.00204  
Project Location: UTO SEC. 14-T18S-R26E

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S-3 EAST WALL (H602267-03)**

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38	
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12	
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03	
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694	
Total BTX	<0.300	0.300	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	10/12/2016	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	<10.0	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 82.7 % 35-147

Surrogate: 1-Chlorooctadecane 90.9 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
MIKE STUBBLEFIELD  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: ASAU 149 TRUNK LINE RELEASE  
Project Number: 30.015.00204  
Project Location: UTO SEC. 14-T18S-R26E

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S-4 NORTH WALL (H602267-04)**

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38	
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12	
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03	
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694	
Total BTX	<0.300	0.300	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2640	16.0	10/12/2016	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/11/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	46.8	10.0	10/11/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 92.6 % 35-147

Surrogate: 1-Chlorooctadecane 96.2 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
MIKE STUBBLEFIELD  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: ASAU 149 TRUNK LINE RELEASE  
Project Number: 30.015.00204  
Project Location: UTO SEC. 14-T18S-R26E

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S-5 WEST WALL (H602267-05)**

BTX 8021B		mg/kg		Analyzed By: CK				S-04		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/12/2016	ND	2.15	107	2.00	2.56		
Toluene*	0.532	0.050	10/12/2016	ND	2.21	111	2.00	2.87		
Ethylbenzene*	1.95	0.050	10/12/2016	ND	2.15	108	2.00	2.86		
Total Xylenes*	7.12	0.150	10/12/2016	ND	6.47	108	6.00	3.14		
Total BTX	9.61	0.300	10/12/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 144 % 73.6-140

Chloride, SM4500CI-B			mg/kg					Analyzed By: AC			
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
<b>Chloride</b>	<b>64.0</b>	16.0	10/12/2016	ND	400	100	400	3.92			

TPH 8015M			mg/kg					Analyzed By: CK			
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
<b>GRO C6-C10</b>	<b>217</b>	50.0	10/11/2016	ND	188	94.1	200	3.55			
<b>DRO &gt;C10-C28</b>	<b>4310</b>	50.0	10/11/2016	ND	214	107	200	4.52			

Surrogate: 1-Chlorooctane 137 % 35-147

Surrogate: 1-Chlorooctadecane 139 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
MIKE STUBBLEFIELD  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: ASAU 149 TRUNK LINE RELEASE  
Project Number: 30.015.00204  
Project Location: UTO SEC. 14-T18S-R26E

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: S-6 SOUTH WALL (H602267-06)**

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/12/2016	ND	2.15	107	2.00	2.56	
Toluene*	0.110	0.050	10/12/2016	ND	2.21	111	2.00	2.87	
Ethylbenzene*	<0.050	0.050	10/12/2016	ND	2.15	108	2.00	2.86	
Total Xylenes*	0.297	0.150	10/12/2016	ND	6.47	108	6.00	3.14	
Total BTX	0.407	0.300	10/12/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.0 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	10/12/2016	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/11/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	293	10.0	10/11/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 77.7 % 35-147

Surrogate: 1-Chlorooctadecane 87.1 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside if QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



(575) 393-2326 FAX (575) 393-2476

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

Challenges



October 26, 2016

MIKE STUBBLEFIELD

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: ASAU 149 TRUNK LINE RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 10/25/16 14:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager



**Analytical Results For:**

 R T HICKS CONSULTANTS  
 MIKE STUBBLEFIELD  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104  
 Fax To: NONE

Received:	10/25/2016	Sampling Date:	10/24/2016
Reported:	10/26/2016	Sampling Type:	Soil
Project Name:	ASAU 149 TRUNK LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	30.015.00204	Sample Received By:	Jodi Henson
Project Location:	UTO SEC. 14-T18S-R26E		

**Sample ID: S-7 NORTH WALL (H602387-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>3520</b>	16.0	10/25/2016	ND	416	104	400	0.00	

**Sample ID: S-8 WEST WALL (H602387-02)**

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/26/2016	ND	197	98.3	200	3.72	
<b>DRO &gt;C10-C28</b>	<b>26.7</b>	10.0	10/26/2016	ND	213	107	200	5.60	

Surrogate: 1-Chlorooctane 97.4 % 35-147

Surrogate: 1-Chlorooctadecane 114 % 28-171

**Sample ID: S-9 SOUTH WALL (H602387-03)**

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/26/2016	ND	197	98.3	200	3.72	
DRO >C10-C28	<10.0	10.0	10/26/2016	ND	213	107	200	5.60	

Surrogate: 1-Chlorooctane 82.3 % 35-147

Surrogate: 1-Chlorooctadecane 98.5 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
MIKE STUBBLEFIELD  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received:	10/25/2016	Sampling Date:	10/24/2016
Reported:	10/26/2016	Sampling Type:	Soil
Project Name:	ASAU 149 TRUNK LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	30.015.00204	Sample Received By:	Jodi Henson
Project Location:	UTO SEC. 14-T18S-R26E		

**Sample ID: S-10 B-14' N. DEP PIPELINE (H602387-04)**

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/25/2016	ND	1.82	90.9	2.00	0.937	
Toluene*	<0.050	0.050	10/25/2016	ND	2.18	109	2.00	1.70	
Ethylbenzene*	0.050	0.050	10/25/2016	ND	2.26	113	2.00	1.31	
Total Xylenes*	<0.150	0.150	10/25/2016	ND	6.90	115	6.00	1.38	
Total BTX	<0.300	0.300	10/25/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	2440	16.0	10/25/2016	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/26/2016	ND	197	98.3	200	3.72	
DRO >C10-C28	<10.0	10.0	10/26/2016	ND	213	107	200	5.60	

Surrogate: 1-Chlorooctane 83.0 % 35-147

Surrogate: 1-Chlorooctadecane 100 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
MIKE STUBBLEFIELD  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received:	10/25/2016	Sampling Date:	10/24/2016
Reported:	10/26/2016	Sampling Type:	Soil
Project Name:	ASAU 149 TRUNK LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	30.015.00204	Sample Received By:	Jodi Henson
Project Location:	UTO SEC. 14-T18S-R26E		

**Sample ID: S-11 B-15' S. DEP PIPELINE (H602387-05)**

BTX 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/25/2016	ND	1.82	90.9	2.00	0.937		
Toluene*	<0.050	0.050	10/25/2016	ND	2.18	109	2.00	1.70		
Ethylbenzene*	<0.050	0.050	10/25/2016	ND	2.26	113	2.00	1.31		
Total Xylenes*	<0.150	0.150	10/25/2016	ND	6.90	115	6.00	1.38		
Total BTX	<0.300	0.300	10/25/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 104 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	320	16.0	10/25/2016	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/26/2016	ND	197	98.3	200	3.72	
DRO >C10-C28	57.3	10.0	10/26/2016	ND	213	107	200	5.60	

Surrogate: 1-Chlorooctane 106 % 35-147

Surrogate: 1-Chlorooctadecane 118 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories

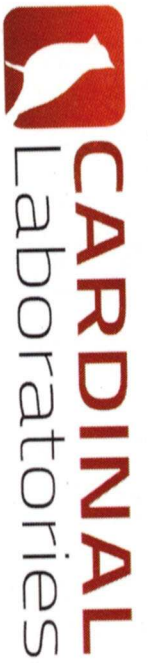
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---

Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

BILL TO

ANALYSIS REQUEST

Company Name: R.T. Hicks Construction		P.O. #:
Project Manager: Mike Stobbe Field		Company: Lime Rock Bk.
Address: 2411 S. 15th Street		Attn: Mike Barnett
City: Artesia State: NM, Zip: 88210		Address:
Phone #: 575-365-5034 Fax #:		City:
Project #: Project Owner: Lime Rock Bk.		State: Zip:
Project Name: ASRU 149 Trunk line release		Phone #:
Project Location: US-9 sec. 14 - T185-R26E		Fax #:
Sample Name: Mike Stobbe Field		

FOR LAB USE ONLY

FOR LAB USE ONLY	
Lab I.D.	Sample I.D.
H1002387	
1	5-7 North wall
2	5-8 West wall
3	5-9 South wall
4	5-10B 14' N. deep pipeline
5	5-11 B-15' S. deep pipeline
	(G)RAB OR (C)OMP.
	# CONTAINERS
	GROUNDWATER
	WASTEWATER
	SOIL
	OIL
	SLUDGE
	OTHER :
	ACID/BASE:
	ICE / COOL
	OTHER :
	DATE
	TIME
	Total Ch
	BTEX 80
	TPH 80

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Relinquished By:

Received By:

Relinquished By: Mike Stobbe Field  
Date: 10/23/16  
Time: 2:00 PM  
Received By: Jensen  
Date: 10/24/16  
Time: 3:00 PM

Phone Result: ☐ Yes ☐ No Add'l Phone #:   
Fax Result: ☐ Yes ☐ No Add'l Fax #:   
REMARKS: RUSH!!

Delivered By: (Circle One)   
Sampler - UPS - Bus - Other   
Sample Condition   
Cool ☒ Intact ☐   
Yes ☒ No ☐   
Checked By:   
3:00 PM

November 07, 2016

MIKE STUBBLEFIELD

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: ASAU 149 TRUNK LINE RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 11/04/16 16:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
MIKE STUBBLEFIELD  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received:	11/04/2016	Sampling Date:	11/02/2016
Reported:	11/07/2016	Sampling Type:	Soil
Project Name:	ASAU 149 TRUNK LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	30.015.00204	Sample Received By:	Jodi Henson
Project Location:	UTO SEC. 14-T18S-R26E		

**Sample ID: S-12 B-15.5' DCP P/L (H602501-01)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>320</b>	16.0	11/07/2016	ND	400	100	400	0.00	

**Sample ID: S-13 EAST WALL 11' BGS (H602501-02)**

BTEX 8021B			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/07/2016	ND	2.39	120	2.00	0.324	
Toluene*	<0.050	0.050	11/07/2016	ND	2.43	122	2.00	0.577	
Ethylbenzene*	<0.050	0.050	11/07/2016	ND	2.30	115	2.00	0.415	
Total Xylenes*	<0.150	0.150	11/07/2016	ND	6.90	115	6.00	0.505	
Total BTEX	<0.300	0.300	11/07/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 109 % 73.6-140

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>432</b>	16.0	11/07/2016	ND	400	100	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/05/2016	ND	194	97.1	200	0.233	
DRO >C10-C28	<10.0	10.0	11/05/2016	ND	195	97.5	200	0.433	

Surrogate: 1-Chlorooctane 99.7 % 35-147

Surrogate: 1-Chlorooctadecane 83.9 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

 R T HICKS CONSULTANTS  
 MIKE STUBBLEFIELD  
 901 RIO GRANDE BLVD SUITE F-142  
 ALBUQUERQUE NM, 87104  
 Fax To: NONE

 Received: 11/04/2016  
 Reported: 11/07/2016  
 Project Name: ASAU 149 TRUNK LINE RELEASE  
 Project Number: 30.015.00204  
 Project Location: UTO SEC. 14-T18S-R26E

 Sampling Date: 11/02/2016  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: S-14 B. 14' N DCP P/L (H602501-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	992	16.0	11/07/2016	ND	400	100	400	0.00	

**Sample ID: S-15 B. 14' N. DCP P/L (H602501-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1680	16.0	11/07/2016	ND	400	100	400	0.00	

**Sample ID: S-16 B 15' N. DCP P/L (H602501-05)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	800	16.0	11/07/2016	ND	400	100	400	0.00	

**Sample ID: S-17 NORTH WALL (H602501-06)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	11/07/2016	ND	400	100	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories

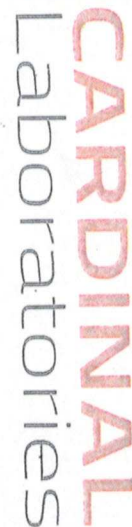
\*=Accredited Analyte

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---

Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

Page 5 of 5