

## **LINN ENERGY**

2130 W. Bender Blvd.  
Hobbs, NM 88241  
Phone 575.738.1739

# Max Friess & Fren Supply Line 2RP-2033

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## Corrective Action Plan

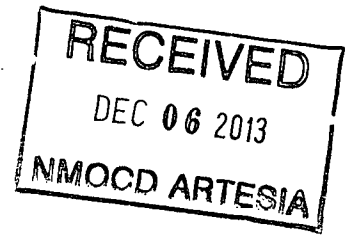
API No. 3001505284

Release Date: May 20<sup>th</sup>, 2013

Unit Letter L, Section 20, Township 17S, Range 31E

# Rice Environmental Consulting & Safety

P.O. Box 2948, Hobbs, NM 88241  
Phone 575.393.2967



**December 5<sup>th</sup>, 2013**

**Mike Bratcher**

New Mexico Energy, Minerals, & Natural Resources  
Oil Conservation Division, Environmental Bureau – District 2  
811 S. First St.  
Artesia, NM 88210

**RE: Corrective Action Plan**

**Linn Energy – Max Friess & Fren Supply Line (2RP-2033)  
UL/L sec. 20 T17S R31E  
API No. 3001505284**

Mr. Bratcher:

Linn Energy (Linn) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site.

## **Background and Previous Work**

The site is located approximately 4.8 miles east of Loco Hills, New Mexico at UL/L sec. 20 T17S R31E. This site is in an area of no known groundwater.

On May 20<sup>th</sup>, 2013, Linn discovered a break in a supply line, which released 20 barrels of produced water. None of this fluid was recovered. The release affected 3,621 square feet of pasture land and a remediated, abandoned well site. An initial C-141 was sent to BLM and NMOCD and NMOCD approved the initial C-141 on October 31<sup>st</sup>, 2013 (Appendix A).

RECS received this site after another company began remediation efforts. The previous company took surface samples from 5 points within the release. At SP-2, a soil bore was installed on August 9<sup>th</sup>, 2013 to a depth of 40 ft bgs (Figure 1). Representative samples from these sampling events were taken to a commercial laboratory for analysis (Appendix B). SP-1, SP-2 and SP-3 returned elevated chloride values with depth but returned Gasoline Range Organics (GRO), Diesel Range Organics (DRO) and BTEX readings of non-detect. SP-4 returned laboratory chloride levels, GRO, DRO and BTEX below regulatory standards at the surface and at 1 ft bgs. SB-5 returned an elevated chloride level at the surface that dropped to non-detect at 1 ft bgs. GRO, DRO and BTEX readings at the surface and at 1 ft bgs were non-detect.

## **Corrective Action Plan**

Based on the sampling conducted by the other environmental company, RECS recommends that the area around SP-1, SP-2 and SP-3 be excavated to 4 ft bgs (Figure 2). The excavated material will be disposed of at a NMOCD approved facility. At 4 ft

bgs, grab samples will be taken along the excavation walls and sent to a commercial laboratory to confirm that chloride readings are below 1,000 mg/kg. At 4 ft bgs, a 20-mil reinforced poly liner will be installed and properly seated into the base of the excavation. The excavation will then be backfilled with clean, imported soil and contoured to the surrounding location.

The area around SP-4 and SP-5 will be scraped down 6 inches. The scraped material will be sent to a NMOCD approved facility for disposal. Clean soil will be imported to the site to backfill the scrape and contour it to the surrounding location.

Once the excavation and scrape are completed, soil amendments will be added as needed and the site will be seeded with a blend of native vegetation. Vegetation provides an infiltration barrier for the site, since plants capture water through their roots thereby reducing the amount of water traveling through the vadose zone to groundwater.

Once the CAP activities are completed, ROC will submit a report detailing the CAP activities and a request for 'remediation termination' or site closure.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,



Lara Weinheimer  
Project Scientist  
RECS  
(575) 441-0431

cc. Mike Burton, BLM

Attachments:

- Figure 1 – Initial Sampling Data
- Figure 2 – Proposed Liner and Scrape
- Appendix A – Initial C-141
- Appendix B – Laboratory Analyses

# Figures

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948, Hobbs, NM 88241  
Phone 575.393.2967

# Initial Sampling Data

SP-1

Depth	Lab CI-	GRO	DRO	Total BTEX
Surface	17800	<10	<10	<0.3
8'	1150	<10	<10	<0.3

SP-2

Depth	Lab CI-	GRO	DRO	Total BTEX
Surface	240	<10	<10	<0.3
20'	1250	<10	<10	<0.3
40'	144	<10	<10	<0.3

SP-3

Depth	CI-	Lab CI-	GRO	DRO	Total BTEX
Surface		18400	<10	<10	<0.3
3'	1255				
4'	950				
5'	675				
6'	675				
7'	450				
8'	377				
9'	375				

SP-4

Depth	Lab CI-	GRO	DRO	Total BTEX
Surface	48	<10	<10	<0.3
1'	<16	<10	<10	<0.3

SP-5

Depth	Lab CI-	GRO	DRO	Total BTEX
Surface	24200	<10	<10	<0.3
1'	<16	<10	<10	<0.3

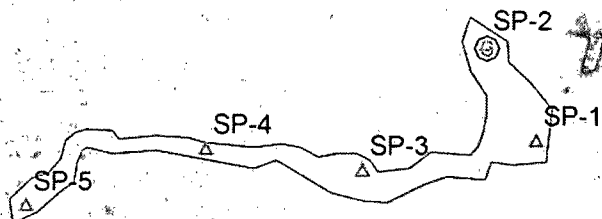
## Legend

△ SAMPLE POINTS

⊙ SOIL BORE

□ STAIN (3,621 sq ft)

— EDDY COUNTY ROADS



Landowner: BLM

DGW: None

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



## LINN MAX FRIESS & FREN SUPPLY LINE (2RP-2033)

LEGALS: UL/L sec. 20  
T-17-S R-31-E  
EDDY COUNTY, NM

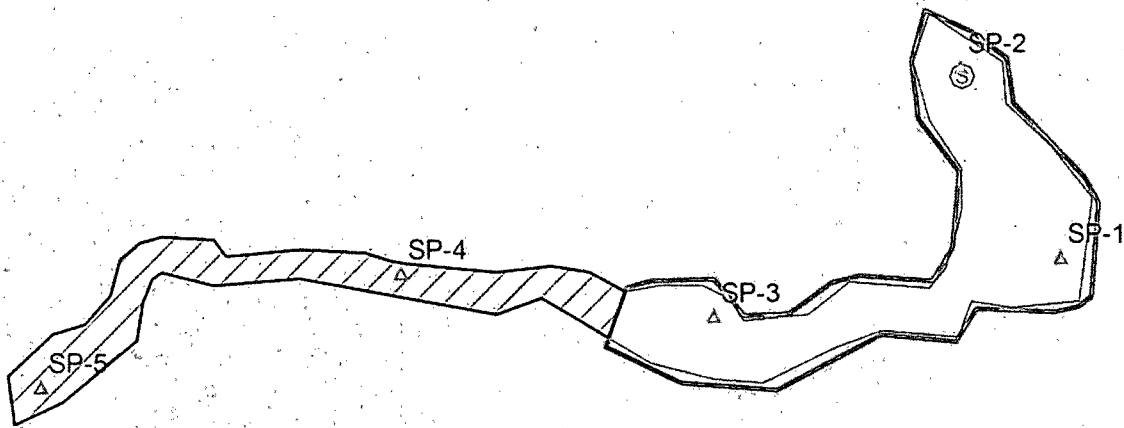
## Figure 1






0 50 100  
Feet

GPS date: 9/10/13  
Drawing date: 9/19/13  
Drafted by: L. Weinheimer

# Proposed Liner and Scrape



## Legend

- △ SAMPLE POINTS
- Ⓢ SOIL BORE
-  PROPOSED 20-MIL POLY LINER AT 4 FT BGS
-  SCRAPE DOWN 6 IN
-  STAIN (3,621 sq ft)

Landowner: BLM

DGW: None

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Imapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community




**LINN MAX FRIESS &  
FREN SUPPLY LINE  
(2RP-2033)**

LEGALS: UL/L sec. 20  
T-17-S R-31-E  
EDDY COUNTY, NM

**Figure 2**



0 25 50  
 Feet

GPS date: 9/10/13  
Drawing date: 9/19/13  
Drafted by: L. Weinheimer

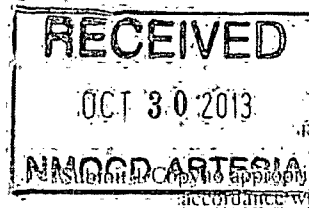
# Appendix A

Initial C-141

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., 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, 2010

### Release Notification and Corrective Action

**NJM/W133043 9030** **OPERATOR** ☒ Initial Report ☐ Final Report

Name of Company: Linn Energy <b>269324</b>	Contract: Brian Wall
Address: 2130 W. Bender Blvd., Hobbs, NM 88240	Telephone No.: (806) 367-0645
Facility Name: Max Fries and Fren Supply Line	Facility Type: Supply Line
Surface Owner: BLM	Mineral Owner: API No. 3001505284

### LOCATION OF RELEASE

**Turner B #12**

Unit/Section	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	20	17S	31E	1618	ESL	701	FWL	Eddy

Latitude: 32°49'2.178"N Longitude: 103°53'53.514"W

### NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 716 bbls	Volume Recovered: 0 bbls
Source of Release: Supply Line	Date and Hour of Occurrence: 5/20/13	Date and Hour of Discovery: 5/20/13
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse:	
If a Watercourse was Impacted, Describe Fully:		
Describe Cause of Problem and Remedial Action Taken: A break in the supply line lead to a release of 20 bbls of produced water, which covered 3,621 sq ft of pasture land. The site was sampled in 5 places throughout the release and representative samples were taken to a commercial laboratory for analysis. A soil bore was installed at the site on August 9 <sup>th</sup> , 2013. The soil bore showed elevated chloride levels at 20 ft bgs, which decreased to below 250 mg/kg at 40 ft bgs.		
Describe Area Affected and Cleanup Action Taken: A Corrective Action Plan will be developed to remediate the area based on initial sampling data.		
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.		

### OIL CONSERVATION DIVISION

Signature: <b>Fred B. Wall</b>	Approved by Environmental Specialist: <b>M. L. Deaton</b>	
Printed Name: Brian Wall	Approval Date: <b>OCT 31 2013</b>	Expiration Date:
Title: Construction Foreman	Conditions of Approval:	Attached <input type="checkbox"/>
Email Address: BWall@linnenergy.com	Remediation per OCD Rule & Guidelines & like approval by BLM: <b>SUBMIT REMEDIATION</b>	
Date:	Phone: (806) 367-0645	

Attach Additional Sheets If Necessary

PROPOSAL NO LATER THAN  
**November 30, 2013**

**2RP-2033**



# Appendix B

## Laboratory Analyses

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 2948 Hobbs, NM 88241  
Phone 575.393.2967

July 11, 2013

GARY WINK

LINN ENERGY

RR1, BOX 24 B

KINGFISHER, OK 73750

RE: MAX FRIESS & FREN SUPPLY LINE

Enclosed are the results of analyses for samples received by the laboratory on 06/27/13 13:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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:**

LINN ENERGY  
 GARY WINK  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	06/27/2013	Sampling Date:	06/26/2013
Reported:	07/11/2013	Sampling Type:	Soil
Project Name:	MAX FRIESS & FREN SUPPLY LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MALJAMAR, NM		

**Sample ID: SP 1 SURFACE (H301531-01)**

BTEX 8260B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/10/2013	ND	2.21	111	2.00	24.4	
Toluene*	<0.050	0.050	07/10/2013	ND	2.24	112	2.00	21.9	
Ethylbenzene*	<0.050	0.050	07/10/2013	ND	2.21	110	2.00	19.3	
Total Xylenes*	<0.150	0.150	07/10/2013	ND	6.71	112	6.00	17.4	

Surrogate: Dibromofluoromethane 96.5 % 61.3-142

Surrogate: Toluene-d8 105 % 71.3-129

Surrogate: 4-Bromofluorobenzene 101 % 65.7-141

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	06/29/2013	ND	190	94.8	200	4.58	
DRO >C10-C28	<10.0	10.0	06/29/2013	ND	191	95.3	200	5.34	

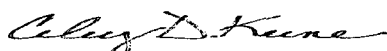
Surrogate: 1-Chlorooctane 82.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 88.0 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LINN ENERGY  
 GARY WINK  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	06/27/2013	Sampling Date:	06/26/2013
Reported:	07/11/2013	Sampling Type:	Soil
Project Name:	MAX FRIESS & FREN SUPPLY LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MALJAMAR, NM		

**Sample ID: SP 2 SURFACE (H301531-02)**

BTEx 8260B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/10/2013	ND	2.21	111	2.00	24.4	
Toluene*	<0.050	0.050	07/10/2013	ND	2.24	112	2.00	21.9	
Ethylbenzene*	<0.050	0.050	07/10/2013	ND	2.21	110	2.00	19.3	
Total Xylenes*	<0.150	0.150	07/10/2013	ND	6.71	112	6.00	17.4	

Surrogate: Dibromofluoromethane 92.4 % 61.3-142

Surrogate: Toluene-d8 107 % 71.3-129

Surrogate: 4-Bromofluorobenzene 104 % 65.7-141

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	06/29/2013	ND	190	94.8	200	4.58	
DRO >C10-C28	<10.0	10.0	06/29/2013	ND	191	95.3	200	5.34	

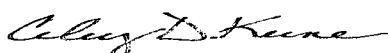
Surrogate: 1-Chlorooctane 81.2 % 65.2-140

Surrogate: 1-Chlorooctadecane 86.9 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LINN ENERGY  
 GARY WINK  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received: 06/27/2013  
 Reported: 07/11/2013  
 Project Name: MAX FRIESS & FREN SUPPLY LINE  
 Project Number: NONE GIVEN  
 Project Location: MALJAMAR, NM

Sampling Date: 06/26/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP 3 SURFACE (H301531-03)**

BTEx 8260B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/10/2013	ND	2.21	111	2.00	24.4	
Toluene*	<0.050	0.050	07/10/2013	ND	2.24	112	2.00	21.9	
Ethylbenzene*	<0.050	0.050	07/10/2013	ND	2.21	110	2.00	19.3	
Total Xylenes*	<0.150	0.150	07/10/2013	ND	6.71	112	6.00	17.4	

Surrogate: Dibromofluoromethane 92.0 % 61.3-142

Surrogate: Toluene-d8 104 % 71.3-129

Surrogate: 4-Bromofluorobenzene 101 % 65.7-141

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	06/29/2013	ND	190	94.8	200	4.58	
DRO >C10-C28	<10.0	10.0	06/29/2013	ND	191	95.3	200	5.34	

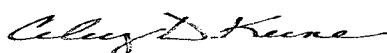
Surrogate: 1-Chlorooctane 86.7 % 65.2-140

Surrogate: 1-Chlorooctadecane 92.3 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LINN ENERGY  
GARY WINK  
RR1, BOX 24 B  
KINGFISHER OK, 73750  
Fax To: (405) 375-6693

Received: 06/27/2013  
Reported: 07/11/2013  
Project Name: MAX FRIESS & FREN SUPPLY LINE  
Project Number: NONE GIVEN  
Project Location: MALJAMAR, NM

Sampling Date: 06/26/2013  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 4 SURFACE (H301531-04)**

BTEX 8260B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/10/2013	ND	2.21	111	2.00	24.4	
Toluene*	<0.050	0.050	07/10/2013	ND	2.24	112	2.00	21.9	
Ethylbenzene*	<0.050	0.050	07/10/2013	ND	2.21	110	2.00	19.3	
Total Xylenes*	<0.150	0.150	07/10/2013	ND	6.71	112	6.00	17.4	

Surrogate: Dibromofluoromethane 95.3 % 61.3-142

Surrogate: Toluene-d8 104 % 71.3-129

Surrogate: 4-Bromofluorobenzene 105 % 65.7-141

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	06/29/2013	ND	190	94.8	200	4.58	
DRO >C10-C28	<10.0	10.0	06/29/2013	ND	191	95.3	200	5.34	

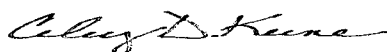
Surrogate: 1-Chlorooctane 88.4 % 65.2-140

Surrogate: 1-Chlorooctadecane 90.4 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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 GARY WINK  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

 Received: 06/27/2013  
 Reported: 07/11/2013  
 Project Name: MAX FRIESS & FREN SUPPLY LINE  
 Project Number: NONE GIVEN  
 Project Location: MALJAMAR, NM

 Sampling Date: 06/26/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP 5 SURFACE (H301531-05)**
**BTEX 8260B**
**mg/kg**
**Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/10/2013	ND	2.21	111	2.00	24.4	
Toluene*	<0.050	0.050	07/10/2013	ND	2.24	112	2.00	21.9	
Ethylbenzene*	<0.050	0.050	07/10/2013	ND	2.21	110	2.00	19.3	
Total Xylenes*	<0.150	0.150	07/10/2013	ND	6.71	112	6.00	17.4	

*Surrogate: Dibromofluoromethane* 93.5 % 61.3-142

*Surrogate: Toluene-d8* 105 % 71.3-129

*Surrogate: 4-Bromofluorobenzene* 102 % 65.7-141

**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	07/01/2013	ND	179	89.6	200	13.3	
DRO >C10-C28	<10.0	10.0	07/01/2013	ND	179	89.3	200	17.3	

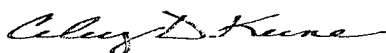
*Surrogate: 1-Chlorooctane* 87.2 % 65.2-140

*Surrogate: 1-Chlorooctadecane* 92.1 % 63.6-154

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**

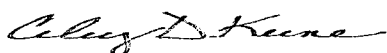
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received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





July 02, 2013

GARY WINK

LINN ENERGY

RR1, BOX 24 B

KINGFISHER, OK 73750

RE: MAX FRIESS & FREN SUPPLY LINE

Enclosed are the results of analyses for samples received by the laboratory on 06/27/13 13:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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).

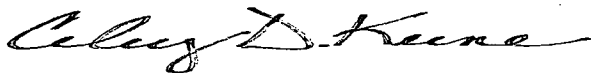
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

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:**

LINN ENERGY  
 GARY WINK  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	06/27/2013	Sampling Date:	06/10/2013
Reported:	07/02/2013	Sampling Type:	Soil
Project Name:	MAX FRIESS & FREN SUPPLY LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MALJAMAR, NM		

**Sample ID: SP 1 @ SURFACE (H301532-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	17800	16.0	07/02/2013	ND	432	108	400	0.00		

**Sample ID: SP 2 @ SURFACE (H301532-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	07/02/2013	ND	432	108	400	0.00	

**Sample ID: SP 3 @ SURFACE (H301532-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18400	16.0	07/02/2013	ND	432	108	400	0.00	

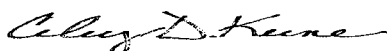
**Sample ID: SP 4 @ SURFACE (H301532-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	07/02/2013	ND	432	108	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LINN ENERGY  
GARY WINK  
RR1, BOX 24 B  
KINGFISHER OK, 73750  
Fax To: (405) 375-6693

Received:	06/27/2013	Sampling Date:	06/10/2013
Reported:	07/02/2013	Sampling Type:	Soil
Project Name:	MAX FRIESS & FREN SUPPLY LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MALJAMAR, NM		

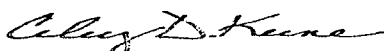
**Sample ID: SP 5 @ SURFACE (H301532-05)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	24200	16.0	07/02/2013	ND	432	108	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

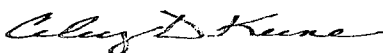
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived 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**

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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Celey D. Keene, Lab Director/Quality Manager



July 05, 2013

GARY WINK

LINN ENERGY

RR1, BOX 24 B

KINGFISHER, OK 73750

RE: MAX FRIESS & FREN SUPPLY LINE

Enclosed are the results of analyses for samples received by the laboratory on 06/28/13 13:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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).

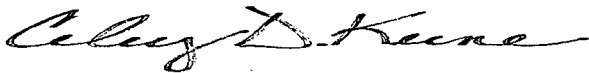
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

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:**

LINN ENERGY  
 GARY WINK  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	06/28/2013	Sampling Date:	06/17/2013
Reported:	07/05/2013	Sampling Type:	Soil
Project Name:	MAX FRIESS & FREN SUPPLY LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MALJAMAR, NM		

**Sample ID: SP 1 @ 8' (H301539-01)**

BTX 8021B		mg/kg		Analyzed By: AP				I-02	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/03/2013	ND	2.14	107	2.00	2.42	
Toluene*	<0.050	0.050	07/03/2013	ND	2.26	113	2.00	2.24	
Ethylbenzene*	<0.050	0.050	07/03/2013	ND	2.45	123	2.00	2.84	
Total Xylenes*	<0.150	0.150	07/03/2013	ND	7.44	124	6.00	2.43	
Total BTX	<0.300	0.300	07/03/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 117 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1150	16.0	07/02/2013	ND	432	108	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	07/01/2013	ND	179	89.6	200	13.3	
DRO >C10-C28	<10.0	10.0	07/01/2013	ND	179	89.3	200	17.3	

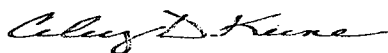
Surrogate: 1-Chlorooctane 91.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 93.1 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

LINN ENERGY  
 GARY WINK  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	06/28/2013	Sampling Date:	06/17/2013
Reported:	07/05/2013	Sampling Type:	Soil
Project Name:	MAX FRIESS & FREN SUPPLY LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MALJAMAR, NM		

**Sample ID: SP 4 @ 1' (H301539-02)**

BTEX 8021B			mg/kg		Analyzed By: AP				I-02	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/03/2013	ND	2.14	107	2.00	2.42		
Toluene*	<0.050	0.050	07/03/2013	ND	2.26	113	2.00	2.24		
Ethylbenzene*	<0.050	0.050	07/03/2013	ND	2.45	123	2.00	2.84		
Total Xylenes*	<0.150	0.150	07/03/2013	ND	7.44	124	6.00	2.43		
Total BTEX	<0.300	0.300	07/03/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 118 % 89.4-126

Chloride, SM4500Cl-B			mg/kg					Analyzed By: DW	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/02/2013	ND	432	108	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	07/01/2013	ND	179	89.6	200	13.3	
DRO >C10-C28	<10.0	10.0	07/01/2013	ND	179	89.3	200	17.3	

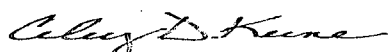
Surrogate: 1-Chlorooctane 91.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 91.7 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LINN ENERGY  
 GARY WINK  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	06/28/2013	Sampling Date:	06/17/2013
Reported:	07/05/2013	Sampling Type:	Soil
Project Name:	MAX FRIESS & FREN SUPPLY LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MALJAMAR, NM		

**Sample ID: SP 5 @ 1' (H301539-03)**

BTEX 8021B		mg/kg		Analyzed By: AP				I-02	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/03/2013	ND	2.14	107	2.00	2.42	
Toluene*	<0.050	0.050	07/03/2013	ND	2.26	113	2.00	2.24	
Ethylbenzene*	<0.050	0.050	07/03/2013	ND	2.45	123	2.00	2.84	
Total Xylenes*	<0.150	0.150	07/03/2013	ND	7.44	124	6.00	2.43	
Total BTEX	<0.300	0.300	07/03/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 118 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/02/2013	ND	432	108	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	07/01/2013	ND	179	89.6	200	13.3	
DRO >C10-C28	<10.0	10.0	07/01/2013	ND	179	89.3	200	17.3	

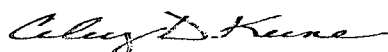
Surrogate: 1-Chlorooctane 92.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 93.4 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

I-02            This result was analyzed outside of the EPA recommended holding time.

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

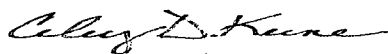
             Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

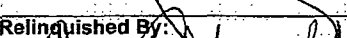



## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

[illegible]

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 the client for the 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 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 services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:		Date:	Received By:	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Phone #:
		Time:		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Fax #:
Relinquished By:		Date:	Received By:	REMARKS:	
		6-28-13	Jodi Henson	Email:	
Delivered By: (Circle One)		Time:		gawink@linnenergy.com	
Sampler - UPS - Bus - Other:		1315		aruth@diversifiedpsi.com	
		2.8°C	Sample Condition		
			Cool Intact	CHECKED BY:	
			<input type="checkbox"/> Yes <input type="checkbox"/> No	(Initials)	
			<input type="checkbox"/> Yes <input type="checkbox"/> No		

August 19, 2013

BRIAN WALL

LINN ENERGY

RR1, BOX 24 B

KINGFISHER, OK 73750

RE: MAX FRIESS & FREN SUPPLY LINE

Enclosed are the results of analyses for samples received by the laboratory on 08/09/13 16:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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).

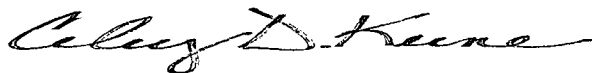
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

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:**

LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received: 08/09/2013  
 Reported: 08/19/2013  
 Project Name: MAX FRIESS & FREN SUPPLY LINE  
 Project Number: NONE GIVEN  
 Project Location: MALJAMAR, NM

Sampling Date: 08/09/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP 2 20' (H301894-01)**

BTEX 8260B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/19/2013	ND	2.15	108	2.00	3.67	
Toluene*	<0.050	0.050	08/19/2013	ND	2.16	108	2.00	4.83	
Ethylbenzene*	<0.050	0.050	08/19/2013	ND	2.10	105	2.00	4.57	
Total Xylenes*	<0.150	0.150	08/19/2013	ND	6.24	104	6.00	4.81	
Total BTEX	<0.300	0.300	08/19/2013	ND					

Surrogate: Dibromofluoromethane 97.7 % 61.3-142

Surrogate: Toluene-d8 101 % 71.3-129

Surrogate: 4-Bromofluorobenzene 103 % 65.7-141

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1250	16.0	08/13/2013	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/13/2013	ND	176	88.0	200	3.63	
DRO >C10-C28	<10.0	10.0	08/13/2013	ND	186	93.0	200	2.90	

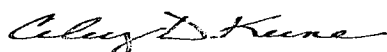
Surrogate: 1-Chlorooctane 100 % 65.2-140

Surrogate: 1-Chlorooctadecane 109 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	08/09/2013	Sampling Date:	08/09/2013
Reported:	08/19/2013	Sampling Type:	Soil
Project Name:	MAX FRIESS & FREN SUPPLY LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MALJAMAR, NM		

**Sample ID: SP 2 40' (H301894-02)**

BTEX 8260B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/19/2013	ND	2.15	108	2.00	3.67	
Toluene*	<0.050	0.050	08/19/2013	ND	2.16	108	2.00	4.83	
Ethylbenzene*	<0.050	0.050	08/19/2013	ND	2.10	105	2.00	4.57	
Total Xylenes*	<0.150	0.150	08/19/2013	ND	6.24	104	6.00	4.81	
Total BTEX	<0.300	0.300	08/19/2013	ND					

Surrogate: Dibromofluoromethane 95.1 % 61.3-142

Surrogate: Toluene-d8 101 % 71.3-129

Surrogate: 4-Bromofluorobenzene 102 % 65.7-141

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	08/13/2013	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/13/2013	ND	183	91.5	200	5.98	
DRO >C10-C28	<10.0	10.0	08/13/2013	ND	191	95.7	200	6.03	

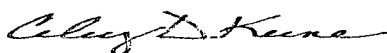
Surrogate: 1-Chlorooctane 90.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 100 % 63.6-154

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\*=Accredited Analyte

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**Notes and Definitions**

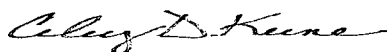
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received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

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Relinquished By: <i>Lucy Cargile</i>		Date: <i>8/9/12</i>	Received By: <i>[Signature]</i>	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Phone #: _____
Time: <i>1530</i>				Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Fax #: _____
Relinquished By: <i>[Signature]</i>		Date: <i>8/9/12</i>	Received By: <i>[Signature]</i>	REMARKS: <i>bwall@linnerenergy.com</i>	
Time: <i>1655</i>				<i>aruth@diversifiedpsl.com</i>	
Delivered By: (Circle One)		Sample Condition		CHECKED BY (Initials)	
Sampler <u>UPS</u> - Bus - Other:		Cool <input checked="" type="checkbox"/> Intact <input type="checkbox"/>		<i>[Initials]</i>	
		Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>			

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