

### **General Information**

This section provides general information about the operator and the site where the spill occurred.

**Date:** October 31, 2014

**Client:** LINN Energy

**Site Name:** 7 Rivers Queen Unit 60

**County:** Lea

**State:** NM

**Site Coordinates** Latitude: 32.3482077157592  
Longitude: -103.257434938142

**Property Owner:** Private

**State Report No.:** 1RP-3213

### **Release Description and Assessment**

The information below is related to the spill (Date, Type, Cause and Quantity) and the area impacted.

**Date of Spill:** 8/4/14

**Type of Spill:** ☒ Oil ☒ Produced Water ☐ Condensate ☐ Other (Specify):

**Cause of Spill:** ☐ Equipment Failure ☐ Valve Failure ☒ Line Rupture ☐ Leaking Tank ☐ Tank Overfill  
☐ Other (List):

#### **Other Contributing Factors or Comments:**

**Quantity Spilled:** 15/1 bbls. **Quantity Recovered:** 0/0 bbls. **Total Released:** 15/1 bbls.

**Method of Recovery:** ☐ Vacuum Truck ☐ Other (Specify):

**OCD Notified:** ☒ Yes ☐ No **C-141 Completed and Submitted:** ☒ Yes ☐ No

**Spill Area Impacted:** ☐ Inside Firewall ☐ On Production Pad ☒ In Pasture ☐ In Cultivated Land  
☐ Other (List):

**Total Square Footage Impacted:** 8800 **Estimated Depth:** 1-6' **Volume (Cu. Yds):** 2000

**Other Comments:**

### **Remediation Activity Summary**

**The following summarizes the activities used to remediate the spill.**

Impacted soils above regulatory threshold levels were manually and mechanically excavated from the spill area.

The affected area was excavated and hauled to Lealand for disposal. The bottom of the excavation still has elevated levels of chlorides ranging from 1800 to 5040 mg/kg. The presence of lines restricted further excavation due to safety concerns. Two (2) soils borings via hand auger were advanced within the bottom of the excavation to attempt to delineate the vertical extent of the impact. SP2 400 mg/kg at 12', SP3 272 mg/kg at 18'. An OCD approved calcium amendment was installed to the bottom of the excavation (gypsum) then backfilled with clean compacted material to within 1.5 – 2 feet of surface then the backfill was completed with compatible soil which is conducive to growing vegetation. Then the site was seeded with an approved BLM mix.

### **Analytical Summary**

Results of analyses following remediation activities are as follows:

<b>Summary of Remediation Sampling Analytical Results</b>						
<b>Total Petroleum Hydrocarbons - [TPH (mg/kg)] &amp; Chlorides [Chl (mg/kg)]</b>						
<b>Sample #</b>	<b>Depth (ft)</b>	<b>Date</b>	<b>TPH C6-C10</b>	<b>TPH C10-C28</b>	<b>Total TPH</b>	<b>Chl</b>
SP2	12	9/8/14	NA	NA	NA	400
SP3	18	9/8/14	NA	NA	NA	272

\* ND = Non-Detect; concentration below                      mg/kg.

A review of the analytical data indicated the sample is within the Oil Conservation Division (OCD) regulatory threshold limits. Based upon this information it has been determined that remediation of the site is complete. Copies of analytical reports, seed tickets, photographs, BLM closure and final C-141 are attached.

Prepared by:



Kit Prichard  
Etech Environmental & Safety Solutions, Inc.



Spill area before excavation.



Spill area before excavation.





Spill area before excavation.



Spill area during excavation.



Site being seeded.



Site being seeded.





Electronic Correspondence

September 10, 2014

Dr. Tomas Oberding  
State of New Mexico  
Oil Conservation Division  
1625 N. French Drive  
Hobbs, NM 88240  
[tomas.oberding@state.nm.us](mailto:tomas.oberding@state.nm.us)

Re: Corrective Action Plan  
LINN Energy, Seven Rivers Queen Unit 60  
API No.: 30-025-28122  
Legal: Unit L- Sec 35 – T22S – R36E, Lea Co., NM  
GPS: 32.3482077157592, -103.257434938142

Dear Tomas:

Etech Environmental & Safety Solutions, Inc. (Etech) is pleased to submit the following corrective action plan on the aforementioned site for your review and approval.

### **Scope of Work**

The scope of this project is for the remediation of a produced water/hydrocarbon impact. Completion of remediation will involve the following actions:

1. Placement of a one-call for utility location.
2. Excavation of impacted soils as far as practicable or until the chloride levels are less than 1,000 mg/kg and/or hydrocarbon levels of less than 5,000 mg/kg are reached. Please note: The delineation data was collected from the lowest point in the impacted area where it was evident liquids had pooled. The assessment map includes the delineation data and the sampling points (SP's) that will be used to determine that the excavation has reached remediation objectives.
3. During the course of excavation soil samples will be screened on site to determine the progress of the remediation. Screening is achieved using a YSI chloride meter with a tolerance of +/- 6% which is the same tolerance as laboratory titration methods.
4. Once the screening determines the remediation objectives have been reached, confirmation samples will be collected from the bottom of the excavation to confirm that remediation goals have been reached. If the excavation depth is greater than 2 feet vertical, side wall samples will be collected as well.
5. If the results of analysis determine that the chloride levels are above regulatory threshold levels, additional excavation will be performed until the remediation objectives are met. It should be noted that due to the depth of the impact from the delineation, there may be circumstance that arise where additional excavation is not practical. This includes reaching the limits of excavation with chlorides that are close to objective levels, safety

issues such as the close proximity of equipment, or other site specific issues. In this event, it will be likely to install a liner or a layer of gypsum at the bottom of the excavation before backfilling.

6. Backfilling of the excavated area(s) will be achieved by placing clean fill similar to the existing material from the site to within 2 foot of the surface. The last two feet will be backfilled with top soil of similar configuration to the surrounding area and contoured to match the existing grade.
7. Where pad areas or interior areas of tank batteries are excavated, they will be backfilled to within 6 inches of surface then backfilled to grade with compacted caliche. Any firewalls or containment berms removed during remediation will be reinstalled.
8. The site will be seeded with a 50/50 mixture of BLM #2 and #4 seed. Seeding will take place when the seasonal conditions are conducive to maximizing the potential for seed germination. Actual seeding will be accomplished by broadcast or drilling; whichever is the most practical for the site.

### **Notifications and Special Conditions**

1. The OCD and BLM will be notified prior to the commencement of on-site operations.
2. The OCD and BLM will be notified prior to each sampling event to allow the opportunity to witness the sampling events. Splits will be made available if requested.
3. The OCD and BLM (if applicable) will be notified when the site is closed for final inspection prior to seeding.
4. A final report documenting the closure of the site will be submitted along with a final C-141.

Thank you for your assistance on this matter. Should you have any questions, require additional information, or have any additional stipulations for this site, please contact Mr. Brian Wall at (575) 738-1739 (Office) or via email at [bwall@linenergy.com](mailto:bwall@linenergy.com) or myself at (432) 563-2200 (office) or via email at [kit@etechenv.com](mailto:kit@etechenv.com).

Respectfully:



Kit Prichard  
Environmental Professional

cc: Jeffery Robertson, BLM Carlsbad District Office



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

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September 09, 2014

KIT PRICHARD

ETECH Environmental & Safety Solutions, Inc.

P. O. BOX 8469

MIDLAND, TX 79708

RE: SRQU #60

Enclosed are the results of analyses for samples received by the laboratory on 09/08/14 16:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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 style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



**Analytical Results For:**

ETECH Environmental & Safety Solutions, Inc.  
 KIT PRICHARD  
 P. O. BOX 8469  
 MIDLAND TX, 79708  
 Fax To: (432) 563-2213

Received: 09/08/2014  
 Reported: 09/09/2014  
 Project Name: SRQU #60  
 Project Number: 253-5377-000  
 Project Location: LEA COUNTY, NM

Sampling Date: 09/08/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP 1 4' (H402785-01)**

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	09/09/2014	ND	1.89	94.7	2.00	8.34	
Toluene*	<0.050	0.050	09/09/2014	ND	1.70	85.0	2.00	8.25	
Ethylbenzene*	<0.050	0.050	09/09/2014	ND	1.57	78.4	2.00	8.62	
Total Xylenes*	<0.150	0.150	09/09/2014	ND	4.86	81.0	6.00	7.43	
Total BTEX	<0.300	0.300	09/09/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	09/09/2014	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	09/09/2014	ND	168	84.0	200	4.11	
DRO >C10-C28	35.1	10.0	09/09/2014	ND	186	92.9	200	2.47	

Surrogate: 1-Chlorooctane 86.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 97.0 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

ETECH Environmental & Safety Solutions, Inc.  
KIT PRICHARD  
P. O. BOX 8469  
MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 09/08/2014  
Reported: 09/09/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 09/08/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 2 12' (H402785-02)**

BTX 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	09/09/2014	ND	1.89	94.7	2.00	8.34	
Toluene*	<0.050	0.050	09/09/2014	ND	1.70	85.0	2.00	8.25	
Ethylbenzene*	<0.050	0.050	09/09/2014	ND	1.57	78.4	2.00	8.62	
Total Xylenes*	<0.150	0.150	09/09/2014	ND	4.86	81.0	6.00	7.43	
Total BTX	<0.300	0.300	09/09/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	400	16.0	09/09/2014	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	<50.0	50.0	09/09/2014	ND	168	84.0	200	4.11	
DRO >C10-C28	258	50.0	09/09/2014	ND	186	92.9	200	2.47	

Surrogate: 1-Chlorooctane 101 % 65.2-140

Surrogate: 1-Chlorooctadecane 111 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

ETECH Environmental & Safety Solutions, Inc.  
KIT PRICHARD  
P. O. BOX 8469  
MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 09/08/2014  
Reported: 09/09/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 09/08/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 3 18' (H402785-03)**

BTX 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	09/09/2014	ND	1.89	94.7	2.00	8.34		
Toluene*	<0.050	0.050	09/09/2014	ND	1.70	85.0	2.00	8.25		
Ethylbenzene*	<0.050	0.050	09/09/2014	ND	1.57	78.4	2.00	8.62		
Total Xylenes*	<0.150	0.150	09/09/2014	ND	4.86	81.0	6.00	7.43		
Total BTX	<0.300	0.300	09/09/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 104 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	09/09/2014	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	09/09/2014	ND	168	84.0	200	4.11	
DRO >C10-C28	10.0	10.0	09/09/2014	ND	186	92.9	200	2.47	

Surrogate: 1-Chlorooctane 93.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 101 % 63.6-154

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





Page 6 of 6

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

BILL TO

P.O. #: 223-5511-0

Company

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City:

State:

Phone #:  
Fax #:

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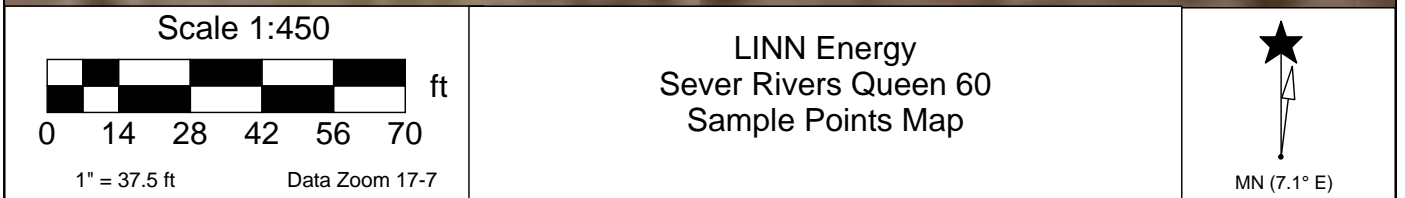
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District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

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 October 10, 2003

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

## Release Notification and Corrective Action

### OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Linn Operating	Contact: Brian Wall	
Address: 2130 W. Bender Hobbs, NM 88240	Telephone No.: 575-738-1739	
Facility Name: Seven Rivers Queen Unit # 60	Facility Type: Oil Producer	
Surface Owner: Private	Mineral Owner:	API No.: 30-025-28122

### LOCATION OF RELEASE

Unit Letter L	Section 34	Township 22S	Range 36E	Feet from the 2605	North/South Line South	Feet from the 1280	East/West Line West	County Lea
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**Latitude:** 32.3482077157592 **Longitude:** -103.257434938142

### NATURE OF RELEASE

Type of Release: Produced Water / Oil	Volume of Release: 15 bbls /1 bbl	Volume Recovered: 0 / 0
Source of Release: 2 7/8 Steel pipeline	Date and Hour of Occurrence: 08/04/2014	Date and Hour of Discovery: 08/04/2014 2:45pm
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Jeff Robertson-BLM / Tomas Oberding- NM OCD	
By Whom? Brian Wall	Date and Hour 08/06/2014 0700	
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.\*: Old 2 7/8 steel flow line has a pinn hole could not see leak from well. Leak is in sanddunes. Airplane passing by spotted leak.

Describe Area Affected and Cleanup Action Taken.\* :

Directions to site: Go south on 207 for one mile turn left onto delaware basin road go six miles then turn left onto pipeline rightway for 3 and a half miles then turn right the go a 1/4 of a mile to well 60 then go north 600 ft.

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: 	<b><u>OIL CONSERVATION DIVISION</u></b>		
Printed Name: Brian Wall	Approved by District Supervisor:		
Title: Construction Foreman II	Approval Date:	Expiration Date:	
E-mail Address: bwall@linenergy.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 08/06/2014	Phone: 806-367-0645		

\* Attach Additional Sheets If Necessary



Electronic Correspondence

October 21, 2014

Dr. Tomas Oberding  
State of New Mexico  
Oil Conservation Division  
1625 N. French Drive  
Hobbs, NM 88240  
[tomas.oberding@state.nm.us](mailto:tomas.oberding@state.nm.us)

Re: Corrective Action Plan Amendment  
LINN Energy, 7 Rivers Queen Unit 60  
Legal: Unit L, Section 35 T22S R36E, 2605 FSL & 1280 FWL, Lea County, NM  
API #: 30-025-28122  
Lat-Long: 32.3482077157592, -103.257434938142  
Event No. (OCD): 1RP-3213

Dear Tomas:

Etech Environmental & Safety Solutions, Inc. (Etech) submits the following amended corrective action plan on the aforementioned site for your review and approval.

**Current Project Status**

1. The status of the remediation of the site to date is as follows:
2. The impacted area is approximately 110' long 90' wide 6' deep.
3. There are lines within the confines of the excavation that are suspended approx. 6' while the excavation is open.
4. All side walls of the excavation below the regulatory threshold levels of 1,000 mg/kg chlorides, 5000 mg/kg TPH.
5. The bottom of the excavation still has elevated levels of chlorides ranging from 1800 to 5040 mg/kg. A map showing the sample locations and analytical results along with a copy of the analysis is attached.
6. The presence of the lines has restricted further excavation due to safety concerns. Two (2) soils borings via hand auger were advanced within the bottom of the excavation to attempt to delineate the vertical extent of the impact. SP2 400 mg/kg at 12', SP3 272



mg/kg at 18' The results of the laboratory analysis of samples collected from the bottom of the soil borings are attached.

A photograph of the site is provided below:



### **Proposed Corrective Action**

LINN is proposing an amendment to the corrective action to this site. The factors used to determine this corrective action include first the safety of all persons related to performing additional excavation within the site. In addition, based upon available data, groundwater in the area is believed to be in excess of 125 feet. The corrective actions evaluated for the site (based upon the above) are presented as follows:

1. Backfill with clean compacted fill material.
2. Apply a calcium amendment to the bottom of the excavation (gypsum) then backfill with clean compacted fill material to within 1.5 – 2 feet of surface then complete the backfill with compatible soil which is conducive to growing vegetation.

3. Installation of a 20 mil polyethylene liner in the bottom of the excavation, then backfill with clean compacted fill material to within 1.5 – 2 feet of surface then complete the backfill with compatible soil which is conducive to growing vegetation

After review of the above options, LINN believes, the best approach is Option 2, utilizing the application of a calcium amendment to the bottom of the excavation (gypsum) then backfill with clean compacted fill material to within 1.5 – 2 feet of surface then complete the backfill with compatible soil which is conducive to growing vegetation. Using gypsum will effectively ensure that any residual chlorides in the bottom of the excavation will not migrate further vertically and not cause any adverse impact to the reclamation of the site.

Thank you for your assistance on this matter. Also, attached is the initial C-141 for your reference. Should you have any questions, require additional information, or have any additional stipulations for this site, please contact Mr. Brian Wall at (575) 738-1739 (Office) or via email at [bwall@linnenergy.com](mailto:bwall@linnenergy.com) or myself at (432) 563-2200 (office) or via email at [kit@etechenv.com](mailto:kit@etechenv.com).

Respectfully:



Kit Prichard  
Environmental Professional



7 Rivers Queen Unit 60 Chloride Analytical Results October 14, 2014			
Results			
Sample Date	Sample I.D.	Depth (Feet)	Chlorides (mg/kg)
10/14/2014	SP1 Bottom	6	1800
10/14/2014	SP1 West Wall	3	48
10/14/2014	SP1 South Wall	3	32
10/14/2014	SP1 North Wall	3	<16.0
10/14/2014	SP2 Bottom	6	3760
10/14/2014	SP2 South Wall	3	<16.0
10/14/2014	SP2 North Wall	3	16
10/14/2014	SP3 Bottom	6	5040
10/14/2014	SP3 East Wall	3	96
10/14/2014	SP3 South Wall	3	144
10/14/2014	SP3 North Wall	3	<16.0

7 Rivers Queen Unit 60 Analytical Results October 3, 2012								
Sample Information			TPH Results (mg/kg)		BTEX Results (mg/L)			
Date	Sample I.D.	Depth (ft)	GRO	DRO	Benzene	Toluene	Ethylbenzene	Total Xylenes
10/14/14	SP1 Bottom	6	<50.0	2350.0	<0.2	<0.2	<0.2	<0.6
10/14/14	SP1 West Wall	3	<10.0	701.0	<0.05	<0.05	<0.05	<0.150
10/14/14	SP1 South Wall	3	<10.0	<10.0	<0.05	<0.05	<0.05	<0.15
10/14/14	SP1 North Wall	3	<10.0	<10.0	<0.05	<0.05	<0.05	<0.15
10/14/14	SP2 Bottom	6	<10.0	764.0	<0.05	<0.05	<0.05	<0.15
10/14/14	SP2 South Wall	3	<10.0	<10.0	<0.05	<0.05	<0.05	<0.15
10/14/14	SP2 North Wall	3	<10.0	<10.0	<0.05	<0.05	<0.05	<0.15
10/14/14	SP3 Bottom	6	<10.0	<10.0	<0.05	<0.05	<0.05	<0.15
10/14/14	SP3 East Wall	3	<10.0	<10.0	<0.05	<0.05	<0.05	<0.15
10/14/14	SP3 South Wall	3	<10.0	<10.0	<0.05	<0.05	<0.05	<0.15
10/14/14	SP3 North Wall	3	<10.0	<10.0	<0.05	<0.05	<0.05	<0.15

Scale 1:450

0 14 28 42 56 70 ft

1" = 37.5 ft      Data Zoom 17-7

LINN Energy  
Seven Rivers Queen 60  
Sample Points Map

MN (7.1° E)

Data use subject to license.

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www.delorme.com



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

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October 15, 2014

KIT PRICHARD

ETECH Environmental & Safety Solutions, Inc.

P. O. BOX 8469

MIDLAND, TX 79708

RE: SRQU #60

Enclosed are the results of analyses for samples received by the laboratory on 10/14/14 16:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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:**

ETECH Environmental & Safety Solutions, Inc.  
KIT PRICHARD  
P. O. BOX 8469  
MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 10/14/2014  
Reported: 10/15/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SP 1 BOTTOM 6' (H403154-01)**

BTEX 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.200	0.200	10/15/2014	ND	1.81	90.4	2.00	4.62	
Toluene*	<0.200	0.200	10/15/2014	ND	1.72	85.8	2.00	4.10	
Ethylbenzene*	<0.200	0.200	10/15/2014	ND	1.62	81.0	2.00	3.96	
Total Xylenes*	<0.600	0.600	10/15/2014	ND	4.78	79.7	6.00	4.71	
Total BTEX	<1.20	1.20	10/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1800	16.0	10/15/2014	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	2350	50.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 97.1 % 47.2-157

Surrogate: 1-Chlorooctadecane 132 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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Fax To: (432) 563-2213

Received: 10/14/2014  
Reported: 10/15/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SP 1 W. WALL 3' (H403154-02)**

BTX 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	10/15/2014	ND	1.81	90.4	2.00	4.62		
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10		
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96		
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71		
Total BTX	<0.300	0.300	10/15/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.2 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	10/15/2014	ND	416	104	400	3.92	

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	701	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 90.5 % 47.2-157

Surrogate: 1-Chlorooctadecane 110 % 52.1-176

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Fax To: (432) 563-2213

Received: 10/14/2014  
Reported: 10/15/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SP 1 S. WALL 3' (H403154-03)**

BTX 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	10/15/2014	ND	1.81	90.4	2.00	4.62		
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10		
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96		
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71		
Total BTX	<0.300	0.300	10/15/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	10/15/2014	ND	416	104	400	3.92	

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	<10.0	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 86.7 % 47.2-157

Surrogate: 1-Chlorooctadecane 100 % 52.1-176

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Received: 10/14/2014  
 Reported: 10/15/2014  
 Project Name: SRQU #60  
 Project Number: 253-5377-000  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Kathy Perez

**Sample ID: SP 1 N. WALL 3' (H403154-04)**

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	10/15/2014	ND	1.81	90.4	2.00	4.62		
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10		
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96		
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71		
Total BTEx	<0.300	0.300	10/15/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	10/15/2014	ND	416	104	400	3.92	

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	<10.0	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 84.0 % 47.2-157

Surrogate: 1-Chlorooctadecane 95.1 % 52.1-176

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MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 10/14/2014  
Reported: 10/15/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SP 2 BOTTOM 6' (H403154-05)**

BTX 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	10/15/2014	ND	1.81	90.4	2.00	4.62	
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10	
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96	
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71	
Total BTX	<0.300	0.300	10/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3760	16.0	10/15/2014	ND	400	100	400	3.92	

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	764	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 92.9 % 47.2-157

Surrogate: 1-Chlorooctadecane 114 % 52.1-176

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Celey D. Keene, Lab Director/Quality Manager

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KIT PRICHARD  
P. O. BOX 8469  
MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 10/14/2014  
Reported: 10/15/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SP 2 S. WALL 3' (H403154-06)**

BTX 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	10/15/2014	ND	1.81	90.4	2.00	4.62	
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10	
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96	
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71	
Total BTX	<0.300	0.300	10/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	10/15/2014	ND	400	100	400	3.92	

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	<10.0	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 80.3 % 47.2-157

Surrogate: 1-Chlorooctadecane 88.4 % 52.1-176

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\*=Accredited Analyte

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 Fax To: (432) 563-2213

Received: 10/14/2014  
 Reported: 10/15/2014  
 Project Name: SRQU #60  
 Project Number: 253-5377-000  
 Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Kathy Perez

**Sample ID: SP2 N. WALL 3' (H403154-07)**

BTX 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	10/15/2014	ND	1.81	90.4	2.00	4.62		
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10		
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96		
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71		
Total BTX	<0.300	0.300	10/15/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	10/15/2014	ND	400	100	400	3.92		

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	<10.0	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 90.4 % 47.2-157

Surrogate: 1-Chlorooctadecane 102 % 52.1-176

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Fax To: (432) 563-2213

Received: 10/14/2014  
Reported: 10/15/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SP 3 BOTTOM 6' (H403154-08)**

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	10/15/2014	ND	1.81	90.4	2.00	4.62		
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10		
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96		
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71		
Total BTEx	<0.300	0.300	10/15/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	5040	16.0	10/15/2014	ND	400	100	400	3.92		

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	<10.0	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 87.6 % 47.2-157

Surrogate: 1-Chlorooctadecane 99.3 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

ETECH Environmental & Safety Solutions, Inc.  
KIT PRICHARD  
P. O. BOX 8469  
MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 10/14/2014  
Reported: 10/15/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SP3 E. WALL 3' (H403154-09)**

BTX 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	10/15/2014	ND	1.81	90.4	2.00	4.62		
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10		
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96		
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71		
Total BTX	<0.300	0.300	10/15/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	10/15/2014	ND	400	100	400	3.92	

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	<10.0	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 89.5 % 47.2-157

Surrogate: 1-Chlorooctadecane 98.8 % 52.1-176

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

ETECH Environmental & Safety Solutions, Inc.  
KIT PRICHARD  
P. O. BOX 8469  
MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 10/14/2014  
Reported: 10/15/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SP3 S. WALL 3' (H403154-10)**

BTX 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	10/15/2014	ND	1.81	90.4	2.00	4.62		
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10		
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96		
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71		
Total BTX	<0.300	0.300	10/15/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	144	16.0	10/15/2014	ND	400	100	400	3.92		

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	<10.0	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 92.4 % 47.2-157

Surrogate: 1-Chlorooctadecane 100 % 52.1-176

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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ETECH Environmental & Safety Solutions, Inc.  
KIT PRICHARD  
P. O. BOX 8469  
MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 10/14/2014  
Reported: 10/15/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 10/14/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Kathy Perez

**Sample ID: SP 3 N. WALL 3' (H403154-11)**

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	10/15/2014	ND	1.81	90.4	2.00	4.62		
Toluene*	<0.050	0.050	10/15/2014	ND	1.72	85.8	2.00	4.10		
Ethylbenzene*	<0.050	0.050	10/15/2014	ND	1.62	81.0	2.00	3.96		
Total Xylenes*	<0.150	0.150	10/15/2014	ND	4.78	79.7	6.00	4.71		
Total BTEx	<0.300	0.300	10/15/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	10/15/2014	ND	400	100	400	3.92		

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	10/15/2014	ND	170	85.1	200	2.28	
DRO >C10-C28	<10.0	10.0	10/15/2014	ND	172	86.1	200	2.02	

Surrogate: 1-Chlorooctane 94.8 % 47.2-157

Surrogate: 1-Chlorooctadecane 104 % 52.1-176

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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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---

Celey D. Keene, Lab Director/Quality Manager



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

[illegible]





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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: <u>E-tech Env</u>		<b>BILL TO</b>		ANALYSIS REQUEST											
Project Manager: <u>Kir Pricehard</u>		P.O. #: <u>253-5377-000</u>													
Address:		Company: <u>Linn Energy</u>													
City:		Attn:													
State:		Address:													
Zip:		City:													
Phone #:		State:													
Fax #:		Zip:													
Project #: <u>253-5377-000</u>		Project Owner:													
Project Name: <u>SRQA #60</u>		Phone #:													
Project Location: <u>Euvoce NM</u>		Fax #:													
Sampler Name: <u>Terry Osborn</u>															
FOR LAB USE ONLY															
Lab I.D. <u>403154</u>		Sample I.D.													
SP3 N. Wall 3'		(G)RAB OR (C)OMP.													
		# CONTAINERS													
		GROUNDWATER													
		WASTEWATER													
		SOIL													
		OIL													
		SLUDGE													
		OTHER :													
		ACID/BASE:													
		ICE / COOL													
		OTHER :													
		DATE													
		TIME													
		CL													
		TPH													
		BTEX													
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Relinquished By: <u>msa</u>		Date: <u>10-14-04</u>		Received By: <u>Jeffery</u>		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Phone #:									
Time: <u>4:55</u>		Time: <u>10-14-2004</u>		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Fax #:											
Relinquished By:		REMARKS: <u>Rush!</u>													
Delivered By: (Circle One)		Sample Condition		CHECKED BY: <u>JP</u>											
Cool <input type="checkbox"/> Intact <input type="checkbox"/>		Cool <input type="checkbox"/> Intact <input type="checkbox"/>													
Sampler - UPS - Bus - Other: <u>5.7</u>		Cool <input type="checkbox"/> Intact <input type="checkbox"/>													



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

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September 09, 2014

KIT PRICHARD

ETECH Environmental & Safety Solutions, Inc.

P. O. BOX 8469

MIDLAND, TX 79708

RE: SRQU #60

Enclosed are the results of analyses for samples received by the laboratory on 09/08/14 16:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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:**

ETECH Environmental & Safety Solutions, Inc.  
 KIT PRICHARD  
 P. O. BOX 8469  
 MIDLAND TX, 79708  
 Fax To: (432) 563-2213

Received: 09/08/2014  
 Reported: 09/09/2014  
 Project Name: SRQU #60  
 Project Number: 253-5377-000  
 Project Location: LEA COUNTY, NM

Sampling Date: 09/08/2014  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP 1 4' (H402785-01)**

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	09/09/2014	ND	1.89	94.7	2.00	8.34	
Toluene*	<0.050	0.050	09/09/2014	ND	1.70	85.0	2.00	8.25	
Ethylbenzene*	<0.050	0.050	09/09/2014	ND	1.57	78.4	2.00	8.62	
Total Xylenes*	<0.150	0.150	09/09/2014	ND	4.86	81.0	6.00	7.43	
Total BTEX	<0.300	0.300	09/09/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	09/09/2014	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	09/09/2014	ND	168	84.0	200	4.11	
DRO >C10-C28	35.1	10.0	09/09/2014	ND	186	92.9	200	2.47	

Surrogate: 1-Chlorooctane 86.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 97.0 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

ETECH Environmental & Safety Solutions, Inc.  
KIT PRICHARD  
P. O. BOX 8469  
MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 09/08/2014  
Reported: 09/09/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 09/08/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 2 12' (H402785-02)**

BTX 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	09/09/2014	ND	1.89	94.7	2.00	8.34	
Toluene*	<0.050	0.050	09/09/2014	ND	1.70	85.0	2.00	8.25	
Ethylbenzene*	<0.050	0.050	09/09/2014	ND	1.57	78.4	2.00	8.62	
Total Xylenes*	<0.150	0.150	09/09/2014	ND	4.86	81.0	6.00	7.43	
Total BTX	<0.300	0.300	09/09/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	400	16.0	09/09/2014	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	<50.0	50.0	09/09/2014	ND	168	84.0	200	4.11	
DRO >C10-C28	258	50.0	09/09/2014	ND	186	92.9	200	2.47	

Surrogate: 1-Chlorooctane 101 % 65.2-140

Surrogate: 1-Chlorooctadecane 111 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

ETECH Environmental & Safety Solutions, Inc.  
KIT PRICHARD  
P. O. BOX 8469  
MIDLAND TX, 79708  
Fax To: (432) 563-2213

Received: 09/08/2014  
Reported: 09/09/2014  
Project Name: SRQU #60  
Project Number: 253-5377-000  
Project Location: LEA COUNTY, NM

Sampling Date: 09/08/2014  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 3 18' (H402785-03)**

BTX 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	09/09/2014	ND	1.89	94.7	2.00	8.34		
Toluene*	<0.050	0.050	09/09/2014	ND	1.70	85.0	2.00	8.25		
Ethylbenzene*	<0.050	0.050	09/09/2014	ND	1.57	78.4	2.00	8.62		
Total Xylenes*	<0.150	0.150	09/09/2014	ND	4.86	81.0	6.00	7.43		
Total BTX	<0.300	0.300	09/09/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 104 % 89.4-126

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	09/09/2014	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	09/09/2014	ND	168	84.0	200	4.11	
DRO >C10-C28	10.0	10.0	09/09/2014	ND	186	92.9	200	2.47	

Surrogate: 1-Chlorooctane 93.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 101 % 63.6-154

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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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---

Celey D. Keene, Lab Director/Quality Manager



### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

# 5

[illegible]

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 October 10, 2003

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

## Release Notification and Corrective Action

### OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Linn Operating	Contact: Brian Wall	
Address: 2130 W. Bender Hobbs, NM 88240	Telephone No.: 575-738-1739	
Facility Name: Seven Rivers Queen Unit # 60	Facility Type: Oil Producer	
Surface Owner: Private	Mineral Owner:	API No.: 30-025-28122

### LOCATION OF RELEASE

Unit Letter L	Section 34	Township 22S	Range 36E	Feet from the 2605	North/South Line South	Feet from the 1280	East/West Line West	County Lea
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Latitude: 32.3482077157592 Longitude: -103.257434938142

### NATURE OF RELEASE

Type of Release: Produced Water / Oil	Volume of Release: 15 bbls /1 bbl	Volume Recovered: 0 / 0
Source of Release: 2 7/8 Steel pipeline	Date and Hour of Occurrence: 08/04/2014	Date and Hour of Discovery: 08/04/2014 2:45pm
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Jeff Robertson-BLM / Tomas Oberding- NM OCD	
By Whom? Brian Wall	Date and Hour 08/06/2014 0700	
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.\*: Old 2 7/8 steel flow line has a pinn hole could not see leak from well. Leak is in sanddunes. Airplane passing by spotted leak.

Describe Area Affected and Cleanup Action Taken.\* :

Directions to site: Go south on 207 for one mile turn left onto delaware basin road go six miles then turn left onto pipeline rightway for 3 and a half miles then turn right the go a 1/4 of a mile to well 60 then go north 600 ft.

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: 	<b>OIL CONSERVATION DIVISION</b>		
Printed Name: Brian Wall	Approved by District Supervisor:		
Title: Construction Foreman II	Approval Date:	Expiration Date:	
E-mail Address: bwall@linenergy.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 08/06/2014	Phone: 806-367-0645		

\* Attach Additional Sheets If Necessary

# Bamert Seed Company Inc.

1897 CR 1018 Muleshoe, TX 79347

(800) 262-9892

Permit # TX00905

**Bunks - BLM #3 150 #**

**INV54978**

Description	Pure Seed	Germ	Dormant	Hard Seed	Origin
Bristlegrass Plains, "VNS" (Setaria vulpiseta)	10.08%	87.00%	1.00%	0.00%	TX
Grama, Sideoats "El Reno" (Bouteloua curtipendula)	56.16%	94.00%	0.00%	0.00%	TX
Green Sprangletop, "Van Horn" (Leptochloa dubia)	24.93%	93.00%	0.00%	0.00%	TX
Purity: 91.16%	Inert Matter: 8.58%	Other Crop Seed: 0.24%		Weed Seed: 0.01%	

Noxious Weeds: None

Test Date:

Net Wt: 40.00 lbs

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(800) 262-9892

Permit # TX00905

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Purity: 91.16%	Inert Matter: 8.58%	Other Crop Seed: 0.24%		Weed Seed: 0.01%	

Noxious Weeds: None

Test Date:

Net Wt: 40.00 lbs



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Purity: 91.16%	Inert Matter: 8.58%	Other Crop Seed: 0.24%		Weed Seed: 0.01%	

Noxious Weeds: None

Test Date:

Net Wt: 40.00 lbs

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1897 CR 1018 Muleshoe, TX 79347

(800) 262-9892

Permit # TX00905

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Purity: 91.16%	Inert Matter: 8.58%	Other Crop Seed: 0.24%		Weed Seed: 0.01%	

Noxious Weeds: None

Test Date:

Net Wt: 6.46 lbs

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 in  
accordance with 19.15.29 NMAC

**Release Notification and Corrective Action**

**OPERATOR**

☐ Initial Report ☒ Final Report

Name of Company: LINN Energy	Contact: Brian Wall
Address: 2130 W Bender Blvd. - Hobbs, NM	Telephone No.: 575-942-8675
Facility Name: 7 Rivers Queen Unit 60	Facility Type: Oil producer

Surface Owner: Private	Mineral Owner: Private	API No.: 30-025-28122
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**LOCATION OF RELEASE**

Unit Letter L	Section 34	Township 22S	Range 36E	Feet from the 2605	North/South Line South	Feet from the 1280	East/West Line West	County Lea
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Latitude: 32.3482077157592 Longitude: -103.257434938142

**NATURE OF RELEASE**


Type of Release: Produced Water / Oil	Volume of Release: 15bbls / 1bbls	Volume Recovered: 0 / 0
Source of Release: 2 7/8 Steel flowline	Date and Hour of Occurrence: 08/04/14	Date and Hour of Discovery: 08/04/14 - 1425
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Jeff Robertson - BLM / Tomas Oberding - NMOCD	
By Whom? Brian Wall	Date and Hour: 08/06/14 - 0700	
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.\*: Old 2 7/8 flowline has a pin hole in it and you could not see the leak from the well. The leak is in the sand dunes. An airplane passing by spotted the leak.

1. Describe Area Affected and Cleanup Action Taken.\*: The affected area was excavated and hauled to Lealand for disposal. The bottom of the excavation still has elevated levels of chlorides ranging from 1800 to 5040 mg/kg. The presence of lines restricted further excavation due to safety concerns. Two (2) soils borings via hand auger were advanced within the bottom of the excavation to attempt to delineate the vertical extent of the impact. SP2 400 mg/kg at 12', SP3 272 mg/kg at 18'. An OCD approved calcium amendment was installed to the bottom of the excavation (gypsum) then backfilled with clean compacted material to within 1.5 - 2 feet of surface then the backfill was completed with compatible soil which is conducive to growing vegetation. Then the site was seeded with an approved BLM mix.

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: 		<b>OIL CONSERVATION DIVISION</b>	
Printed Name: EL Gonzales		Approved by District Supervisor:	
Title: Production Supervisor		Approval Date:	Expiration Date:
E-mail Address: elgonzales@linnenergy.com		Conditions of Approval:	
Date: 11/17/14 Phone: 505-504-8002		Attached <input type="checkbox"/>	

\* Attach Additional Sheets If Necessary