

## **LINN ENERGY**

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

**H.E. West B #27**  
**(2RP-668)**

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# **Corrective Action Plan**

Two releases at the site

API No. 30-015-05074

Unit Letter N, Section 4, Township 17S, Range 31E



PO Box 2948 | Hobbs, NM 88241 | Phone 575.393.2967

April 4<sup>th</sup>, 2014

**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 – H.E. West B #27 (2RP-668)**  
**UL/N sec. 4 T17S R31E**  
**API No. 30-015-05074**

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 6.5 miles northeast of Loco Hills, New Mexico at UL/N sec. 4 T17S R31E. This site is in an area of no known groundwater.

Two releases occurred at this site. The first release was from an injection line, which released a total of 50 barrels of produced water and 25 barrels of oil. A vacuum truck was dispatched to the site and recovered 30 barrels of produced water and oil. NMOCD was notified of release on February 17<sup>th</sup>, 2011 and an initial C-141 was approved by NMOCD on March 29<sup>th</sup>, 2011. The second release occurred on February 25<sup>th</sup>, 2011. A buried fiberglass line failed releasing 75 barrels of produced water and 30 barrels of hydrocarbons. Vacuum trucks were dispatched to the site the recovered 40 barrels of produced water and 20 barrels of hydrocarbons. Both releases together covered 17,267 square feet of pasture land. NMOCD and BLM were notified of the release and an initial C-141 was sent to NMOCD on March 30<sup>th</sup>, 2011 (Appendix A).

RECS personnel were on site beginning on October 10<sup>th</sup>, 2013. Fifteen sample points were taken throughout the release at the surface and with depth (Figure 1). The samples were field tested for chlorides and hydrocarbons and all surface samples were taken to a commercial laboratory for analysis. Points 11, 12 and 15 were augured down for depth and representative samples were taken to a commercial laboratory for analysis. Points 1 – 10 returned laboratory chloride readings at the surface below regulatory standards. Point 11 returned a laboratory chloride reading below regulatory standards at 6 inches bgs. Point 12 returned a laboratory chloride reading of 2,840 mg/kg at 2.5 ft bgs. Points 13 and 14 returned laboratory chloride readings at the surface below regulatory standards. Point 15 returned a laboratory chloride reading of 2,600 mg/kg at 8 ft bgs. Gasoline Range Organics (GRO) returned readings of non-detect at all points

at all depth. Diesel Range Organics (DRO) returned elevated readings above regulatory standards at the surface of Point 5, Point 8 and Point 9. BTEX levels were non-detect at all points and at all depths (Appendix B).

Photo documentation of these activities can be found in Appendix C.

### **Corrective Action Plan**

Based on the laboratory sampling data, the areas around Points 5, 8 and 11 will be scraped down 6 inches (Figure 2). The bottom of each scrape will be sampled to verify that all constituents are below regulatory standards. All excavated soils will be evaluated for use as backfill and any soils that do not meet regulatory standards will be disposed of at a NMOCD approved facility. The remaining soils will be blended on site to use as backfill. Clean soil will be imported to the site to replace any soils taken for disposal. A sample of the blended backfill will be taken to a commercial laboratory to confirm that the backfill has all constituents below regulatory standards.

Given the number of lines in and around Points 12 and 15, these areas will be scraped down 6 inches to 1 foot using a hydrovac. Once the scrapes are completed, these areas will be flooded with Ca++Nhance and clean water that will push the remaining chlorides below the nutritive zone and remediate the sodicity remaining from the produced water release. Ca++Nhance uses organic matter to increase the permeability of the soil and enhance microbial growth in the soil that immobilizes nutrients preventing leaching and building soil nutrient pools. After flooding the site, the bottom of each scrape will be sampled to verify that all constituents are below regulatory standards. The scrapes will then be backfilled with the blended soil.

All disturbed areas will be seeded with a blend of native vegetation. Vegetation will provide 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 these activities are completed, a report will be submitted to NMOCD and BLM detailing these actions and asking for 'remediation termination' and 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

**Attachments:**

- Figure 1 – Initial Sampling Data**
- Figure 2 – Proposed Corrective Actions**
- Appendix A – Initial C-141s**
- Appendix B – Initial Sampling Lab**
- Appendix C – Photo Documentation**

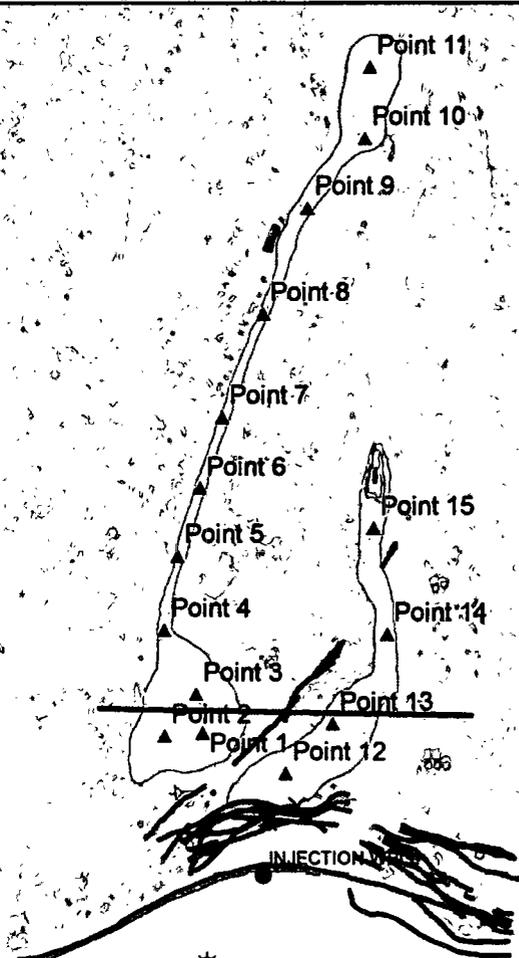


# Figures

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

# Initial Sampling Data

Point	CI-	PID	GRO	DRO	B	T	E	X	BTEX
Point 1 Surface	64	3.7	<10	11.6	<0.05	<0.05	<0.05	<0.15	<0.3
Point 2 Surface	32	3.4	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
Point 3 Surface	80	14.4	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
Point 4 Surface	240	0.1	<10	85.8	<0.05	<0.05	<0.05	<0.15	<0.3
Point 5 Surface	320	2.4	<100	5120	<0.05	<0.05	<0.05	<0.15	<0.3
Point 6 Surface	144	5.2	<100	4840	<0.05	<0.05	<0.05	<0.15	<0.3
Point 7 Surface	144	3	<100	4060	<0.05	<0.05	<0.05	<0.15	<0.3
Point 8 Surface	928	4.1	<100	6560	<0.05	<0.05	<0.05	<0.15	<0.3
Point 9 Surface	832	17.3	<100	6620	<0.05	<0.05	<0.05	<0.15	<0.3
Point 10 Surface	736	4.2	<10	24.2	<0.05	<0.05	<0.05	<0.15	<0.3
Point 11 Surface	2000	2.9	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
Point 12 Surface	17200	4.4	<10	29.1	<0.05	<0.05	<0.05	<0.15	<0.3
6"	1945	1.1							
1'	1009	2.6							
1.5'	1817	1.3							
2'	4645	2.9							
2.3'	2840	1.7	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3



## Legend

- OIL WELLS
- SAMPLE POINTS
- DEADMAN
- WELLHEAD
- PIPE END
- BURIED PIPELINE
- PAD/ROAD EDGE
- SURFACE PIPELINE
- EXCAVATION
- VALVE BOX
- STAIN (17,267 sq ft - Total)

Point	CI-	PID	GRO	DRO	B	T	E	X	BTEX
Point 13 Surface	992	1.7	<10	21.9	<0.05	<0.05	<0.05	<0.15	<0.3
Point 14 Surface	48	2.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
Point 15 Surface	25200	5.3	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
6"	4680	2.5							
1'	5261	19.2							
1.5'	4820	5.7							
2'	4032	8.3							
2.5'	4137	7.4							
3'	3814	11.6							
3.5'	4880	22.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
4'	4417	11.6							
4.5'	3938	14.5							
5'	3890	5							
5.5'	4949	5.1							
6'	4124	5.3							
6.5'	3538	6.3							
7'	2715	5.5							
7.5'	2639	6.7							
8'	2600	4.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

DGW = None

Landowner = BLM

USDA, USGS, AEX  
and the GIS User Community



**LINN H.E.  
WEST B #027  
(2RP-668)**

LEGALS: UL/C Sec. 9  
T17S - R31E  
EDDY COUNTY, NM

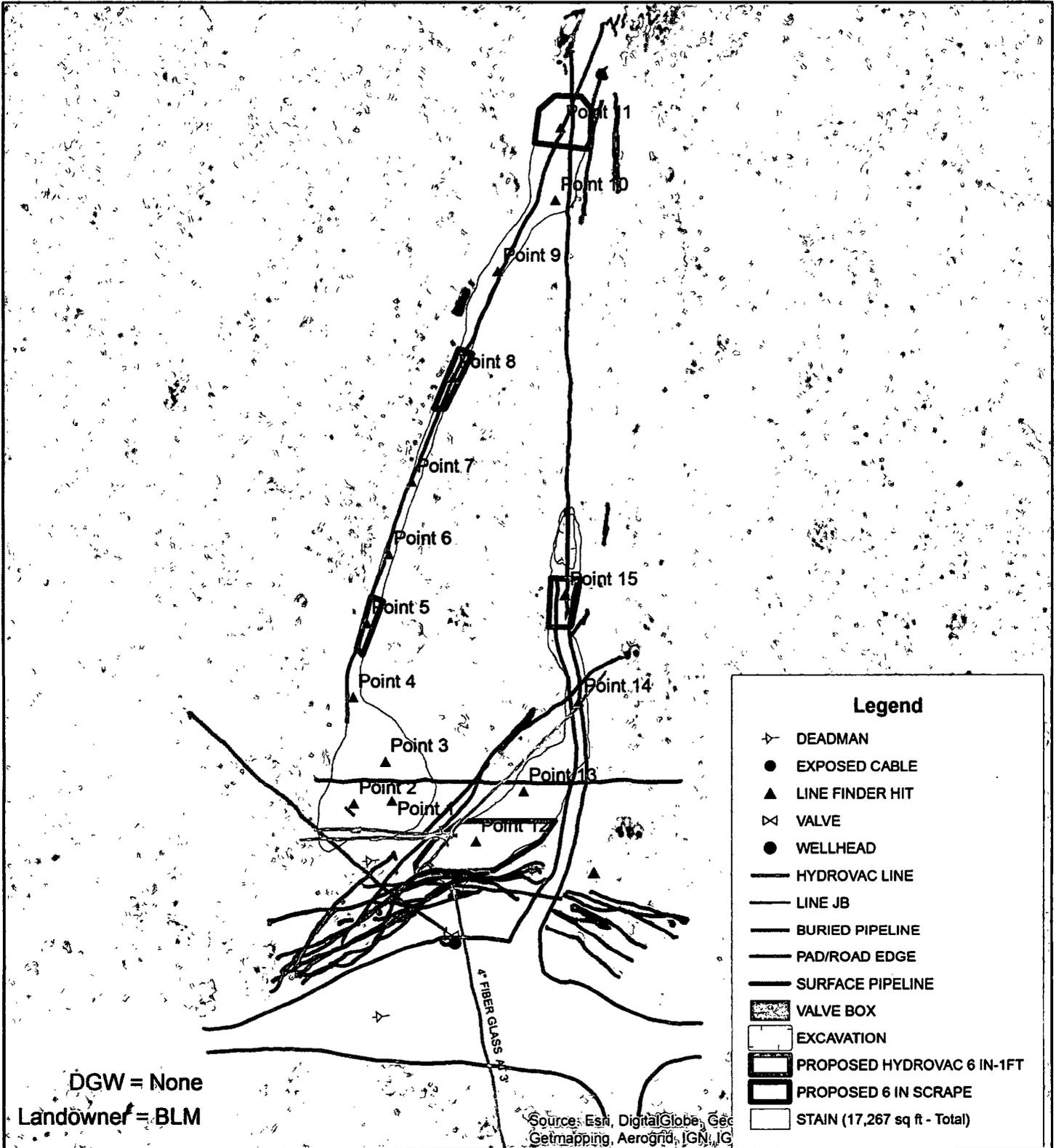
Figure 1



0 75 150  
Feet

GPS date: 10/10/2013 KS  
Drawing date: 10/21/13  
Drafted by: L. Weinheimer

# Proposed Corrective Actions



**LINN H.E.  
WEST B #027  
(2RP-668)**

LEGALS: UL/C Sec. 9  
T17S - R31E  
EDDY COUNTY, NM

**Figure 2**

0 50 100  
Feet

GPS date: 2/5/14 BC  
Drawing date: 3/12/14  
Drafted by: T. Grieco

# Appendix A

Initial C-141s

**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  
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

**RECEIVED**  
MAR 28 2011  
NMOCD ARTESIA

Form C-141  
Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

**Release Notification and Corrective Action**

*NKMW 1108838071* OPERATOR  Initial Report  Final Report  
 Name of Company *Linn Operating* *269324* Contact *Dennis Potter*  
 Address *PO Box 69 Loco Hills, NM 88255* Telephone No. *575 206 7673 cell*  
 Facility Name *H E West B No. 27 (Keel West Water Flood)* Facility Type *Injection Well*

Surface Owner <i>BLM</i>	Mineral Owner	Lease No. <i>NMLC029426B</i> <i>API 30-015-05074</i> <i>Federal Tracking #11NU034TG</i>
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**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
<i>N</i>	<i>4</i>	<i>17S</i>	<i>31E</i>	<i>660'</i>	<i>South Line</i>	<i>1980'</i>	<i>West</i>	<i>Eddy</i>

Latitude *32.8560* Longitude *103.8769*

**NATURE OF RELEASE**

Type of Release <i>Produced Water and Oil</i>	Volume of Release <i>50bbls Prod Water/25bbls Oil</i>	Volume Recovered <i>30bbls</i>
Source of Release <i>Injection Line</i>	Date and Hour of Occurrence <i>Unknown</i>	Date and Hour of Discovery <i>17Feb11</i>
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? <i>Mike Bratcher NMOCD</i>	
By Whom? <i>Dennis Potter</i>	Date and Hour <i>17Feb11</i>	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. <i>N/A</i>	

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

Describe Cause of Problem and Remedial Action Taken.\*  
*Source of release was determined and action was taken to stop leak. Vac trucks were utilized to extract all free standing liquid from release point and the area of pooling south of release site. Once all free standing liquid was removed, the contractor will perform excavation to remove all surface sludge and contaminated soil to a depth of approximately 1'-2" BGS. Once the initial action has been completed, delineation will take place with soil samples being obtained and analyzed for BTEX, TPH, Chlorides. Lab analysis will be used to formulate a remediation work plan for submission to NMOCD and BLM. Hungry Horse, LLC has been contracted to perform the remediation.*

Describe Area Affected and Cleanup Action Taken.\*

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: <i>Dennis J. Potter</i>	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: <i>Dennis Potter</i>	Approved by District Supervisor: Signed By: <i>Mike Bratcher</i>	
Title: <i>Asst. Production Foreman</i>	Approval Date: <i>3/29/11</i>	Expiration Date:
E-mail Address: <i>dpotter@linnenergy.com</i>	Conditions of Approval:	Attached <input type="checkbox"/>

Date: *28Feb11* Phone: *575 206 7673*

\* Attach Additional Sheets If Necessary

Remediation per OCD Rules & Guidelines. **SUBMIT REMEDIATION PROPOSAL NOT LATER THAN:**

*4/29/11*

*2RP-668*

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

Form C-141  
Revised October 10, 2003

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

Submit 2 Copies to appropriate  
District Office in accordance  
with Rule 116 on back  
side of form

**Release Notification and Corrective Action**

**OPERATOR**

X Initial Report  Final Report

Name of Company Linn Energy	Contact Dennis Potter
Address PO Box 69, Loco Hills, NM 88255	Telephone No. 575 677 2327
Facility Name H E West B #27	Facility Type Injection Well

Surface Owner BLM	Mineral Owner BLM	Lease No. NMLC029426B API 30-015-05074
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**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	4	17S	31E					Eddy

Latitude N32.8560 Longitude W103.8769 (Release Site)

**NATURE OF RELEASE**

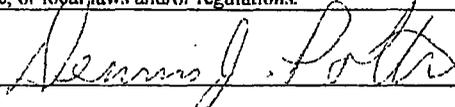
Type of Release Produced Water/Hydrocarbons	Volume of Release 75bbls prod water/30bbls hydrocarbons	Volume Recovered Unknown 40bbls prod water/20bbls hydrocarbons
Source of Release Buried Fiberglass Line (2 <sup>nd</sup> Release)	Date and Hour of Occurrence 25Feb11	Date and Hour of Discovery 25Feb11
Was Immediate Notice Given? X Yes No <input type="checkbox"/> Not Required	If YES, To Whom? Terry Gregston BLM/Mike Bratcher NM OCD	
By Whom? Dennis Potter	Date and Hour N/A	
Was a Watercourse Reached? <input type="checkbox"/> Yes X No	If YES, Volume Impacting the Watercourse. N/A	

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

Describe Cause of Problem and Remedial Action Taken.\*  
The release is a result of a fiberglass line failure. Produced water was released and pooled to the south of the release. Vac trucks were called to vacuum all free standing liquid. Surface sludge was removed by mechanical means and stockpiled on plastic for later disposal. Upon completion of all line repairs/replacements, delineation will be performed and a work plan submitted to NM OCD and BLM for approval.

Describe Area Affected and Cleanup Action Taken.\*

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: Dennis Potter	Approved by District Supervisor:	
Title: Assistant Production Foreman	Approval Date:	Expiration Date:
E-mail Address: dpotter@linenergy.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 30Mar11 Phone: 505 206 7673		

\* Attach Additional Sheets If Necessary



# Appendix B

Initial Sampling Lab

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



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

October 18, 2013

JACOB KAMPLAIN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: H. E. WEST B #027

Enclosed are the results of analyses for samples received by the laboratory on 10/15/13 12:30.

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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, prominent initial 'C'.

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 1 @ SURFACE (H302489-01)**

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	10/15/2013	ND	1.94	97.1	2.00	4.35		
Toluene*	<0.050	0.050	10/15/2013	ND	1.97	98.3	2.00	4.23		
Ethylbenzene*	<0.050	0.050	10/15/2013	ND	2.00	99.9	2.00	5.82		
Total Xylenes*	<0.150	0.150	10/15/2013	ND	5.82	97.0	6.00	4.78		
Total BTEX	<0.300	0.300	10/15/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 97.3 % 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	<b>64.0</b>	16.0	10/16/2013	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	10/15/2013	ND	208	104	200	2.60		
DRO >C10-C28	<b>11.6</b>	10.0	10/15/2013	ND	200	100	200	2.31		

Surrogate: 1-Chlorooctane 93.4 % 65.2-140

Surrogate: 1-Chlorooctadecane 102 % 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

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 2 @ SURFACE (H302489-02)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/15/2013	ND	1.94	97.1	2.00	4.35		
Toluene*	<0.050	0.050	10/15/2013	ND	1.97	98.3	2.00	4.23		
Ethylbenzene*	<0.050	0.050	10/15/2013	ND	2.00	99.9	2.00	5.82		
Total Xylenes*	<0.150	0.150	10/15/2013	ND	5.82	97.0	6.00	4.78		
Total BTEX	<0.300	0.300	10/15/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.2 % 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	32.0	16.0	10/16/2013	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	10/15/2013	ND	208	104	200	2.60		
DRO >C10-C28	<10.0	10.0	10/15/2013	ND	200	100	200	2.31		

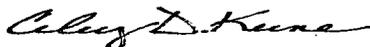
Surrogate: 1-Chlorooctane 89.2 % 65.2-140

Surrogate: 1-Chlorooctadecane 92.7 % 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

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 3 @ SURFACE (H302489-03)**

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	10/15/2013	ND	1.94	97.1	2.00	4.35		
Toluene*	<0.050	0.050	10/15/2013	ND	1.97	98.3	2.00	4.23		
Ethylbenzene*	<0.050	0.050	10/15/2013	ND	2.00	99.9	2.00	5.82		
Total Xylenes*	<0.150	0.150	10/15/2013	ND	5.82	97.0	6.00	4.78		
Total BTEX	<0.300	0.300	10/15/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 97.9 % 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	80.0	16.0	10/16/2013	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	10/15/2013	ND	208	104	200	2.60		
DRO >C10-C28	<10.0	10.0	10/15/2013	ND	200	100	200	2.31		

Surrogate: 1-Chlorooctane 94.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 99.8 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 4 @ SURFACE (H302489-04)**

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	10/15/2013	ND	1.94	97.1	2.00	4.35		
Toluene*	<0.050	0.050	10/15/2013	ND	1.97	98.3	2.00	4.23		
Ethylbenzene*	<0.050	0.050	10/15/2013	ND	2.00	99.9	2.00	5.82		
Total Xylenes*	<0.150	0.150	10/15/2013	ND	5.82	97.0	6.00	4.78		
Total BTEX	<0.300	0.300	10/15/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 97.5 % 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	240	16.0	10/16/2013	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	10/15/2013	ND	208	104	200	2.60		
DRO >C10-C28	85.8	10.0	10/15/2013	ND	200	100	200	2.31		

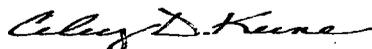
Surrogate: 1-Chlorooctane 96.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

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\*=Accredited Analyte

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 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 5 @ SURFACE (H302489-05)**

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	10/17/2013	ND	1.90	95.1	2.00	1.49		
Toluene*	<0.050	0.050	10/17/2013	ND	1.97	98.5	2.00	1.87		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.00	100	2.00	1.58		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	5.96	99.4	6.00	1.35		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIL) 99.4 % 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	320	16.0	10/16/2013	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS							S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10	<100	100	10/15/2013	ND	208	104	200	2.60			
DRO >C10-C28	5120	100	10/15/2013	ND	200	100	200	2.31			

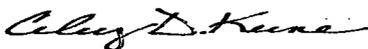
Surrogate: 1-Chlorooctane 87.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 254 % 63.6-154

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**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 6 @ SURFACE (H302489-06)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	144	16.0	10/16/2013	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS							S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10	<100	100	10/15/2013	ND	208	104	200	2.60			
DRO >C10-C28	4840	100	10/15/2013	ND	200	100	200	2.31			

Surrogate: 1-Chlorooctane 80.3 % 65.2-140

Surrogate: 1-Chlorooctadecane 245 % 63.6-154

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 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 7 @ SURFACE (H302489-07)**

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	10/17/2013	ND	1.90	95.1	2.00	1.49		
Toluene*	<0.050	0.050	10/17/2013	ND	1.97	98.5	2.00	1.87		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.00	100	2.00	1.58		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	5.96	99.4	6.00	1.35		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.7 % 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	144	16.0	10/16/2013	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS							S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10	<100	100	10/15/2013	ND	208	104	200	2.60			
DRO >C10-C28	4060	100	10/15/2013	ND	200	100	200	2.31			

Surrogate: 1-Chlorooctane 81.5 % 65.2-140

Surrogate: 1-Chloroadecane 218 % 63.6-154

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 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 8 @ SURFACE (H302489-08)**

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	10/17/2013	ND	1.90	95.1	2.00	1.49		
Toluene*	<0.050	0.050	10/17/2013	ND	1.97	98.5	2.00	1.87		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.00	100	2.00	1.58		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	5.96	99.4	6.00	1.35		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIL) 98.9 % 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	928	16.0	10/16/2013	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS							S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10	<100	100	10/15/2013	ND	208	104	200	2.60			
DRO >C10-C28	6560	100	10/15/2013	ND	200	100	200	2.31			

Surrogate: 1-Chlorooctane 84.7 % 65.2-140

Surrogate: 1-Chlorooctadecane 267 % 63.6-154

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 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 9 @ SURFACE (H302489-09)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 99.8 % 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	832	16.0	10/16/2013	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS							S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10	<100	100	10/15/2013	ND	208	104	200	2.60			
DRO >C10-C28	6620	100	10/15/2013	ND	200	100	200	2.31			

Surrogate: 1-Chlorooctane 100 % 65.2-140

Surrogate: 1-Chlorooctadecane 260 % 63.6-154

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 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 10 @ SURFACE (H302489-10)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 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	736	16.0	10/16/2013	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	10/15/2013	ND	208	104	200	2.60		
DRO >C10-C28	24.2	10.0	10/15/2013	ND	200	100	200	2.31		

Surrogate: 1-Chlorooctane 108 % 65.2-140

Surrogate: 1-Chlorooctadecane 113 % 63.6-154

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 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 11 @ SURFACE (H302489-11)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PII) 100 % 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	2000	16.0	10/16/2013	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	10/16/2013	ND	192	96.1	200	6.02		
DRO >C10-C28	<10.0	10.0	10/16/2013	ND	189	94.7	200	9.52		

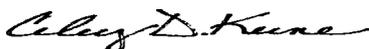
Surrogate: 1-Chlorooctane 93.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

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 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 12 @ SURFACE (H302489-12)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PII) 99.1 % 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	17200	16.0	10/16/2013	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	10/16/2013	ND	192	96.1	200	6.02		
DRO >C10-C28	29.1	10.0	10/16/2013	ND	189	94.7	200	9.52		

Surrogate: 1-Chlorooctane 95.2 % 65.2-140

Surrogate: 1-Chlorooctadecane 104 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 13 @ SURFACE (H302489-13)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 99.8 % 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	992	16.0	10/16/2013	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	10/16/2013	ND	192	96.1	200	6.02		
DRO >C10-C28	21.9	10.0	10/16/2013	ND	189	94.7	200	9.52		

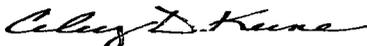
Surrogate: 1-Chlorooctane 96.2 % 65.2-140

Surrogate: 1-Chlorooctadecane 105 % 63.6-154

Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 14 @ SURFACE (H302489-14)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIL) 98.7 % 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	10/16/2013	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	10/16/2013	ND	192	96.1	200	6.02		
DRO >C10-C28	<10.0	10.0	10/16/2013	ND	189	94.7	200	9.52		

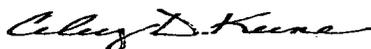
Surrogate: 1-Chlorooctane 94.7 % 65.2-140

Surrogate: 1-Chlorooctadecane 98.0 % 63.6-154

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/10/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 15 @ SURFACE (H302489-15)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 98.5 % 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	25200	16.0	10/16/2013	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	10/16/2013	ND	192	96.1	200	6.02		
DRO >C10-C28	<10.0	10.0	10/16/2013	ND	189	94.7	200	9.52		

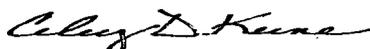
Surrogate: 1-Chlorooctane 95.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

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\*=Accredited Analyte

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Celest D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/14/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 11 @6" (H302489-16)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.9 % 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	544	16.0	10/16/2013	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	10/16/2013	ND	192	96.1	200	6.02		
DRO >C10-C28	<10.0	10.0	10/16/2013	ND	189	94.7	200	9.52		

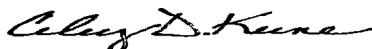
Surrogate: 1-Chlorooctane 91.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 97.8 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/14/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 12 @ 2.5' (H302489-17)**

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	10/17/2013	ND	2.14	107	2.00	0.267		
Toluene*	<0.050	0.050	10/17/2013	ND	2.18	109	2.00	0.468		
Ethylbenzene*	<0.050	0.050	10/17/2013	ND	2.19	110	2.00	0.308		
Total Xylenes*	<0.150	0.150	10/17/2013	ND	6.43	107	6.00	0.445		
Total BTEX	<0.300	0.300	10/17/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 98.4 % 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	2840	16.0	10/16/2013	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	10/16/2013	ND	192	96.1	200	6.02		
DRO >C10-C28	<10.0	10.0	10/16/2013	ND	189	94.7	200	9.52		

Surrogate: 1-Chlorooctane 96.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 RICE ENVIRONMENTAL CONSULTING & SAFETY  
 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/14/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 15 @ 3.5' (H302489-18)**

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	10/18/2013	ND	1.78	89.1	2.00	0.150		
Toluene*	<0.050	0.050	10/18/2013	ND	1.90	95.2	2.00	2.95		
Ethylbenzene*	<0.050	0.050	10/18/2013	ND	1.94	96.8	2.00	3.35		
Total Xylenes*	<0.150	0.150	10/18/2013	ND	5.87	97.9	6.00	6.19		
Total BTEX	<0.300	0.300	10/18/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 103 % 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	4880	16.0	10/16/2013	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	10/16/2013	ND	192	96.1	200	6.02		
DRO >C10-C28	<10.0	10.0	10/16/2013	ND	189	94.7	200	9.52		

Surrogate: 1-Chlorooctane 109 % 65.2-140

Surrogate: 1-Chlorooctadecane 111 % 63.6-154

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**Analytical Results For:**

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 JACOB KAMPLAIN  
 419 W. CAIN  
 HOBBS NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/15/2013  
 Reported: 10/18/2013  
 Project Name: H. E. WEST B #027  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/14/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: POINT 15 @ 8' (H302489-19)**

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	10/18/2013	ND	1.78	89.1	2.00	0.150		
Toluene*	<0.050	0.050	10/18/2013	ND	1.90	95.2	2.00	2.95		
Ethylbenzene*	<0.050	0.050	10/18/2013	ND	1.94	96.8	2.00	3.35		
Total Xylenes*	<0.150	0.150	10/18/2013	ND	5.87	97.9	6.00	6.19		
Total BTEX	<0.300	0.300	10/18/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIL) 100 % 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	2600	16.0	10/16/2013	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	10/16/2013	ND	192	96.1	200	6.02		
DRO >C10-C28	<10.0	10.0	10/16/2013	ND	189	94.7	200	9.52		

Surrogate: 1-Chlorooctane 94.7 % 65.2-140

Surrogate: 1-Chlorooctadecane 98.6 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- 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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Celest D. Keene, Lab Director/Quality Manager



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

**ARDINAL LABORATORIES**

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603  
 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325) 673-7020

**Company Name:** *Lin Energy*  
**Project Manager:** *Jacob Kamplain*  
**Address:**  
**City:** Hobbs **State:** NM **Zip:** 88240  
**Phone #:** **Fax #:**  
**Project #:** **Project Owner:**  
**Project Name:**  
**Project Location:** *A.E. West B #027*  
**Sampler Name:** Kyle Schnaidt

BILL TO		ANALYSIS REQUEST										
Company Name:	P.O. #:	Company:	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				
			X	X	X	X	X	X				

FOR LAB USE ONLY	Lab I.D.	Sample I.D.	PRESERV		SAMPLING		DATE	TIME
			CE / COOL	ACID/BASE	MATRIX	OTHER		
	H302489		X		WASTEWATER	SOIL	10-10-13	2:50
		Point 11 @ Surface	X		GROUNDWATER	WASTEWATER	10-10-13	2:55
		Point 12 @ Surface	X		GROUNDWATER	SOIL	10-10-13	3:00
		Point 13 @ Surface	X		GROUNDWATER	SOIL	10-10-13	3:05
		Point 14 @ Surface	X		GROUNDWATER	SOIL	10-10-13	3:10
		Point 15 @ Surface	X		GROUNDWATER	SOIL	10-10-13	105
		Point 11 @ 6"	X		GROUNDWATER	SOIL	10-14-13	1:10
		Point 12 @ 2.5'	X		GROUNDWATER	SOIL	10-14-13	11:30
		Point 15 @ 3.5'	X		GROUNDWATER	SOIL	10-14-13	11:35
		Point 15 @ 8'	X		GROUNDWATER	SOIL	10-14-13	11:35

**Relinquished By:** Kyle Schnaidt **Date:** 10-15-13  
**Received By:** *[Signature]* **Date:** 10-15-13  
**Relinquished By:** *[Signature]* **Date:** 10-15-13  
**Received By:** *[Signature]* **Date:** 10-15-13

**Delivered By:** (Circle One)  
 Sampler - UPS - Bus - Other: *[Initials]*

**Sample Condition:** Cool Intact *[Initials]*  
 Yes  No

**REMARKS:**  
 kschnaidt@rice-ecs.com  
 Knorman@rice-ecs.com  
 KJones@riceswd.com; jkamplain@rice-ecs.com  
 hconder@rice-ecs.com; Lweinheimer@rice-ecs.com

**Phone Result:**  Yes  No **Add'l Phone #:**  
**Fax Result:**  Yes  No **Add'l Fax #:**

**PLEASE NOTE:** Liability and Damages. Cardinal's liability and Cardinal'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 employee. 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.

**Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476**

#54

# Appendix C

Photo Documentation

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

**Linn H.E. West B #27 (2RP-668)**

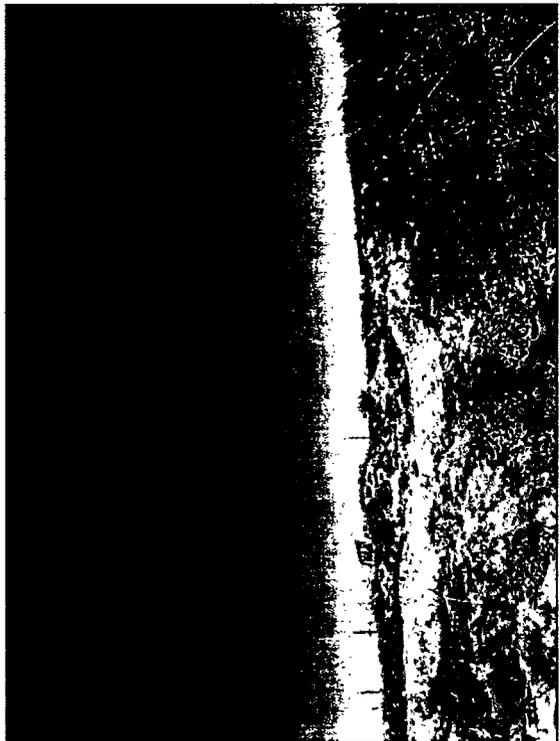
Unit Letter N, Section 4, T17S, R31E



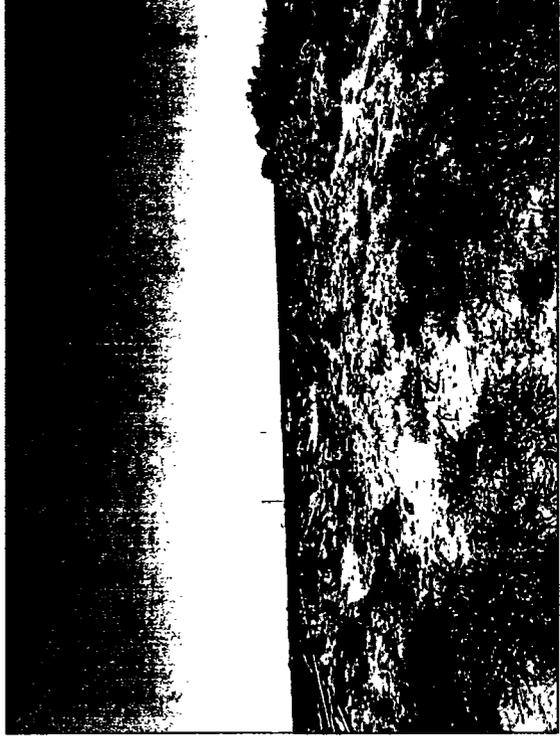
Initial site photo, facing north 10/10/13



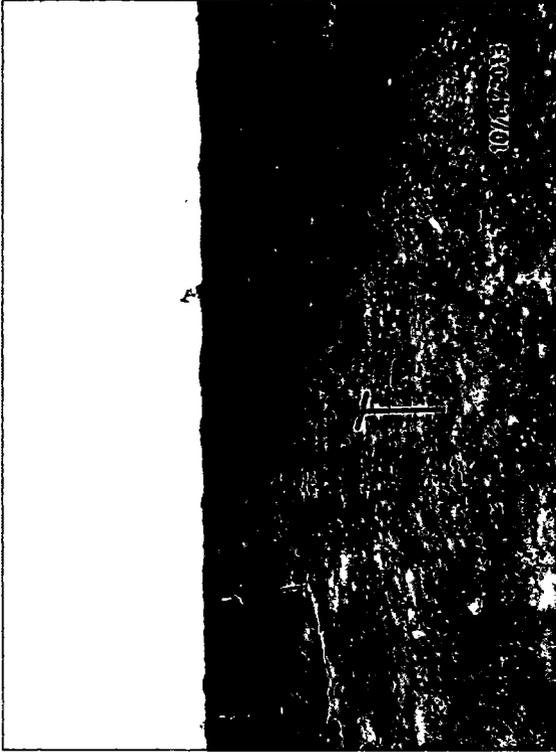
Initial site photo, facing north 10/10/13



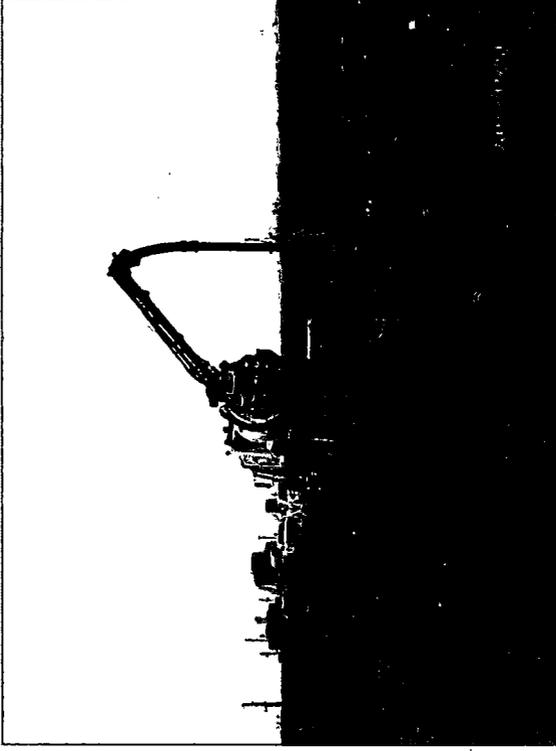
Initial site photo, facing north 10/10/13



Initial site photo, facing south 10/10/13



Hand auguring for depth, facing northeast 10/14/13



Line spot with hydrovac, facing northeast 2/10/14