

From: [Burton, Michael](#)
To: [Lara Weinheimer](#)
Subject: Re: FW: Linn J.L. Keel A #11 (2RP-2031) Addendum to Corrective Action Plan
Date: Tuesday, March 18, 2014 7:33:28 AM

This plan is approved with these stipulations.

SP 2 should be scraped down to 4' bgs and a liner should be key set and back fill. SP 8 needs to be excavated down to 3' 1" bgs to remove most of the chloride contamination. SP 8 and the rest of the spill area can be back filled by knocking in the sides then seeding. If you have any questions please contact me.

Mike Burton
BLM-CFO
Environmental Protection Specialist
575-234-2226 office
575-361-3574 cell
mburton@blm.gov

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On Wed, Mar 12, 2014 at 1:05 PM, Lara Weinheimer <lweinheimer@rice-ecs.com> wrote:

Mike, I haven't heard back from you on this site. I was concerned that you didn't receive it. When you get some time, could you review this Addendum and see if you approve?

Thanks!

Lara

From: Lara Weinheimer [mailto:lweinheimer@rice-ecs.com]
Sent: Tuesday, March 04, 2014 1:49 PM
To: 'Burton, Michael'
Cc: 'Hack Conder'; 'Jacob Kamplain'; 'Wall, Fred'
Subject: Linn J.L. Keel A #11 (2RP-2031) Addendum to Corrective Action Plan

Mike, attached is the Addendum to Corrective Action Plan for the Linn J.L. Keel A #11

(2RP-2031). If you have any questions, please let us know. Otherwise we await your approval.

Thanks!

Lara Weinheimer

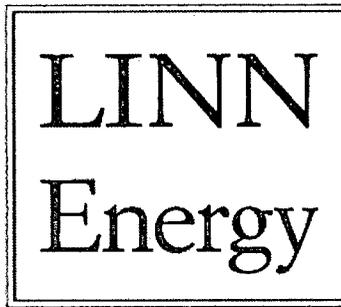
Rice Environmental Consulting & Safety

Project Scientist

419 West Cain

Hobbs, NM 88240

(575) 441-0431



LINN ENERGY

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

J.L. Keel A #11
2RP-2031

Addendum to Corrective Action Plan

API No. 3001505099

Release Date: August 22nd, 2011

Unit Letter H, Section 7, Township 17S, Range 31E

Rice Environmental Consulting & Safety

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

March 4th, 2013

Mike Bratcher

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

**RE: Addendum to Corrective Action Plan
Linn Energy – J.L. Keel A #11 (2RP-2031)
UL/H sec. 7 T17S R31E
API No. 3001505099**

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 5 miles northeast of Loco Hills, New Mexico at UL/H sec. 7 T17S R31E. This site is in an area of no known groundwater

On August 22nd, 2011, Linn discovered that an injection line ruptured at the buried 'T' intersection and released a total of 100 barrels of produced water. A total of 15 barrels of produced water was recovered from the site. The release affected 12,383 square feet of pasture land. BLM was notified of the release on August 22nd, 2011 and an initial C-141 was sent to BLM and NMOCD on October 29th, 2013 (Appendix A).

RECS personnel were on site beginning on October 28th, 2013 to assess the site. A total of 14 points were sampled at the surface along the release. Three points were sampled with depth to determine the vertical extent of the release. All samples were field tested for chlorides and for organic vapors with a PID meter. The samples were then taken to a commercial laboratory for analysis.

Corrective Action Plan

On December 5th, 2013, a Corrective Action Plan (CAP) was submitted to BLM and NMOCD. As part of the CAP, RECS recommended that the site be scraped down 6 inches to remove the elevated chlorides from the surface of the release and to remove visible staining. The scraped soil would be sent to a NMOCD approved facility for disposal. Clean soil would be imported to the site to serve as backfill and to contour the site to the surrounding location. Soil amendments would be added as needed and the site will be seeded with a blend of native vegetation.

NMOCD responded to the CAP on December 5th, 2013 with stipulations that needed to be completed prior to conducting CAP work (Appendix B). NMOCD requested that deeper samples be obtained at Points 2, 6, 8, 11 and 14. The depth of the samples should be to a depth near 10 ft bgs. Additional sampling may be required based on the results of the analytical testing. BLM concurred with these stipulations on December 5th, 2013.

Addendum to the Corrective Action Plan

On January 24th, 2014, RECS personnel were on site to conduct vertical sampling at the site at Points 2, 6, 8, 11, and 14 as requested by NMOCD and BLM (Figure 1). As the verticals were installed, samples were taken at regular intervals and field tested for chlorides and organic vapors. Representative samples were taken to a commercial laboratory for analysis (Appendix C). Points 6, 8 and 11 returned laboratory chloride readings below 1,000 mg/kg at the base of the each vertical and Point 14 returned a laboratory chloride reading below 250 mg/kg at the base of its vertical. Point 2 was installed to a depth of 15 ft bgs and at that depth returned a laboratory chloride value of 2,840 mg/kg and GRO, DRO and BTEX results of non-detect.

Two soil bores were installed at the site on February 19th, 2014 to determine the depth of chloride contamination at the site. As the soil bores were advanced, samples were taken every 3 ft and field tested for chlorides and organic vapors. The bottom two samples from each bore were taken to a commercial laboratory for analysis (Appendix D). SB-1 was installed to a depth of 45 ft bgs and returned laboratory chloride readings of 336 mg/kg at 42 ft bgs and 160 mg/kg at 45 ft bgs. SB-2 was installed to a depth of 27 ft bgs and returned laboratory chloride readings of 176 mg/kg at 24 ft bgs and 160 mg/kg at 27 ft bgs. GRO, DRO and BTEX readings in both soil bores were non-detect.

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

Based on the sampling data, the areas around Point 2 and 8 will be scraped down 2 ft, and the area around Point 9 will be scraped down 6 inches (Figure 1). All excavated soils will be evaluated for use as backfill and any soils having a field chloride level greater than 1,000 mg/kg or an organic vapor reading greater than 100 ppm will be taken to a NMOCD approved facility for disposal. The remainder of the excavated soil will be sampled and taken to a commercial laboratory to confirm chloride levels less than 1,000 mg/kg. Clean soil will be imported to the site to replace any soils taken for disposal. The site will be backfilled with the clean soil and remaining excavated soil to ground surface. The site will be contoured to the surrounding area. Soil amendments will be added as needed and the site will be seeded with LPC mix.

Once these actions have been completed, a request for 'remediation termination' and site closure will be submitted to BLM and NMOCD.

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,

A handwritten signature in black ink, appearing to read "L.W." followed by a stylized flourish.

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

Attachments:

- Figure 1 – Initial Sampling Data
- Appendix A – Initial C-141
- Appendix B – Corrective Action Plan Stipulations
- Appendix C – Vertical Installation Lab
- Appendix D – Soil Bore Installation Lab
- Appendix E – Photo Documentation



Figures

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

Initial Sampling Data

Point 1	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 10	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 2	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	224	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	271	0.4							
2'	877	0.2							
3'	1962	0.3							
4'	2479	0.2							
5'	2831	0.4							
6'	3891	0.2							
7'	2136	0.2							
8'	3021	0.2							
9'	2280	0.4							
10'	2019	0.8							
11'	3001	0.3							
12'	3640	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
13'	1233	0.4							
14'	3181	0.2							
15'	2840	0.3	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 11	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	48	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	522	1.1							
2'	39	1.5							
3'	497	1.1							
4'	555	1.1							
5'	555	1.5							
6'	815	1.3							
7'	928	0.9	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
8'	414	0.3							
9'	304	1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
10'	336	0.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 3	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	736	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
6"	800	0.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	752	0.04	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 12	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 13	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 14	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	<16	1.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
2'	139	1.6							
3'	147	1.1							
4'	120	1.6							
5'	115	1.5							
6'	112	1.3							
7'	150	1.1							
8'	145	1.1							
9'	<16	1.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
10'	48	1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 4	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 5	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 6	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	<16	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	<16	0.7	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
2'	150	0.3							
3'	173	0.4							
4'	170	0.6							
5'	179	0.2							
6'	145	0.3							
7'	146	0.5							
8'	151	0.7							
9'	149	0.3							
10'	336	0.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
11'	704	0.06	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

SB-1	Depth	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
	18	1823	5.4							
	21	2497	5.4							
	24	1165	6							
	27	557	3.4							
	30	444	6.7							
	33	343	3.8							
	36	322	4.2							
	39	313	4.2							
	42	336	1.2	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
	45	160	1.7	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 7	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	208	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

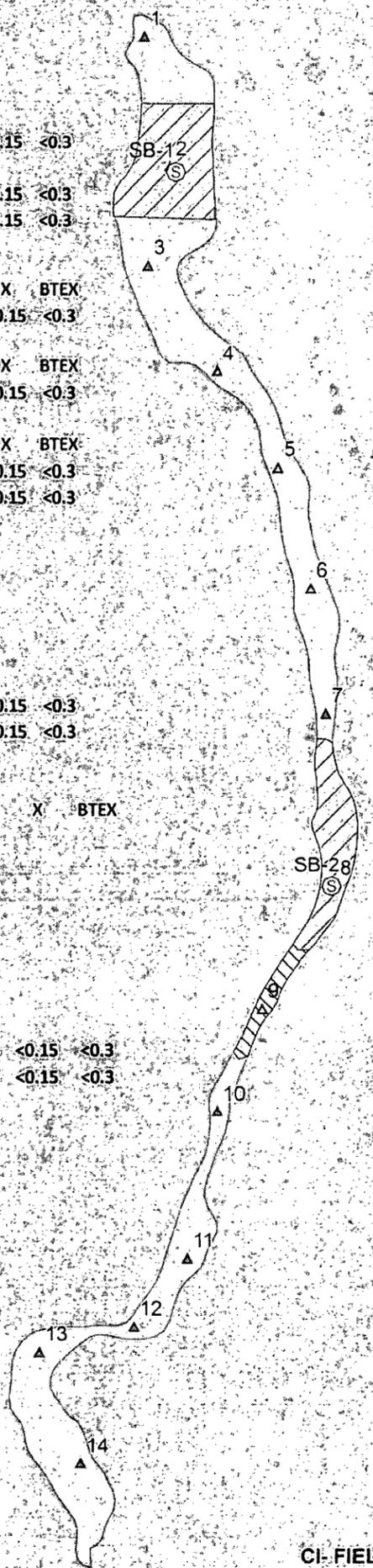
Point 8	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	976	0.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
6"	<16	0.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	<16	0.9	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
2'	778	1.2							
3'	1434	1.1							
4'	1166	1.2							
5'	1180	1.3	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
6'	1807	1.1							
7'	1402	1							
8'	1243	0.8							
9'	1384	0.8							
10'	1467	0.7							
11'	1101	0.6							
12'	1580	0.8	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

Point 9	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
Surface	3640	0.7	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
6"	528	5.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1'	192	12	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
1.5'	64	7.1	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

SB-2	Depth	Cl-	PID	GRO	DRO	B	T	E	X	BTEX
	15	966	3.4							
	18	591	4.5							
	21	448	3.8							
	24	176	2.9	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
	27	160	3.5	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

LANDOWNER: BLM
DGW: NONE

Source: Esri, DigitalGlobe, GeoEye, i-cubed, swisstopo, and the GIS User Community



CI- FIELD DATA
CI- LAB DATA

Legend

- ⊙ ALL SOIL BORE
- ▲ SAMPLE POINT
- ⊙ WELLHEAD
- ▨ PROPOSED SCRAPE TO 2 FT
- ▨ PROPOSED SCRAPE TO 6 IN
- STAIN (12,383 sq ft)



LINN
J. L. KEEL A #11
2RP-2031
UL H SECTION 7
T-17-S R-31-E
EDDY COUNTY, NM

Figure 1

GPS date: 2/18/14 KS
Drawing date: 2/27/14
Drafted by: L. Weinheimer

Appendix A

Initial C-141

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

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

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 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 88240	Telephone No. (806) 367-0645
Facility Name J.L. Keel A #11	Facility Type Injection Line Release

Surface Owner BLM	Mineral Owner	API No. 3001505099
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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
H	7	17S	31E	1945	FNL	762	FEL	Eddy

Latitude 32°51'3.227"N Longitude 103°54'10.98"W

NATURE OF RELEASE

Type of Release Production water	Volume of Release 100 bbls	Volume Recovered 15 bbls
Source of Release Injection Line	Date and Hour of Occurrence 8/22/11	Date and Hour of Discovery 8/22/11
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Terry Gregston - BLM	
By Whom?	Date and Hour 8/22/11	
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.*

The injection line to the injection well ruptured at the buried 'T' intersection affecting 12,383 sq ft of pasture land. A total of 100 bbls of produced water was released and a total of 15 bbls of produced water was recovered.

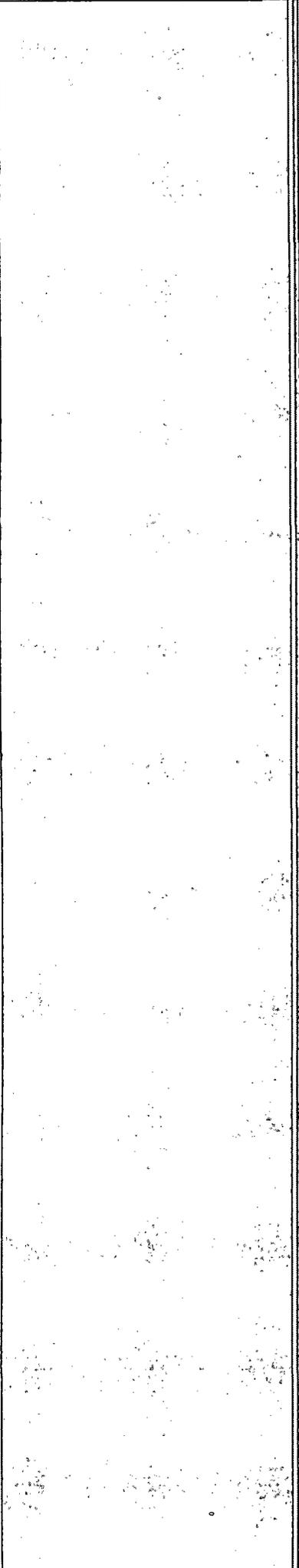
Describe Area Affected and Cleanup Action Taken.*

The site will be assessed vertically and horizontally and a Corrective Action Plan will be written with recommendations to remediate the site.

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>Fred B Wall</i>	<u>OIL CONSERVATION DIVISION</u>	
Printed Name: Brian Wall	Approved by Environmental Specialist:	
Title: Construction Foreman II	Approval Date:	Expiration Date:
E-mail Address: Bwall@linenergy.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: Phone: (806) 367-0645		

* Attach Additional Sheets If Necessary



Appendix B

Corrective Action Plan Stipulations

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

From: [Bratcher, Mike, EMNRD](#)
To: [Lara Weinheimer](#)
Cc: ["Wall, Fred"](#); ["Hack Conder"](#); ["Jacob Kamplain"](#); [Warren, JeanMarie, EMNRD](#)
Subject: RE: Pages from the Linn J.L. Keel A #11 (2RP-2031) Corrective Action Plan
Date: Thursday, December 05, 2013 10:08:57 AM

Lara,

In consideration of the time between the release and the sampling event, the volume of unrecovered fluids, soil conditions at the site, and at least one significant rain event since the release, OCD would request deeper samples be obtained at (sample) Points 2,6,8,11 and 14. Depth should be in the 10' bgs range. The listed sample points should be tested for chloride content, with additional testing for hydrocarbons at (sample) Points 2,8 and 14. Additional testing may be required based on the results of analytical data from these sample points. This request is subject to BLM approval and/or agreement.

If you have any questions or concerns, please contact me.

Thank you,

Mike Bratcher
NMOCD District 2
811 S. First Street
Artesia, NM 88210
O: 575-748-1283 X108
C: 575-626-0857
F: 575-748-9720

From: Lara Weinheimer [mailto:lweinheimer@rice-ecs.com]
Sent: Thursday, December 05, 2013 7:48 AM
To: Bratcher, Mike, EMNRD; Warren, JeanMarie, EMNRD
Cc: 'Wall, Fred'; 'Hack Conder'; 'Jacob Kamplain'
Subject: Pages from the Linn J.L. Keel A #11 (2RP-2031) Corrective Action Plan

Mike, attached is the verbiage and plat for the Linn J.L. Keel A #11 (2RP-2031) Corrective Action Plan. A hard copy is in the mail. If you have any questions, please let us know. Otherwise we await your approval.

Thanks!

Lara Weinheimer
Rice Environmental Consulting & Safety
Project Scientist
419 West Cain
Hobbs, NM 88240
(575) 441-0431



Appendix C

Vertical Installation Lab

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

February 07, 2014

JACOB KAMPLAIN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: J. L. KEEL A #11

Enclosed are the results of analyses for samples received by the laboratory on 01/30/14 17:05.

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/ga/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

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

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 2 @ 12' (H400308-01)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 115 % 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	3640	16.0	02/07/2014	ND	400	100	400	3.92		

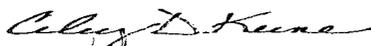
TPH 8015M		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 99.0 % 65.2-140
Surrogate: 1-Chlorooctadecane 99.4 % 63.6-154

Cardinal Laboratories

* = Accredited Analyte

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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:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 2 @ 15' (H400308-02)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 115 % 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	02/07/2014	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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 103 % 65.2-140
Surrogate: 1-Chlorooctadecane 102 % 63.6-154

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

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 6 @ 1' (H400308-03)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 114 % 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	<16.0	16.0	02/07/2014	ND	400	100	400	3.92		

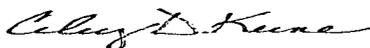
TPH 8015M		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 94.2 % 65.2-140
Surrogate: 1-Chlorooctadecane 97.9 % 63.6-154

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Celest D. Keene, Lab Director/Quality Manager

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

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 6 @ 10' (H400308-04)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIL) 116 % 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	336	16.0	02/07/2014	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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

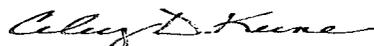
Surrogate: 1-Chlorooctane 101 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

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

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 6 @ 11' (H400308-05)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 115 % 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	704	16.0	02/07/2014	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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

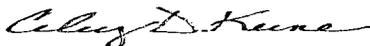
Surrogate: 1-Chlorooctane 88.1 % 65.2-140

Surrogate: 1-Chlorooctadecane 92.8 % 63.6-154

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

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 8 @ 5' (H400308-06)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID 116 % 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	1180	16.0	02/07/2014	ND	400	100	400	3.92		

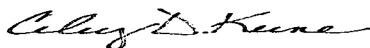
TPH 8015M		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 90.0 % 65.2-140
Surrogate: 1-Chlorooctadecane 93.7 % 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:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 8 @ 12' (H400308-07)

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	02/06/2014	ND	2.42	121	2.00	1.65	
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64	
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10	
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798	
Total BTEX	<0.300	0.300	02/06/2014	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 116 % 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	1580	16.0	02/07/2014	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	02/03/2014	ND	215	107	200	4.28	
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91	

Surrogate: 1-Chlorooctane 90.6 % 65.2-140
Surrogate: 1-Chlorooctadecane 94.5 % 63.6-154

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

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 11 @ 7' (H400308-08)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 115 % 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	02/07/2014	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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 99.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 100 % 63.6-154

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 JACOB KAMPLAIN
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 Fax To: (575) 397-1471

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 11 @ 9' (H400308-09)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 116 % 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	304	16.0	02/07/2014	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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

Surrogate: 1-Chlorooctane 92.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 89.9 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 11 @ 10' (H400308-10)

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	02/06/2014	ND	2.42	121	2.00	1.65	
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64	
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10	
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798	
Total BTEX	<0.300	0.300	02/06/2014	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 116 % 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	336	16.0	02/07/2014	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	02/03/2014	ND	215	107	200	4.28	
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91	

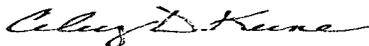
Surrogate: 1-Chlorooctane 97.1 % 65.2-140

Surrogate: 1-Chlorooctadecane 98.0 % 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:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 14 @ 1' (H400308-11)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 115 % 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	<16.0	16.0	02/07/2014	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	02/03/2014	ND	215	107	200	4.28		
DRO >C10-C28	<10.0	10.0	02/03/2014	ND	210	105	200	2.91		

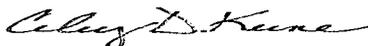
Surrogate: 1-Chlorooctane 102 % 65.2-140

Surrogate: 1-Chlorooctadecane 105 % 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:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 14 @ 9' (H400308-12)

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	02/06/2014	ND	2.42	121	2.00	1.65		
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64		
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10		
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798		
Total BTEX	<0.300	0.300	02/06/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 114 % 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	<16.0	16.0	02/07/2014	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	02/04/2014	ND	203	101	200	3.08		
DRO >C10-C28	<10.0	10.0	02/04/2014	ND	190	95.1	200	1.59		

Surrogate: 1-Chlorooctane 97.4 % 65.2-140
Surrogate: 1-Chlorooctadecane 103 % 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:	01/30/2014	Sampling Date:	01/24/2014
Reported:	02/07/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PT. 14 @ 10' (H400308-13)

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	02/06/2014	ND	2.42	121	2.00	1.65	
Toluene*	<0.050	0.050	02/06/2014	ND	2.37	119	2.00	1.64	
Ethylbenzene*	<0.050	0.050	02/06/2014	ND	2.38	119	2.00	1.10	
Total Xylenes*	<0.150	0.150	02/06/2014	ND	6.89	115	6.00	0.798	
Total BTEX	<0.300	0.300	02/06/2014	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 115 % 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	02/07/2014	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	02/04/2014	ND	203	101	200	3.08	
DRO >C10-C28	<10.0	10.0	02/04/2014	ND	190	95.1	200	1.59	

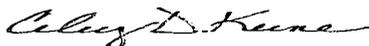
Surrogate: 1-Chlorooctane 83.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 79.4 % 63.6-154

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

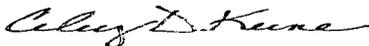
Notes and Definitions

QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
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

Cardinal Laboratories

*=Accredited Analyte

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Celest D. Keene, Lab Director/Quality Manager



CARDINAL 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

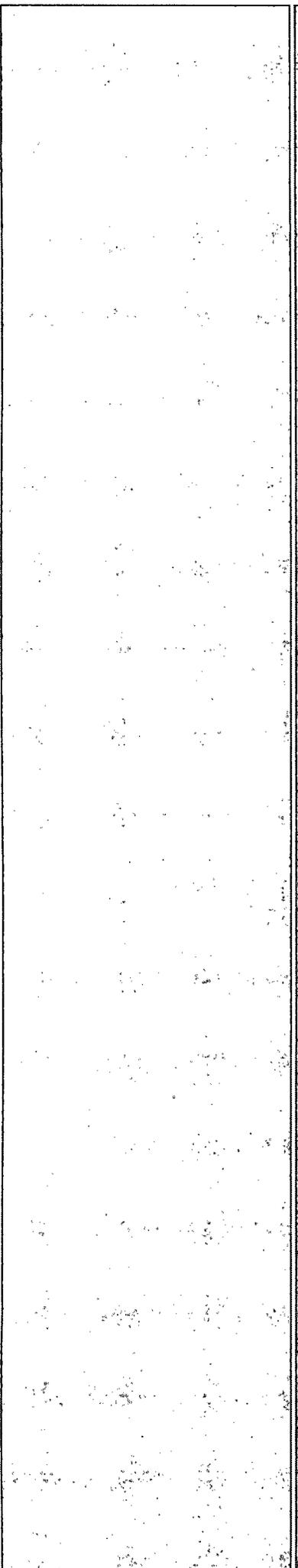
CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: RECS		BILL TO		ANALYSIS REQUEST																						
Project Manager: Jacob Kamplain		P.O. #:		Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS																	
Address:		Company:																								
City: Hobbs State: NM Zip: 88240		Attn:																								
Phone #: Fax #:		Address:																								
Project #: Project Owner:		City:																								
Project Name:		State: Zip:																								
Project Location: <i>J.L. Keel A#10</i>		Phone #:																								
Sampler Name: Kyle Schnaidt		Fax #:																								
FOR LAB USE ONLY																										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS							GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE/COOL	OTHER:	DATE	TIME						
<i>H400308</i>																										
<i>11</i>	<i>point 14 @ 1'</i>	<i>6</i>	<i>1</i>			<i>X</i>							<i>1-21-19</i>	<i>1:10</i>	<i>X</i>	<i>X</i>	<i>X</i>									
<i>12</i>	<i>point 14 @ 9'</i>	<i>6</i>	<i>1</i>			<i>X</i>							<i>5</i>	<i>1:00</i>	<i>X</i>	<i>X</i>	<i>X</i>									
<i>13</i>	<i>point 14 @ 10'</i>	<i>6</i>	<i>1</i>			<i>X</i>								<i>1:15</i>	<i>X</i>	<i>X</i>	<i>X</i>									

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Relinquished By: <i>Kyle Schnaidt</i>	Date: <i>1-30-19</i>	Received By: <i>Jodi Hanson</i>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
	Time: <i>5:05</i>		Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:	
	Time:		email results	
Delivered By: (Circle One)	Sample Condition	CHECKED BY: <i>[Signature]</i>	Knorman@rice-ecs.com	
Sampler - UPS - Bus - Other:	Cool Intact	(Initials)	Kjones@riceswd.com; jkamplain@rice-ecs.com	
	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		hconder@rice-ecs.com; Lweinheimer@rice-ecs.com	

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



Appendix D

Soil Bore Installation Lab

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

February 20, 2014

JACOB KAMPLAIN

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: J. L. KEEL A #11

Enclosed are the results of analyses for samples received by the laboratory on 02/19/14 15:40.

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.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

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

Received:	02/19/2014	Sampling Date:	02/19/2014
Reported:	02/20/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SOIL BORE #1 @ 42' (H400503-01)

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	02/20/2014	ND	2.03	101	2.00	16.6	
Toluene*	<0.050	0.050	02/20/2014	ND	2.07	103	2.00	15.6	
Ethylbenzene*	<0.050	0.050	02/20/2014	ND	2.06	103	2.00	16.4	
Total Xylenes*	<0.150	0.150	02/20/2014	ND	6.02	100	6.00	14.5	
Total BTEX	<0.300	0.300	02/20/2014	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 97.2 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	336	16.0	02/20/2014	ND	386	96.5	400	3.56	

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	02/20/2014	ND	194	96.8	200	13.2	
DRO >C10-C28	<10.0	10.0	02/20/2014	ND	183	91.4	200	14.2	

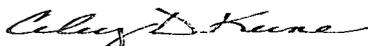
Surrogate: 1-Chlorooctane 104 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 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:	02/19/2014	Sampling Date:	02/19/2014
Reported:	02/20/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SOIL BORE #1 @ 45' (H400503-02)

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	02/20/2014	ND	2.03	101	2.00	16.6	
Toluene*	<0.050	0.050	02/20/2014	ND	2.07	103	2.00	15.6	
Ethylbenzene*	<0.050	0.050	02/20/2014	ND	2.06	103	2.00	16.4	
Total Xylenes*	<0.150	0.150	02/20/2014	ND	6.02	100	6.00	14.5	
Total BTEX	<0.300	0.300	02/20/2014	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 98.3 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	02/20/2014	ND	386	96.5	400	3.56	

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	02/20/2014	ND	194	96.8	200	13.2	
DRO >C10-C28	<10.0	10.0	02/20/2014	ND	183	91.4	200	14.2	

Surrogate: 1-Chlorooctane 90.4 % 65.2-140

Surrogate: 1-Chlorooctadecane 91.6 % 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:	02/19/2014	Sampling Date:	02/19/2014
Reported:	02/20/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SOIL BORE #2 @ 24' (H400503-03)

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	02/20/2014	ND	2.03	101	2.00	16.6		
Toluene*	<0.050	0.050	02/20/2014	ND	2.07	103	2.00	15.6		
Ethylbenzene*	<0.050	0.050	02/20/2014	ND	2.06	103	2.00	16.4		
Total Xylenes*	<0.150	0.150	02/20/2014	ND	6.02	100	6.00	14.5		
Total BTEX	<0.300	0.300	02/20/2014	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 98.0 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	176	16.0	02/20/2014	ND	386	96.5	400	3.56		

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	02/20/2014	ND	194	96.8	200	13.2		
DRO >C10-C28	<10.0	10.0	02/20/2014	ND	183	91.4	200	14.2		

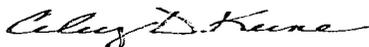
Surrogate: 1-Chlorooctane 94.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 98.5 % 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:	02/19/2014	Sampling Date:	02/19/2014
Reported:	02/20/2014	Sampling Type:	Soil
Project Name:	J. L. KEEL A #11	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SOIL BORE #2 @ 27' (H400503-04)

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	02/20/2014	ND	2.03	101	2.00	16.6	
Toluene*	<0.050	0.050	02/20/2014	ND	2.07	103	2.00	15.6	
Ethylbenzene*	<0.050	0.050	02/20/2014	ND	2.06	103	2.00	16.4	
Total Xylenes*	<0.150	0.150	02/20/2014	ND	6.02	100	6.00	14.5	
Total BTEX	<0.300	0.300	02/20/2014	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 97.2 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	02/20/2014	ND	386	96.5	400	3.56	

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	02/20/2014	ND	194	96.8	200	13.2	
DRO >C10-C28	<10.0	10.0	02/20/2014	ND	183	91.4	200	14.2	

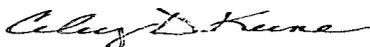
Surrogate: 1-Chlorooctane 77.3 % 65.2-140

Surrogate: 1-Chlorooctadecane 83.5 % 63.6-154

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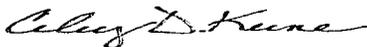
Notes and Definitions

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

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Celey D. Keene, Lab Director/Quality Manager



CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

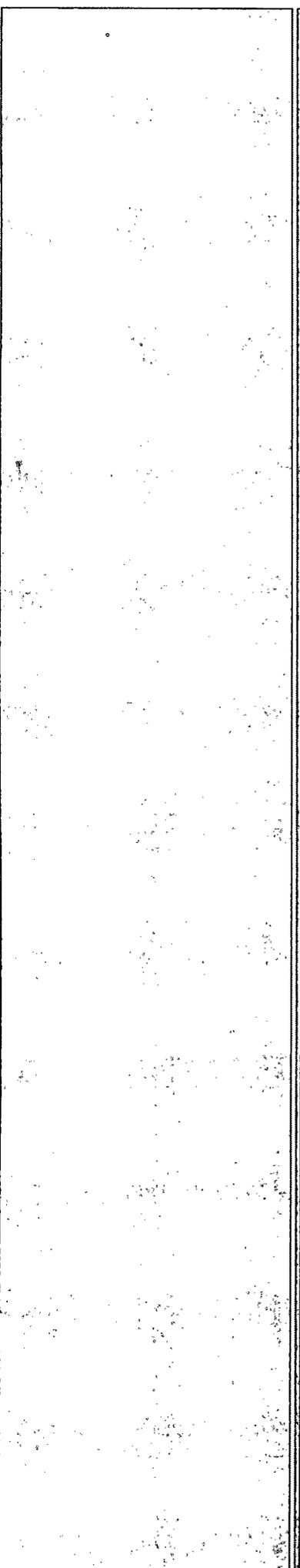
Company Name: <u>RECS</u>				BILL TO				ANALYSIS REQUEST										
Project Manager: <u>Jacob Kamplain</u>				P.O. #:				RUSH!!										
Address:				Company:														
City:		State:		Zip:		Attn:												
Phone #:		Fax #:		Address:														
Project #:		Project Owner:		City:														
Project Name:				State:								Zip:						
Project Location: <u>LINN ENERGY J.L. KEEL A #11</u>				Phone #:														
Sampler Name: <u>EDWARD CEBAREO</u>				Fax #:														
FOR LAB USE ONLY		Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						PRESERV.		SAMPLING		CHLORIDES	TPH	BTEX
GROUNDWATER	WASTEWATER					SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME				
		1	SOIL BORE #1 @ 42'	G	1	/					/		2-19-14	1:20	/	/		
		2	SOIL BORE #1 @ 45'	G	1	/					/			1:25	/	/		
		3	SOIL BORE #2 @ 24'	G	1	/					/			2:05	/	/		
		4	SOIL BORE #2 @ 27'	G	1	/					/			2:10	/	/		

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Relinquished By: <u>[Signature]</u>	Date: <u>2-19-14</u>	Received By: <u>Jodi Henson</u>	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Phone #:	
	Time: <u>3:40</u>		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Fax #:	
Relinquished By:	Date:	Received By:	REMARKS: JKAMPLAIN @ rice-ecs.com hcondor @ riceswd.com lweinheimer @ rice-ecs.com		
	Time:				
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool <input type="checkbox"/> Intact <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>	CHECKED BY: (Initials) <u>[Signature]</u>		

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#54



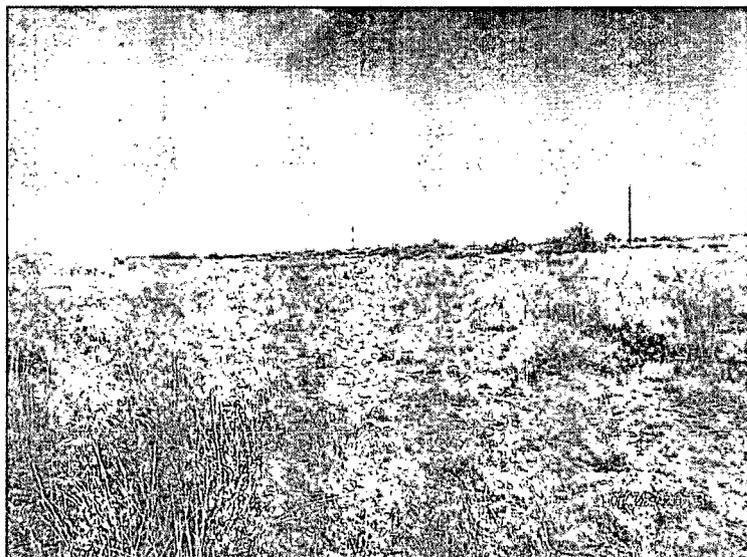
Appendix E

Photo Documentation

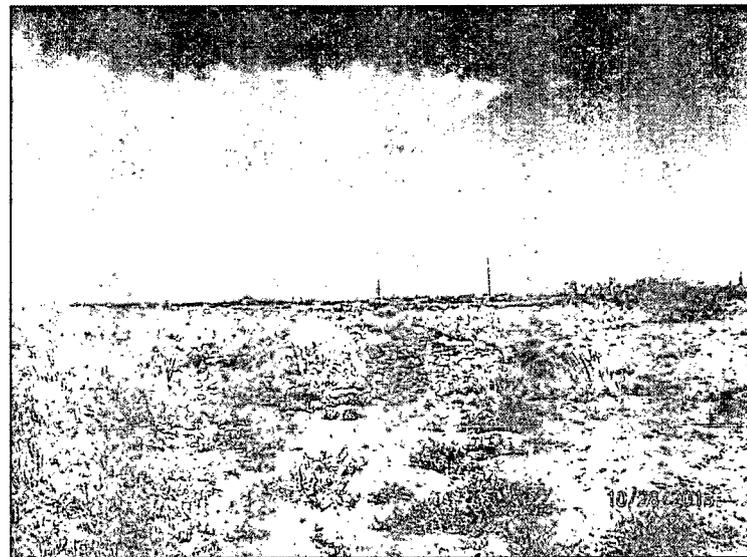
RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

Linn J.L. Keel A #11

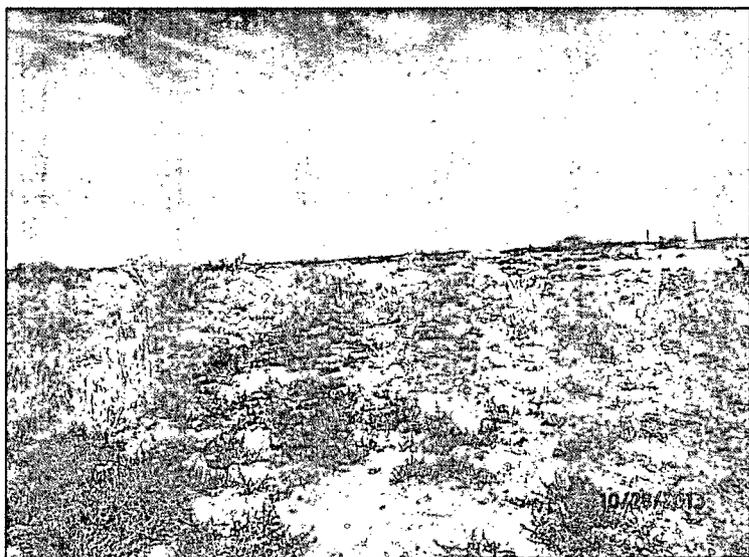
Unit Letter H, Section 7, T17S, R31E



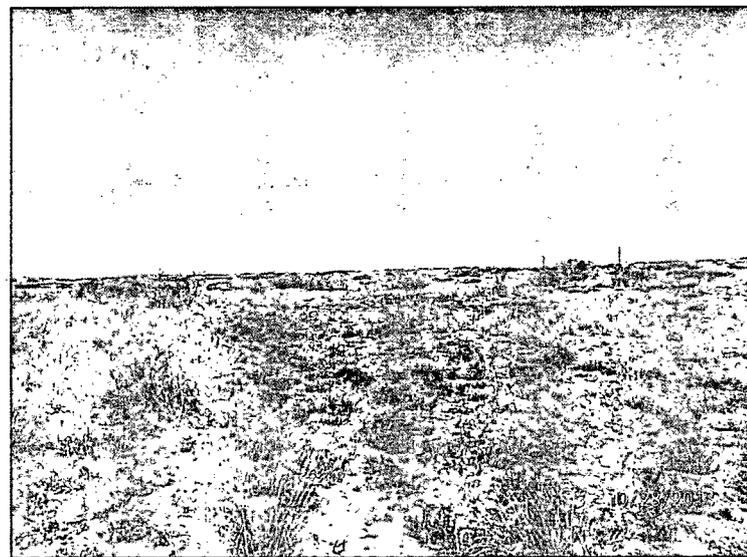
Initial release area, facing north 10/28/13



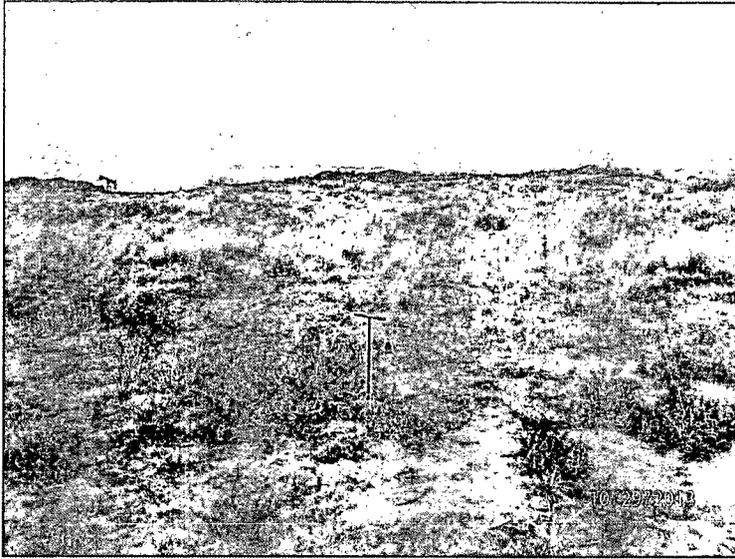
Initial release area, facing north 10/28/13



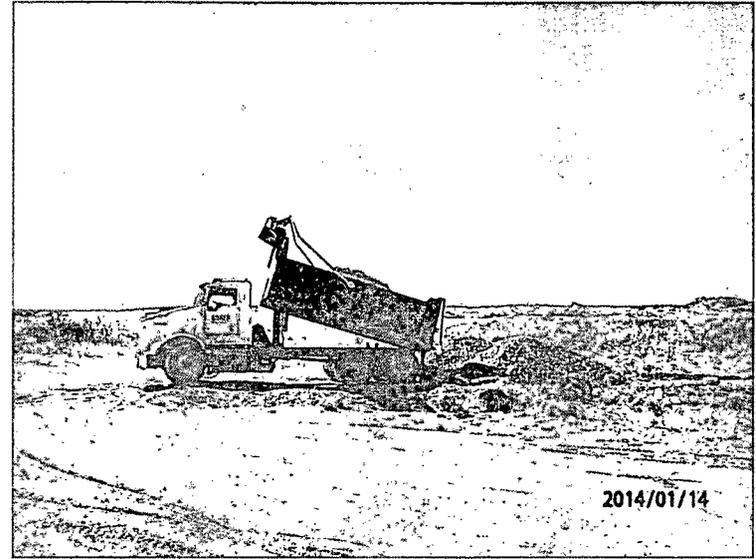
Initial release area, facing north 10/28/13



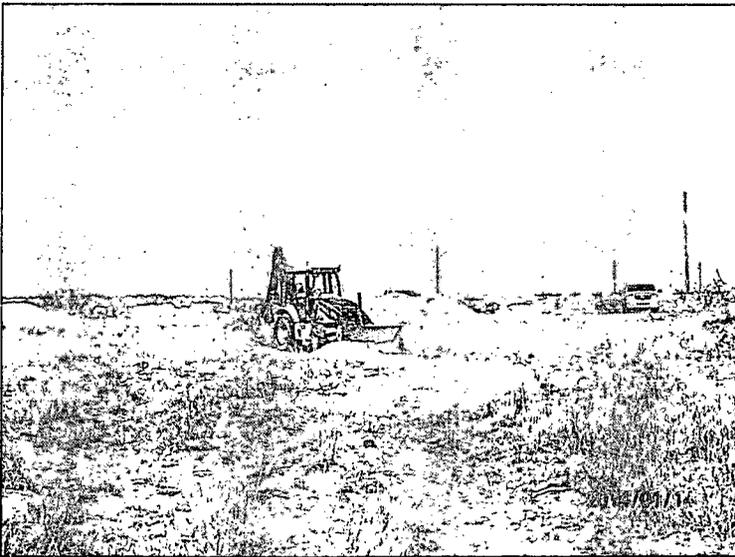
Initial release area, facing south 10/28/13



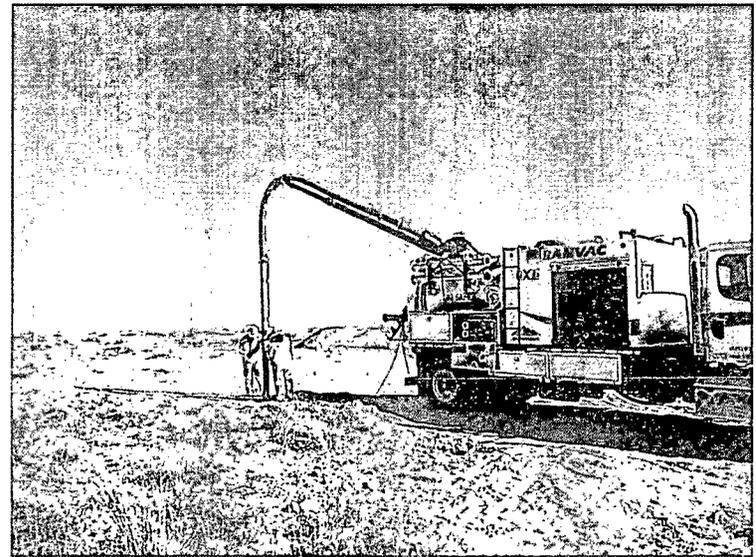
Hand auguring for depth, facing north 10/29/13



Importing caliche, facing south 1/14/14



Building access road for hydrovac, facing north 1/14/14

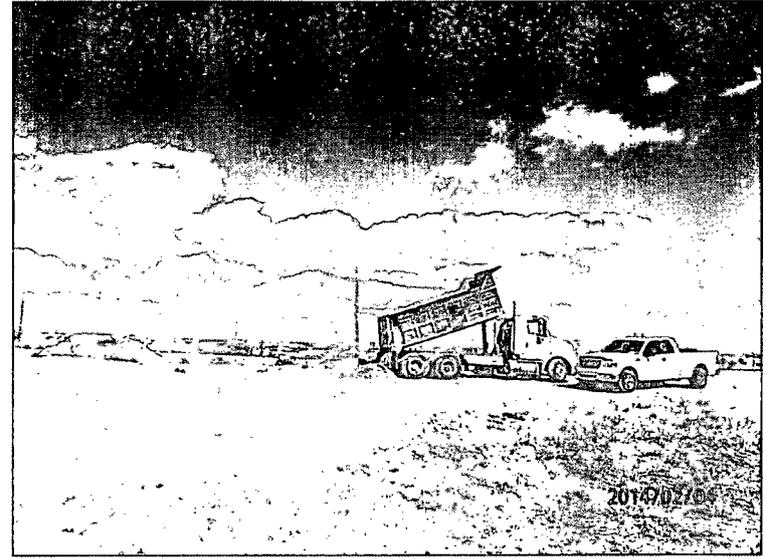


Spotting lines using hydrovac, facing northeast 1/16/14



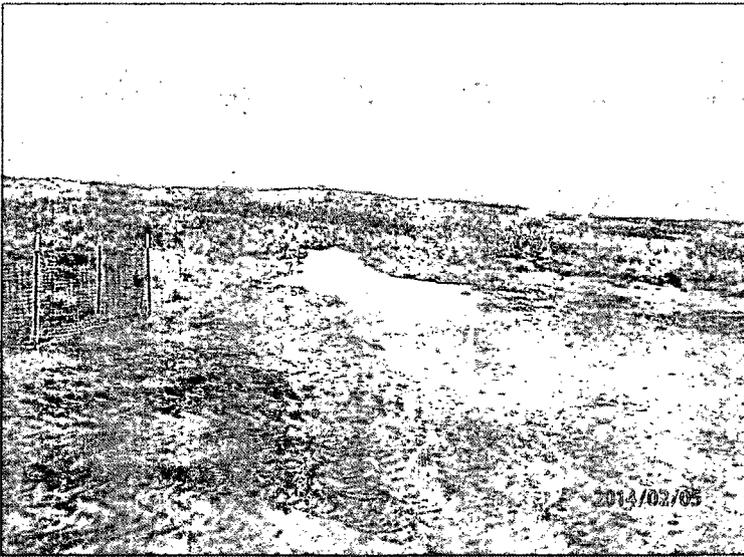
Installing verticals, facing south

1/24/14



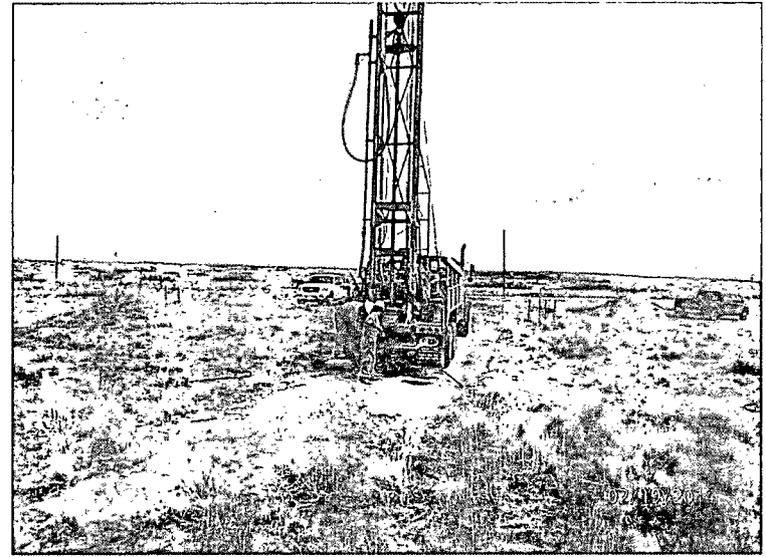
Importing caliche, facing north

2/4/14



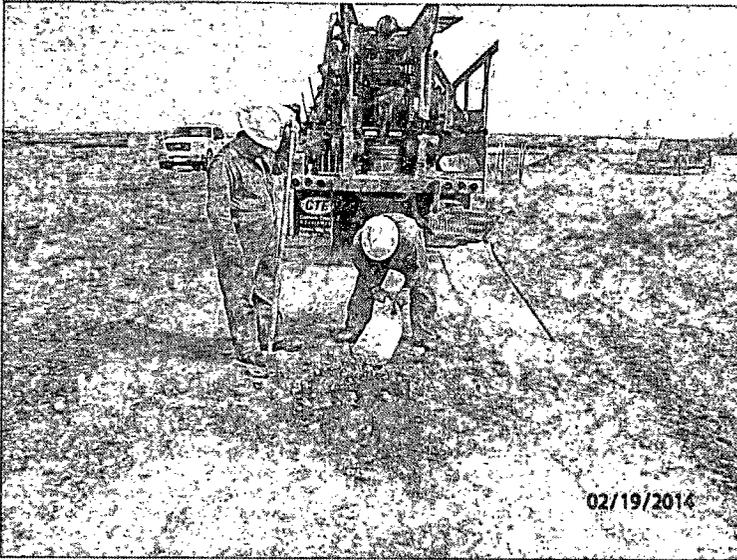
Building access road for soil bore installation, facing west

2/5/14

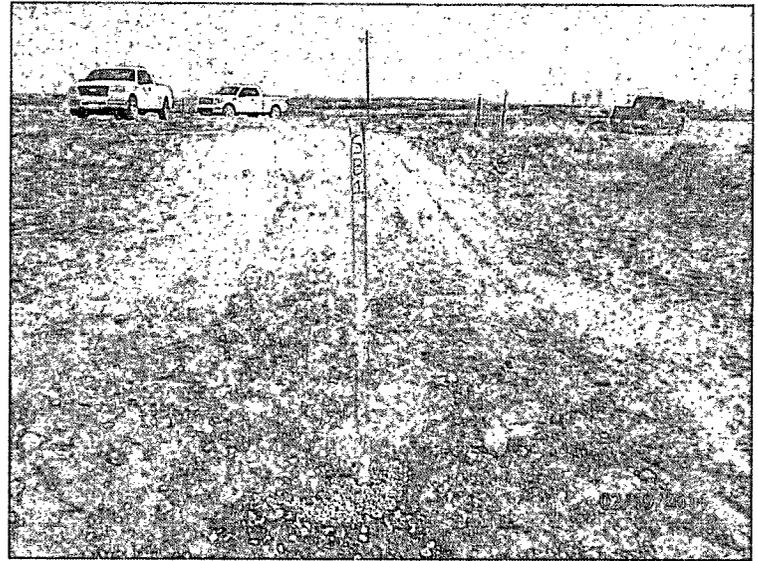


Installing SB-1, facing east

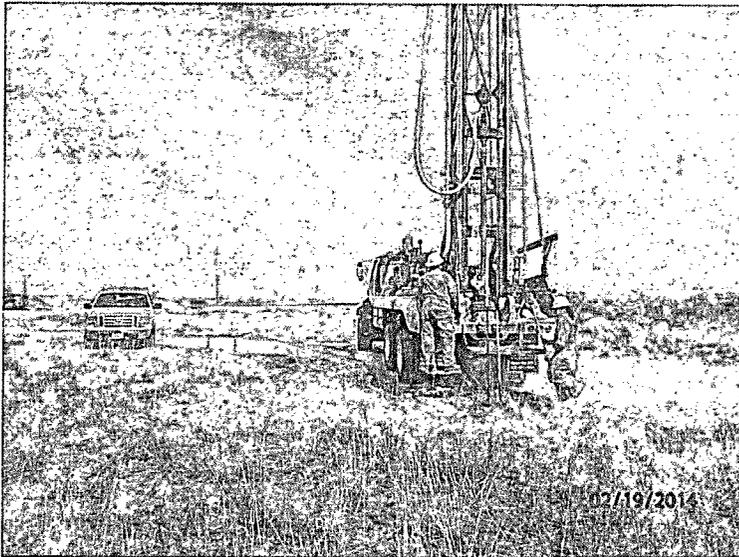
2/19/14



Plugging SB-1 in total with bentonite, facing east
2/19/14



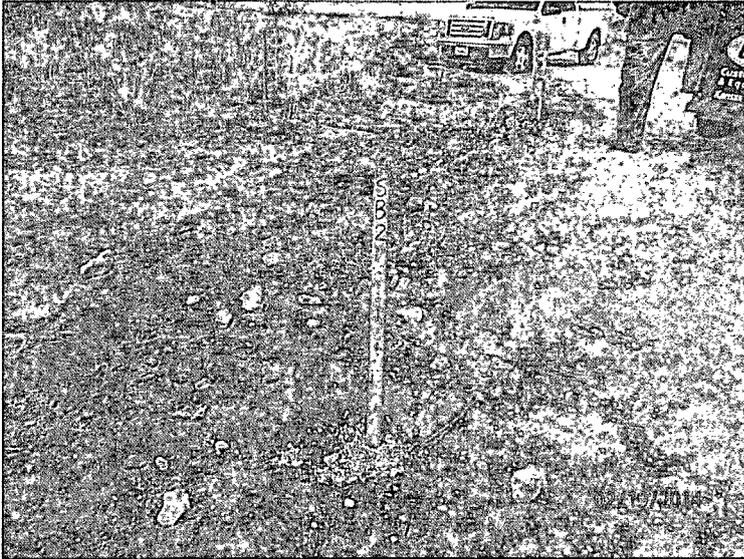
SB-1 completed, facing east
2/19/14



Installing SB-2, facing northeast
2/19/14

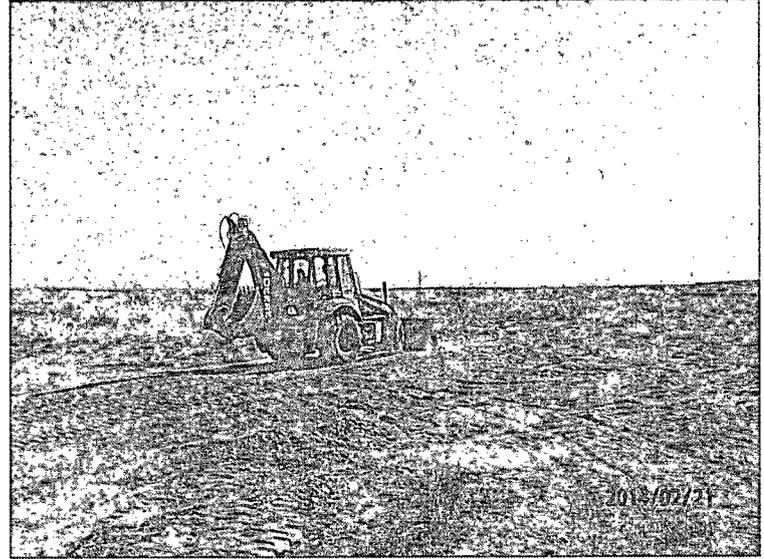


Plugging SB-2 in total with bentonite, facing east
2/19/14



SB-2 completed, facing north

2/19/14



Removing access road, facing east

2/21/14