



Fren #5 Oil Transfer Line

REMEDIATION WORK PLAN

API No. 30-015-05253

Release Date: October 01, 2014

Unit Letter P, Section 19, Township 17 South, Range 31 East

RP# 2RP-2529

January 13, 2015

Prepared by:

Environmental Department
Diversified Field Service, Inc.
206 W. Snyder
Hobbs, NM 88240
Phone: (575)964-8394
Fax: (575)393-8396

Mike Bratcher
Environmental Specialist
NM Oil Conservation District – Division 2
811 S. First St.
Artesia, NM 88210

RE: Linn Energy Fren #5 – Remediation Work Plan
UL/P, Section 19, T17S, R31E
API No. 30-015-05253

Mr. Bratcher,

Linn Energy (Linn) has retained Diversified Field Service, Inc. (DFSI) to address environmental issues for the site detailed herein.

The site is located southwest of Maljamar NM, in Eddy County. The leak site resulted from a produced water leak. The source of the leak was due to corrosion on the oil transfer line located in the pasture area. A C-141 was submitted to the NMOCD on October 2nd, 2014 (2RP-2259). BLM event number is unknown at this time.

Site Assessment and Delineation

On October 13th to October 31st, 2014 DFSI personnel obtained surface and delineation samples of the leak area, which included SP1-SP26. In this area DFSI encountered deep depths of clay soil which prolonged the sampling event. Below you will see the data for each sample, not all samples cleaned up to the regulated concentrations. Only clean samples were taken to the lab, the sample data in red below was confirmed by Cardinal labs:

SP1: 16' – 3898 mg/kg Cl (field sampling only)

SP2: 16' – 2974 mg/kg Cl (field sampling only)

SP3: 4' – 416 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH

SP4: 17' – 1049 mg/kg Cl (field sampling only)

SP5: 17' – 2774 mg/kg Cl (field sampling only)

SP6: 16' – 1060 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH

SP7: 18' – 1074 mg/kg Cl (field sampling only)
SP8: - 17' – 1049 mg/kg Cl (field sampling only)
SP9: 17' – 4148 mg/kg Cl (field sampling only)
SP10: 17' – 4248 mg/kg Cl (field sampling only)
SP11: 17' – 4298 mg/kg Cl (field sampling only)
SP12: 17' – 3998 mg/kg Cl (field sampling only)
SP13: 5' – 1650 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP14: 5' – 1440 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP15: 7' – 1380 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP16: 5' – 1280 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP17: 5' – 1280 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP18: 7' – 1900 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP19: 4' – 1170 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP20: 5' – 16 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP21: 5' – 32 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP22: 6' – 48 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP23: 5' – 1010 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP24: 6' – 752 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP25: 5' – 672 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH
SP26: 6' – 400 mg/kg Cl, <0.300 mg/kg BTEX and <10 mg/kg TPH

Field samples were taken on twenty-six sample points, each sample was tested for chlorides levels as well as TPH. The TPH samples were performed using a Mini Rae Photoionization Detector (PID). All clean field samples found under the BLM/NMOCOD standards, were taken to Cardinal Lab of Hobbs to obtain confirmation samples.

The area of impact covers approximately 119,542 sq. ft. of contaminated surface. The leak ran from the release point into the Cedar Lake Area.

DFSI has conducted a groundwater study of the area and has determined that according to the New Mexico Office of the State Engineer the average depth to groundwater for this area is 236 foot below ground surface. As per the BLM, Linn was requested to find a water well within a 2 mile radius, to obtain a sample of the ground water to determine the concentration levels of TDS (Total Dissolved Solids). One well was found to the southwest of the impacted area, this well was abandoned in the late 1960's. Based on the ground water study and unavailable water information it is therefore determined that there is no eminent danger of groundwater impact.

Conclusion

After careful review DFSI on behalf of Linn Energy would like to propose the following:

Excavate the impacted area from SP20 to SP26 to a depth of 3' bgs (81,813 sq. ft. of impacted area) and haul the contaminated soil to an approved disposal. Linn Energy would like to use material from the bottom of the Cedar Lake area to backfill the excavation. This will improve the area around the lake for future rain events and to provide a larger holding area to water livestock. A berm will be constructed on the east side of the road to prevent any future leaks from entering the lake bed. The remainder of the impacted area, SP1-19 will be revisited in one year from this date to determine if any vegetation growth has occurred, at that point a supplemental report will be submitted for the remainder of the contaminated area if needed.

Side wall samples will be taking during the excavation procedure to ensure that all contaminants have been remediated. These samples will also be taken to an approved lab for confirmation before backfilling will take place.

Following the approval of one of the above plan above and after the remediation has taken place, DFSI will submit all proper closure documentation to the NMOCD and BLM in accordance to the State and Federal Guidelines set forth.

Please feel free to contact me with any questions concerning this remediation plan request.

Sincerely,



Natalie Gladden
Environmental Director
Diversified Field Service, Inc.
206 West Snyder
Hobbs, NM 88240
Office: (575)964-8394
Mobile: (575)602-1786
Fax: (575)964-8396
Email: ngladden@diversifiedfsi.com

cc Jeff Robertson, Jim Amos
NM Bureau of Land Management

Attachments: Initial Form C-141
Linn Spill/Release Report
Site/Sample Map
Sample Data
Lab Analytical Data

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 Operating Inc.	Contact Brian Wall
Address 2130 W Bender Blvd Hobbs, NM 88240	Telephone No. 575-738-1739
Facility Name (Closest well) Fren Oil 5 Transfer Line	Facility Type Pipeline/ Production Line
Surface Owner Federal	Mineral Owner
API No. 30-015-05253	

LOCATION OF RELEASE

Unit Letter P	Section 19	Township 17S	Range 31E	Feet from the 660	North/South Line South	Feet from the 660	East/West Line East	County Eddy
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Latitude 32.814603855344 Longitude -103.90264740013

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 80bbls	Volume Recovered 0
Source of Release Transit line	Date and Hour of Occurrence 10/01/2014	Date and Hour of Discovery 10/01/2014 12:00pm
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Jeff Robertson BLM / Mike Bratcher NM OCD	
By Whom? Brian Wall	Date and Hour 10/02/2014 0700	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* Old Tran-site line developed a small hole/crack due to fatigue-allowing an estimated 80 bbls. of produced water to escape--This line is used to transfer produced water from the Fren and Max Friess batteries. The old line joins the fiberglass transfer line from the Turner B south which also allowed fluid from all three locations to leak. We will be requesting an AFE to replace this old line with a new 3" poly surface line using the existing ROW amount of PW recovered unknown due to accumulated rain water in low areas

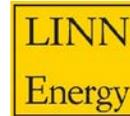
Describe Area Affected and Cleanup Action Taken.* Fluid ran across pasture estimated 500 yards and accumulated in a low area on the lease road and crossed into adjacent pasture heavy rains had the area saturated allowing the fluid to travel rather than soak

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: 	OIL CONSERVATION DIVISION	
Printed Name: Brian Wall	Approved by Environmental Specialist:	
Title: Construction Foreman II	Approval Date:	Expiration Date:
E-mail Address: bwall@linnenergy.com	Conditions of Approval:	
Date: 10/02/2014 Phone: 806-367-0645	Attached <input type="checkbox"/>	

* Attach Additional Sheets If Necessary

Spill / Release Report



Incident Date: 10/1/2014 **Incident Time:** 12:00 PM

EH&S Rep: Only By An EH&S Rep.
Date:

Location Information

Completion or Unit Lease Code:		Division:	Houston Region	State:	New Mexico
		Department:	Production	Lease Name & No:	Fren 5 closest well
		Area:	Grayburg	Legal:	S-19 T-17S-31E
		Rig Name:		County:	Eddy

Type and Location

Spill/Release Type:	Land	Inside Dike Area:	No
Latitude:	32.81391	Longitude:	103.902533
Facility:	Pipeline/Production Line	Were There Any Injuries?	No

(If yes, must also fill out Injury Report)

Nearest City:	Loco Hills NM
Directions to Site:	From the Grayburg office travel W on 82 apporx. 1/4 mile turn S. travel 200 yds turn E travel 1/4 mile turn S. 100 yads to site
Source Type:	
Body of Water Impacted:	No
Name Body Of Water:	

Description of Incident and Cause Analysis

Old Transite line developed a small hole/crack due to fatigue-allowing an estimated 80 bbls. of produced water to escape--Fluid ran across pasture estimated 500 yards and accumulated in a low area on the lease road and crossed into adjacent pasture heavy rains had the area saturated allowing the fluid to travel rather than soak. this line is used to transfer produced water from the Fren and Max Friess batteries. The old line joins the fiberglass transfer line from the TurnerB south which also allowed fluid from all three locations to leak. We will be requesting an AFE to replace this old line with a new 3" poly surface line using the existing ROW amount of PW recovered unknown due to accumulated rain water in low areas

Company Name: if caused by contractor - contractor information	
Address	City, State, Zip:
Phone:	Contact Person:

Personnel Information

Lease Operator:	Roger Salazar	Phone:	505-206-7957
Remarks:			
Supervisor:	Rick Rickman	Phone:	575-513-8825
Remarks:			

Containment/Clean Up

Cleaned Date: _____	Time: _____	By: _____
Containment/Cleanup Description: To be determined Await delineation.		
Waste Handling Description: Water recovered taken to public disposal		
Containment/Cleanup Costs: <u>to be determined</u> Oil Loss Cost: <u>\$0.00</u>		

Weather

Wind Direction: <u>N/A</u>	Wind Speed: <u>N/A</u>	Wind Speed UOM: _____
Temperature: <u>82</u>	<u>Fahrenheit</u>	Temperature UOM: _____
Weather Conditions: <u>Clear</u>		

Substance

Number Substances Were Released? 1

SUBSTANCE 1

Substance Released: <u>Produced Water</u>	Volume Released: <u>80</u>	Volume Recovered: <u>0</u>
Volume Type: <u>Barrels</u>		Amount Lost: <u>80</u>

SUBSTANCE 2

Substance Released: <u>Select One</u>	Volume Released: <u>0</u>	Volume Recovered: <u>0</u>
Volume Type: <u>Select One</u>		Amount Lost: <u>0</u>

SUBSTANCE 3

Substance Released: <u>Select One</u>	Volume Released: <u>0</u>	Volume Recovered: <u>0</u>
Volume Type: <u>Select One</u>		Amount Lost: <u>0</u>

Slick Present: <u>No</u>	Was a CERCLA Hazardous substance Released? <u>Select One</u>
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External					
Agency Name	Reported to	Reported By	Verbal / Written	Date / Time	
1 BLM	Jeff Robertson	Brian Wall	Written	10-2-14	0700
2 OCD	Mike Bratcher	Brian Wall	Written	10-2-14	0700
3					

Equipment Type: <u>Other</u>	Specific Cause: <u>Normal Degradation</u>
If not listed enter on line below: <u>Tran-site pipe (cement)</u>	If not listed enter on line below:

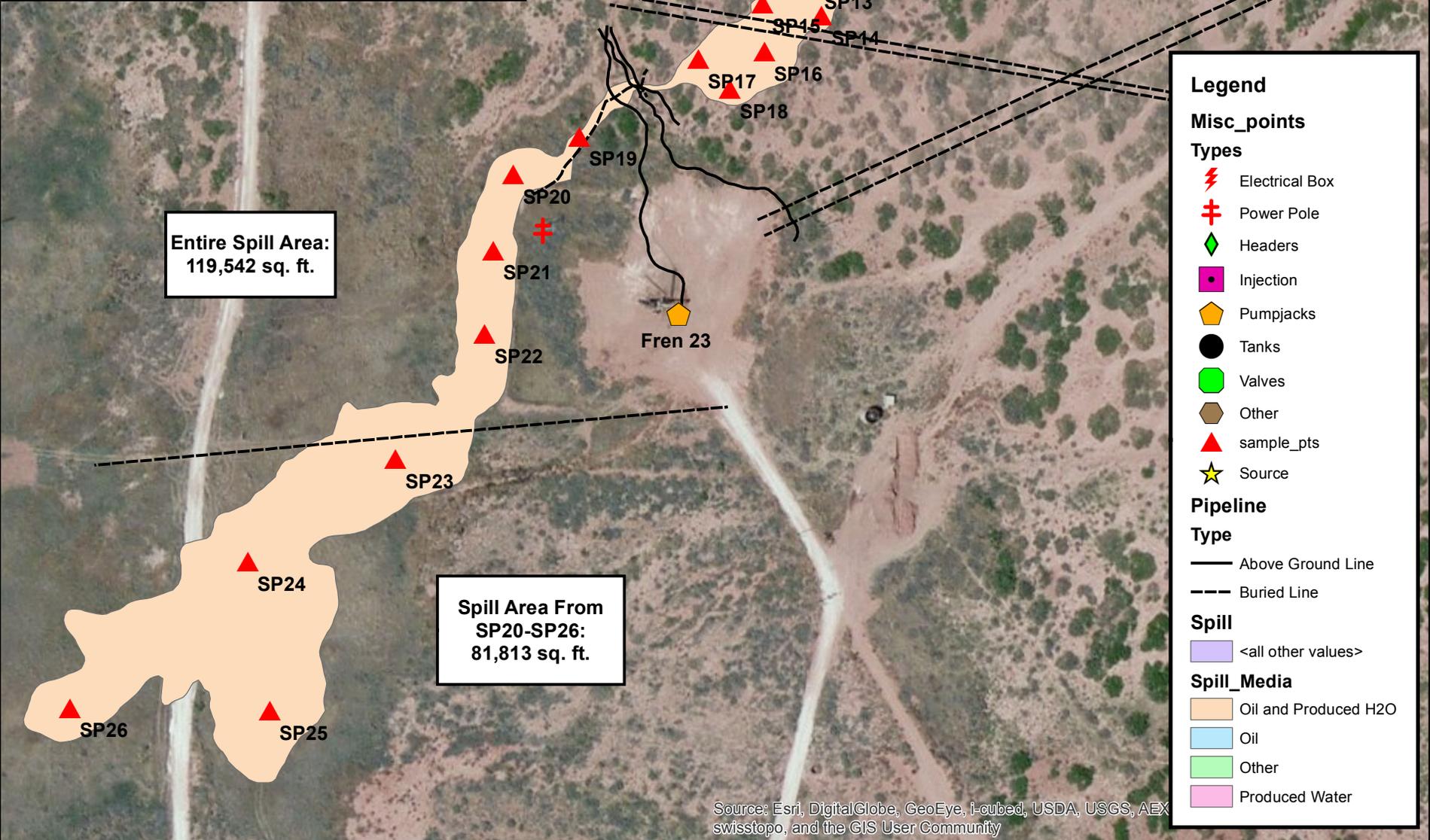
For EH&S Department Only

Contributing Factors	
Contributing Factors: <u>SELECT ONE</u>	Weather Conditions: <u>SELECT ONE</u>

Site Diagram

Linn, Fren Oil #005
UL/P, Sec. 19 T17S R31E
Eddy County, NM
Drafted By: Lance Crenshaw, 01/06/15

0 0.0125 0.025 0.05 Miles



Entire Spill Area:
119,542 sq. ft.

Spill Area From
SP20-SP26:
81,813 sq. ft.

Legend

Misc_points

Types

- Electrical Box
- Power Pole
- Headers
- Injection
- Pumpjacks
- Tanks
- Valves
- Other
- sample_pts
- Source

Pipeline

Type

- Above Ground Line
- Buried Line

Spill

- <all other values>

Spill_Media

- Oil and Produced H2O
- Oil
- Other
- Produced Water

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

Diversified Environmental Services

Company Name: Linn Energy
 Location Name: Fren #005

SP Date: 10/13&14/2 10/15/14 10/24/14 10/27/14 10/28/14 10/29/14
 Rel Date: 10/30/14
10/31/14

SP1	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP2	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP3	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	Notes
Surf	51234	8.4		Surf	4748	18.8		Surf	29365	3.9		
1'	3174	274.4		1'	2824	2		1'	3373	1.6		
2'	5248	14.6		2'	2499	1.1		2'	1074	2		
3'	5498	55.5		3'	5048	1.2		3'	224	2.3		
4'	6348	21.6		4'	3998	1.9		4'	299	1.1		
5'	7622	10.8		5'	4998	1.4		4'	416	<10	<0.300	
6'	5198	26.4		6'	3998	3.6						
7'	4498	22.6		7'	3748	2.5						
8'	4623	14.9		8'	1949	1						
9'	4498	22.1		9'	2624	4.2						
10'	4648	15.5		10'	4223	2.3						
11'	4348	28		11'	4748	4.8						
12'	4098	17.4		12'	2774	3.5						
13'	4048	24.6		13'	3073	1.6						
14'	3998	11.2		14'	2999	2.9						
15'	3948	15.1		15'	3049	3.3						
16'	3898	11.4		16'	2974	1.8						

**BTEX cannot be field tested

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

Diversified Environmental Services

SP4	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP5	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP6	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	Notes
Surf	5748	65.4		Surf	25866	4.5		Surf	21493	10.2		
1'	4573	12.2		1'	4198	1.4		1'	2249	5.6		4
2'	2624	13.3		2'	2274	1.1		2'	2624	7.1		
3'	2999	6.1		3'	3623	0.9		3'	3748	3.4		
4'	4373	5.4		4'	3948	1.2		4'	4498	1.2		
5'	3124	11.8		5'	4123	0.7		5'	4373	0.9		
6'	3498	29.9		6'	3873	0.8		6'	4498	3.2		
7'	3448	17.9		7'	3074	0.6		7'	3773	2.4		
8'	3498	4.8		8'	1749	0.6		8'	4498	1.8		
9'	2874	6.3		9'	1124	0.8		9'	2624	0.6		
10'	2049	4.6		10'	3124	2.3		10'	3124	1.7		
11'	2624	25.3		11'	3548	2		11'	2024	2.1		
12'	1699	112.8		12'	3698	2.2		12'	1499	1.4		
13'	1899	40.1		13'	2749	1.9		13'	1449	1.1		
14'	1999	28.1		14'	2949	1.1		14'	1049	0.8		
15'	1449	17.1		15'	2724	2.8		15'	974	1.9		
16'	949	0.6		16'	2874	3.7		16'	874	0.4		
17'	1049	0.8		17'	2774	4.1		16'	1060	<10	<0.300	

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	Lab Confirmation Sample
	Field Sampling
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Diversified Environmental Services

SP7	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP8	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP9	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	Notes
Surf	42786	9.8		Surf	17619	15.7		Surf	849	0.2		
1'	2149	7.2		1'	3998	12.2		1'	2274	1.1		
2'	2749	5.5		2'	2999	9.6		2'	5023	3.8		
3'	3848	3.8		3'	4498	11.5		3'	5248	8.2		
4'	5123	2.7		4'	3648	10.1		4'	4998	7.6		
5'	4448	1.9		5'	3473	9.4		5'	5123	9.7		
6'	4223	3.5		6'	3523	6.8		6'	4123	4.9		
7'	3898	6.9		7'	3998	10.3		7'	3848	6.6		
8'	2499	9.2		8'	4048	10.8		8'	3298	8.3		
9'	1199	7.6		9'	3298	4.2		9'	2749	5.2		
10'	2099	6.3		10'	3099	8.1		10'	2049	4.7		
11'	1999	2.4		11'	2724	3.2		11'	1949	3.2		
12'	1874	5.8		12'	2499	2.7		12'	2299	5.7		
13'	1974	3.6		13'	2799	7.2		13'	2499	0.8		
14'	1749	7.2		14'	2049	1.8		14'	2624	1.9		
15'	1549	2.1		15'	1699	2.7		15'	3074	3.7		
16'	1424	4.5		16'	1174	2		16'	3498	6.6		
17'	1249	3.2		17'	1049	1.3		17'	4148	8.2		
18'	1074	1.1										

**BTEX cannot be field tested

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

Diversified Environmental Services

SP10	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP11	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP12	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	Notes
Surf	749	0.4		Surf	649	0.5		Surf	49	0.2		
1'	3898	7.2		1'	3024	4.1		1'	774	3.5		
2'	3748	6.8		2'	1024	4.6		2'	1624	5.9		
3'	1249	3.1		3'	974	0.9		3'	4998	2.8		
4'	1124	2.5		4'	1624	2.6		4'	3373	1.7		
5'	1224	4.8		5'	1749	3.7		5'	3498	0.3		
6'	1124	2.7		6'	1999	3.2		6'	3798	2.4		
7'	1499	1.6		7'	1924	4		7'	4248	4.5		
8'	1024	1.1		8'	2124	6.6		8'	4823	6.2		
9'	1249	5.3		9'	1874	3.8		9'	4998	8.8		
10'	999	3.4		10'	1499	0.8		10'	4648	7.4		
11'	1624	7.6		11'	1024	2.7		11'	4248	5.5		
12'	2024	0.2		12'	1799	3.9		12'	3823	3.6		
13'	3149	1.9		13'	2624	2.1		13'	3273	2.9		
14'	3498	2		14'	2874	1.1		14'	2974	2.1		
15'	3748	4.5		15'	3199	3		15'	3248	1.2		
16'	3973	2.3		16'	3848	7.6		16'	3698	3.3		
17'	4248	8.2		17'	4298	9.2		17'	3998	5.7		

**BTEX cannot be field tested

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

SP13	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP14	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	SP15	Cl ⁻ mg/kg	TPH mg/kg	BTEX mg/kg	Notes
Surf	22867	7.9		Surf	2493	12.8		Surf	9122	11.3		
1'	5048	2.3		1'	3498	3.4		1'	1024	7.1		
2'	2024	0.1		2'	2749	6.2		2'	1249	4.8		
3'	2799	11.4		3'	1299	1.7		3'	1149	9		
4'	699	1.1		4'	749	2.1		4'	949	1.2		
5'	749	14.7		5'	699	13.6		5'	1124	3.7		
5'	1650	<10	<0.300	5'	1440	<10	<0.300	6'	899	2.8		
								7'	549	1.6		
								7'	1380	<10	<0.300	

**BTEX cannot be field tested

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples



November 04, 2014

BRIAN WALL

LINN OPERATING-HOBBS

2130 W. BENDER

HOBBS, NM 88240

RE: FREN #5

Enclosed are the results of analyses for samples received by the laboratory on 10/30/14 16:08.

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,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/31/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 3 @ 4' (H403360-01)

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	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	200	99.8	200	2.75	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	204	102	200	3.74	

Surrogate: 1-Chlorooctane 147 % 47.2-157

Surrogate: 1-Chlorooctadecane 168 % 52.1-176

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/31/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 6 @ 16' (H403360-02)

BTEX 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1060	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS						S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	11/03/2014	ND	200	99.8	200	2.75		
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	204	102	200	3.74		

Surrogate: 1-Chlorooctane 152 % 47.2-157
Surrogate: 1-Chlorooctadecane 178 % 52.1-176

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Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/28/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 13 @ 5' (H403360-03)

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	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1650	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	200	99.8	200	2.75	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	204	102	200	3.74	

Surrogate: 1-Chlorooctane 153 % 47.2-157

Surrogate: 1-Chlorooctadecane 176 % 52.1-176

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Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/28/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 14 @ 5' (H403360-04)

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	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

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

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1440	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 83.4 % 47.2-157

Surrogate: 1-Chlorooctadecane 88.8 % 52.1-176

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 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/28/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 15 @ 7' (H403360-05)

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	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

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

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1380	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 83.4 % 47.2-157

Surrogate: 1-Chlorooctadecane 87.5 % 52.1-176

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Analytical Results For:

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 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/28/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 16 @ 5' (H403360-06)

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	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

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

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1280	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 84.3 % 47.2-157

Surrogate: 1-Chlorooctadecane 93.1 % 52.1-176

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Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/28/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 17 @ 5' (H403360-07)

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	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1280	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 94.7 % 47.2-157
Surrogate: 1-Chlorooctadecane 102 % 52.1-176

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Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/30/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 18 @ 7' (H403360-08)

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	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

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

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1900	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 97.5 % 47.2-157

Surrogate: 1-Chlorooctadecane 107 % 52.1-176

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Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/30/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 19 @ 4' (H403360-09)

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	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 107 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1170	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 95.9 % 47.2-157

Surrogate: 1-Chlorooctadecane 104 % 52.1-176

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Analytical Results For:

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 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/30/2014
 Reported: 11/04/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/30/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Kathy Perez

Sample ID: SP. 20 @ 5' (H403360-10)

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	11/03/2014	ND	1.91	95.7	2.00	0.0000498	
Toluene*	<0.050	0.050	11/03/2014	ND	1.82	90.9	2.00	0.325	
Ethylbenzene*	<0.050	0.050	11/03/2014	ND	1.74	87.2	2.00	1.27	
Total Xylenes*	<0.150	0.150	11/03/2014	ND	5.22	87.0	6.00	1.55	
Total BTEX	<0.300	0.300	11/03/2014	ND					

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

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 91.9 % 47.2-157

Surrogate: 1-Chlorooctadecane 94.8 % 52.1-176

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- 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



Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

BILL TO

ANALYSIS REQUEST

Company Name: LINN ENERGY Project Manager: BRIAN WALL Address: City: State: Zip: Phone #: Fax #: Project #: Project Owner: Project Name: Project Location: FREN #5 Sampler Name: EDWARD CESAREO		P.O. #: Company: LINN ENERGY Attn: BRIAN WALL Address: City: State: Zip: Phone #: Fax #: Project Name: Project Location:	
Lab I.D. H4D03360 Sample I.D.		MATRIX: GROUNDWATER, WASTEWATER, SOIL, OIL, SLUDGE, OTHER: ACID/BASE: ICE / COOL, OTHER: PRESERV: SAMPLING:	
(G)RAB OR (C)OMP # CONTAINERS DATE TIME		ANALYSIS REQUEST	
SP. 30 4' SP. 60 16' SP. 130 5' SP. 140 5' SP. 150 7' SP. 160 5' SP. 170 5' SP. 180 7' SP. 190 4' SP. 200 5' SP. 210 5'		CHLORIDES TPH BTEX	
Retinquished By: [Signature] Date: 10-30-14 Time: 4:10		Received By: [Signature] Date: 10-30-14 Time: 1:00	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		CHECKED BY: (Initials) Sample Condition: Cool Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Phone #: Add'l Fax #:		E-mail Results To: Ngladden@diversifiedfsi.com Rpons@diversifiedfsi.com Cesareo@diversifiedfsi.com	

* Cardinal cannot warrant verbal change. Please fix written change in (575) 393-2326



November 06, 2014

BRIAN WALL

LINN OPERATING-HOBBS

2130 W. BENDER

HOBBS, NM 88240

RE: FREN #5

Enclosed are the results of analyses for samples received by the laboratory on 10/31/14 15:35.

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,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

Received:	10/31/2014	Sampling Date:	10/30/2014
Reported:	11/06/2014	Sampling Type:	Soil
Project Name:	FREN #5	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP. 21 @ 5' (H403376-01)

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	11/05/2014	ND	1.95	97.6	2.00	4.89	
Toluene*	<0.050	0.050	11/05/2014	ND	1.87	93.4	2.00	4.63	
Ethylbenzene*	<0.050	0.050	11/05/2014	ND	1.83	91.7	2.00	4.50	
Total Xylenes*	<0.150	0.150	11/05/2014	ND	5.47	91.2	6.00	4.92	
Total BTEX	<0.300	0.300	11/05/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 107 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 91.5 % 47.2-157
Surrogate: 1-Chlorooctadecane 95.0 % 52.1-176

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/31/2014
 Reported: 11/06/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/30/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SP. 22 @ 6' (H403376-02)

BTEX 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/05/2014	ND	1.95	97.6	2.00	4.89	
Toluene*	<0.050	0.050	11/05/2014	ND	1.87	93.4	2.00	4.63	
Ethylbenzene*	<0.050	0.050	11/05/2014	ND	1.83	91.7	2.00	4.50	
Total Xylenes*	<0.150	0.150	11/05/2014	ND	5.47	91.2	6.00	4.92	
Total BTEX	<0.300	0.300	11/05/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 109 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 90.8 % 47.2-157

Surrogate: 1-Chlorooctadecane 100 % 52.1-176

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/31/2014
 Reported: 11/06/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/31/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SP. 23 @ 5' (H403376-03)

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	11/05/2014	ND	1.95	97.6	2.00	4.89		
Toluene*	<0.050	0.050	11/05/2014	ND	1.87	93.4	2.00	4.63		
Ethylbenzene*	<0.050	0.050	11/05/2014	ND	1.83	91.7	2.00	4.50		
Total Xylenes*	<0.150	0.150	11/05/2014	ND	5.47	91.2	6.00	4.92		
Total BTEX	<0.300	0.300	11/05/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 109 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1010	16.0	11/04/2014	ND	400	100	400	0.00		

TPH 8015M		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65		
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13		

Surrogate: 1-Chlorooctane 92.8 % 47.2-157

Surrogate: 1-Chlorooctadecane 95.9 % 52.1-176

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

Received:	10/31/2014	Sampling Date:	10/31/2014
Reported:	11/06/2014	Sampling Type:	Soil
Project Name:	FREN #5	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP. 24 @ 6' (H403376-04)

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	11/05/2014	ND	1.95	97.6	2.00	4.89	
Toluene*	<0.050	0.050	11/05/2014	ND	1.87	93.4	2.00	4.63	
Ethylbenzene*	<0.050	0.050	11/05/2014	ND	1.83	91.7	2.00	4.50	
Total Xylenes*	<0.150	0.150	11/05/2014	ND	5.47	91.2	6.00	4.92	
Total BTEX	<0.300	0.300	11/05/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 108 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	752	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 91.2 % 47.2-157

Surrogate: 1-Chlorooctadecane 94.3 % 52.1-176

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

 Received: 10/31/2014
 Reported: 11/06/2014
 Project Name: FREN #5
 Project Number: NOT GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 10/31/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SP. 25 @ 5' (H403376-05)

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	11/05/2014	ND	1.95	97.6	2.00	4.89		
Toluene*	<0.050	0.050	11/05/2014	ND	1.87	93.4	2.00	4.63		
Ethylbenzene*	<0.050	0.050	11/05/2014	ND	1.83	91.7	2.00	4.50		
Total Xylenes*	<0.150	0.150	11/05/2014	ND	5.47	91.2	6.00	4.92		
Total BTEX	<0.300	0.300	11/05/2014	ND						

Surrogate: 4-Bromofluorobenzene (PID) 108 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	672	16.0	11/04/2014	ND	400	100	400	0.00		

TPH 8015M		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65		
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13		

Surrogate: 1-Chlorooctane 90.5 % 47.2-157

Surrogate: 1-Chlorooctadecane 95.4 % 52.1-176

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 LINN OPERATING-HOBBS
 BRIAN WALL
 2130 W. BENDER
 HOBBS NM, 88240
 Fax To: (575) 738-1740

Received:	10/31/2014	Sampling Date:	10/31/2014
Reported:	11/06/2014	Sampling Type:	Soil
Project Name:	FREN #5	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SP. 26 @ 6' (H403376-06)

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	11/05/2014	ND	1.95	97.6	2.00	4.89	
Toluene*	<0.050	0.050	11/05/2014	ND	1.87	93.4	2.00	4.63	
Ethylbenzene*	<0.050	0.050	11/05/2014	ND	1.83	91.7	2.00	4.50	
Total Xylenes*	<0.150	0.150	11/05/2014	ND	5.47	91.2	6.00	4.92	
Total BTEX	<0.300	0.300	11/05/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 61-154

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	400	16.0	11/04/2014	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/03/2014	ND	185	92.4	200	1.65	
DRO >C10-C28	<10.0	10.0	11/03/2014	ND	179	89.5	200	9.13	

Surrogate: 1-Chlorooctane 89.3 % 47.2-157
Surrogate: 1-Chlorooctadecane 95.0 % 52.1-176

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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



Celey D. Keene, Lab Director/Quality Manager

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

BILL TO

ANALYSIS REQUEST

Company Name: LINN ENERGY
 Project Manager: BRIAN WALL

P.O. #:

Company: LINN ENERGY
 Attn: BRIAN WALL

Address: State: Zip:

Address:

City: State: Zip:
 Phone #: Fax #:
 Project #: Project Owner:

Project Name:

City: State: Zip:
 Phone #: Fax #:

Project Location: Fred #5

Sampler Name: EDWARD CESAREO

FOR LAB USE ONLY

MATRIX

PRESERV

SAMPLING

Lab I.D. Sample I.D.

H403376

1 SP. 21 @ 5'
 2 SP. 22 @ 6'
 3 SP. 23 @ 6'
 4 SP. 24 @ 6'
 5 SP. 25 @ 5'
 6 SP. 26 @ 5'

(G)RAB OR (C)OMP

CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER:

ACID/BASE:

ICE / COOL

OTHER:

DATE TIME

10-30-14 1:05
 10-30-14 1:10
 10-31-14 9:00
 10-31-14 10:42
 10-31-14 1:15
 10-31-14 2:50

CHLORIDES
 TPH
 BTEX

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Relinquished By: *[Signature]*

Date: 10-31-14

Received By: *[Signature]*

Checked By: *[Signature]*

Relinquished By: *[Signature]*

Date: 10-31-14

Received By: *[Signature]*

Checked By: *[Signature]*

Delivered By: (Circle One)

Sampler - UPS - Bus - Other: 40

Sample Condition

Cool Yes No
 Impact Yes No

CHECKED BY: *[Signature]*

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

E-mail Results To:

Ngladden@diversifiedfsi.com
 Rpons@diversifiedfsi.com
 cesareo@diversifiedfsi.com

REMARKS: