RECEIVED
By JKeyes at 3:36 pm, Dec 08, 2015

APPROVED
By JKeyes at 3:36 pm, Dec 08, 2015

LINN Energy

CMU North Injection

REMEDIATION WORK PLAN

API No. 30-025-32941

Release Date: October 7, 2015

Unit Letter H, Section 20, Township 17 South, Range 33 East

December 8, 2015

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

Kellie Jones
Environmental Specialist
NM Oil Conservation District-Division 2
1625 N. French
Hobbs, NM 88240

RE: **Linn Energy, CMU North Injection– Remediation Work Plan**
UL/H, Section 20, T17S, R33E
API No. 30-025-32941

Ms. Jones,

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

The site is located southeast of Maljamar, NM, in Lea County. The leak site resulted from a hole in the side of a fiberglass nipple. The impacted area is entirely in the pasture area. Approximately 168 bbls of produced water was released, with none recovered. A site map is attached. This spill occurred on top of the Caprock Escarpment. A C-141 was submitted to the NMOCD on October 12, 2015.

Site Assessment and Delineation

On October 7, 2015 DFSI personnel responded to the release site and dug up the line so a crew could fix it. DFSI then scraped up the affected area to minimize the environmental impact. A soil berm was installed on the northern edge of the spill to prevent any extra runoff from seeping into a pond in that area.

On October 16, 2015 DFSI personnel returned to the site and sampled the spill area. DFSI sampled 25 points of the spill area, and a water sample was taken from the pond. The samples were tested for chloride levels as well as BTEX. The BTEX samples were performed using a Mini Rae Photoionization Detector (PID). Due to the Caprock Escarpment, DFSI personnel encountered auger refusal at 1’ BGS on every sample point except SP #10, where auger refusal was encountered at 2’ BGS. The field sampling results are attached.

On November 6, 2015, DFSI personnel returned to drill five bore holes to obtain confirmation samples. Samples that field tested clean were sent to a commercial laboratory for confirmation. Those results are attached as well.

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 190 foot below ground surface. Therefore, no eminent danger of groundwater impact or threat to life is anticipated.

Conclusion

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

Excavate the entire spill to 4' BGS, except in the area(s) of the playa, which include SP6-SP10, and SP17-SP18. These areas will be excavated to 1' BGS and backfilled with native topsoil. In the 4' excavation, a 20 mil liner will be installed, then backfilled with native topsoil. The area will be seeded with a BLM approved mix. All contaminated materials will be hauled to an approved NM State Disposal.

Following the approval of the above plan, 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,

Michael Burton
Environmental Operations Director
Diversified Field Service, Inc.
206 West Snyder
Hobbs, NM 88240
Office: (575)964-8394
Mobile: (575)390-5454
Fax: (575)964-8396
Email: Mburton@diversifiedfsi.com

Attachments: Initial Form C-141
Site/Sample Map
Photos
Sample Data
Groundwater 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 E.L. Gonzales
Address 2130 W Bender Blvd Hobbs, NM 88240	Telephone No. 575-738-1739
Facility Name CMU North Injection – (closest active well CMU #196)	Facility Type Water Station

Surface Owner State	Mineral Owner	API No. Closest well 30-025-32941

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
H	20	17S	33E	2473	North	1259	East	Lea

Latitude 32.820549 **Longitude** -103.6808777

NATURE OF RELEASE

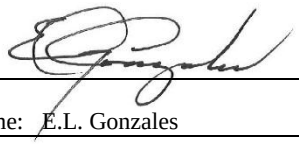
Type of Release Produced Water	Volume of Release 168 bbls	Volume Recovered 0
Source of Release FG- Pipeline	Date and Hour of Occurrence 10/07/2015	Date and Hour of Discovery 10/07/2015 6:30am
Was Immediate Notice Given? ☐ Yes ☐ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.* At approx. 6:30am leak was found, closet well was the CMU A #57. When I arrived water was spraying out of the ground towards the west. We got leak stopped and dug out and noticed a hole in the side of a fiberglass nipple.

Describe Area Affected and Cleanup Action Taken.* Leak was approx. 200' wide at the widest point, and approx. 500' long at the longest point. Leak sprayed out of ground towards west and ran downhill north, northeast. Approx. 168bbls spilled.

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: E.L. Gonzales	Approved by Environmental Specialist:	
Title: Production Supervisor	Approval Date:	Expiration Date:
E-mail Address: elgonzales@linnenergy.com	Conditions of Approval:	Attached ☐
Date: 10/12/2015 Phone: 505-504-8002		

* Attach Additional Sheets If Necessary

CMU North Injection

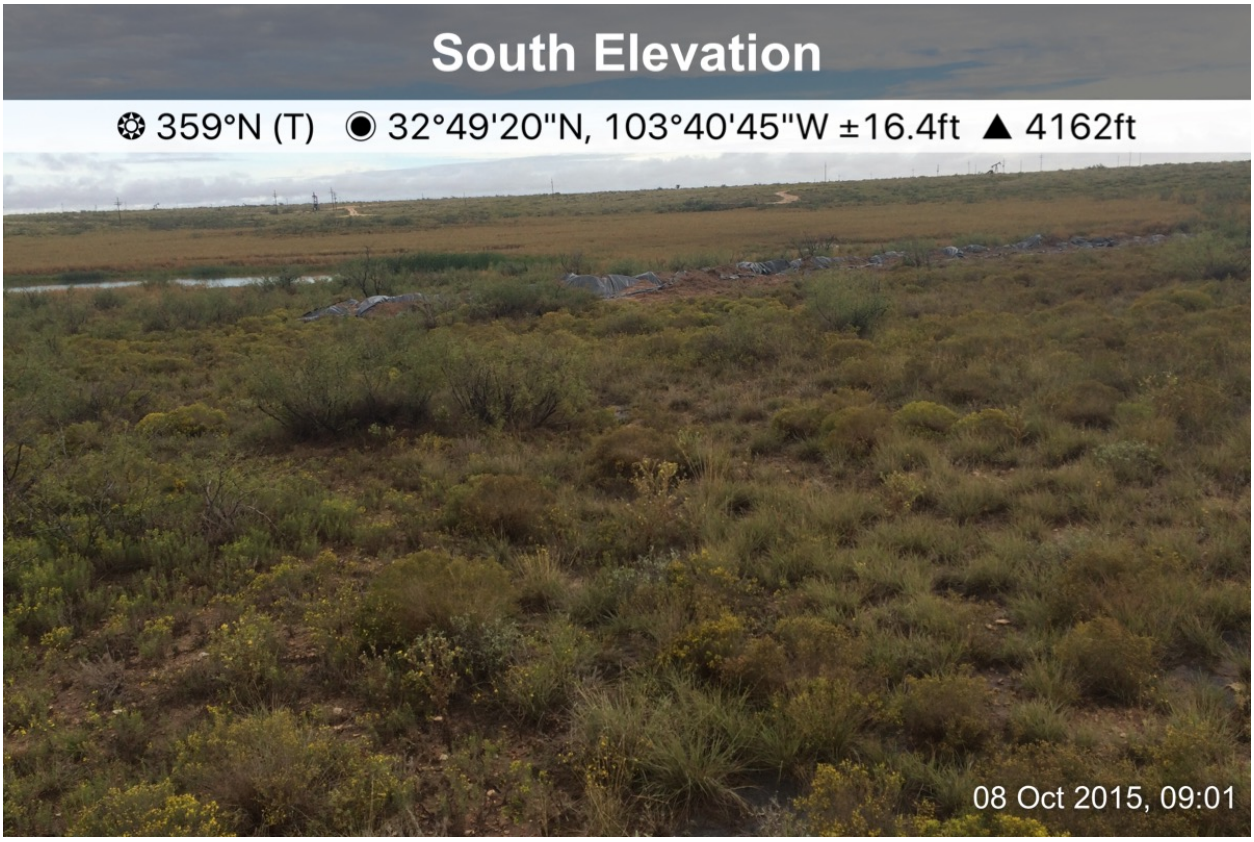
PHOTO PAGE

Spill area in pasture

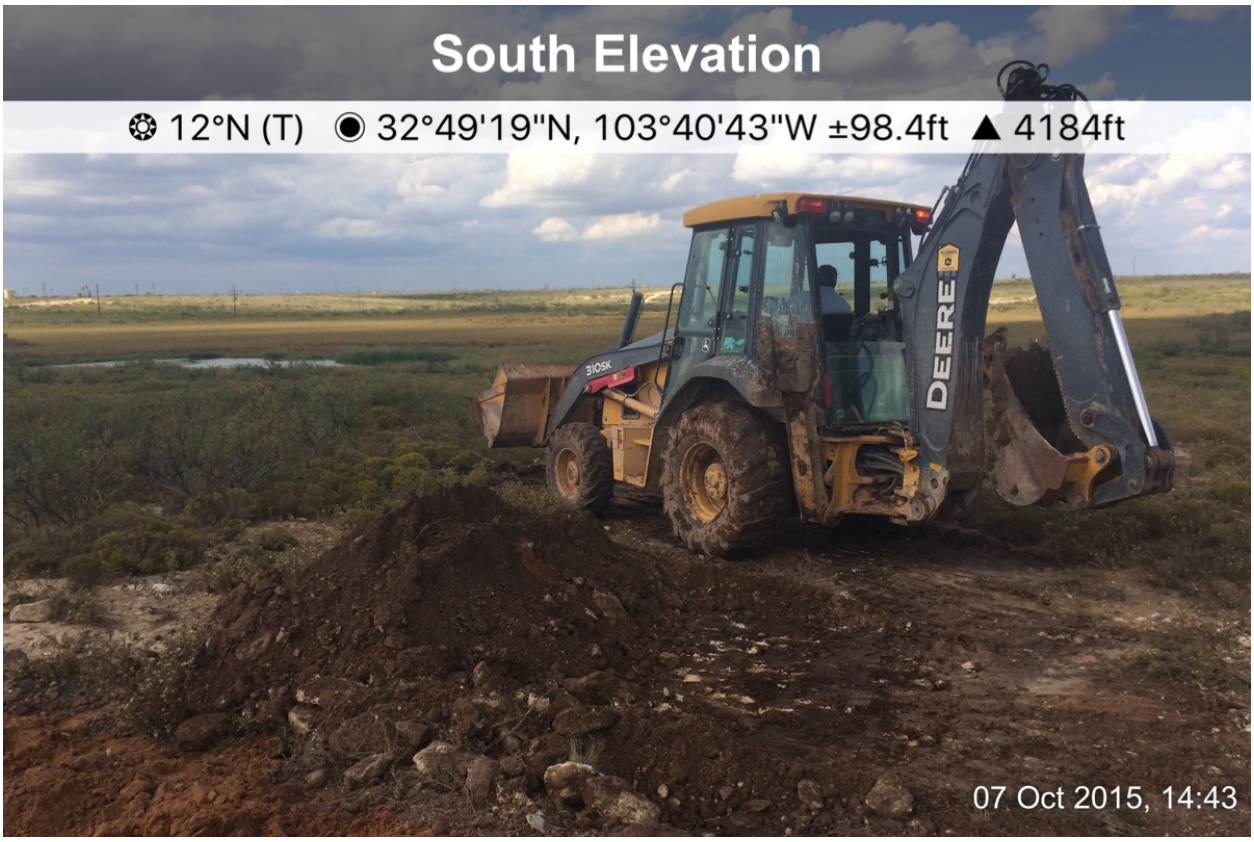
Spill area in pasture

Spill area with pond in background

Spill area with sample points

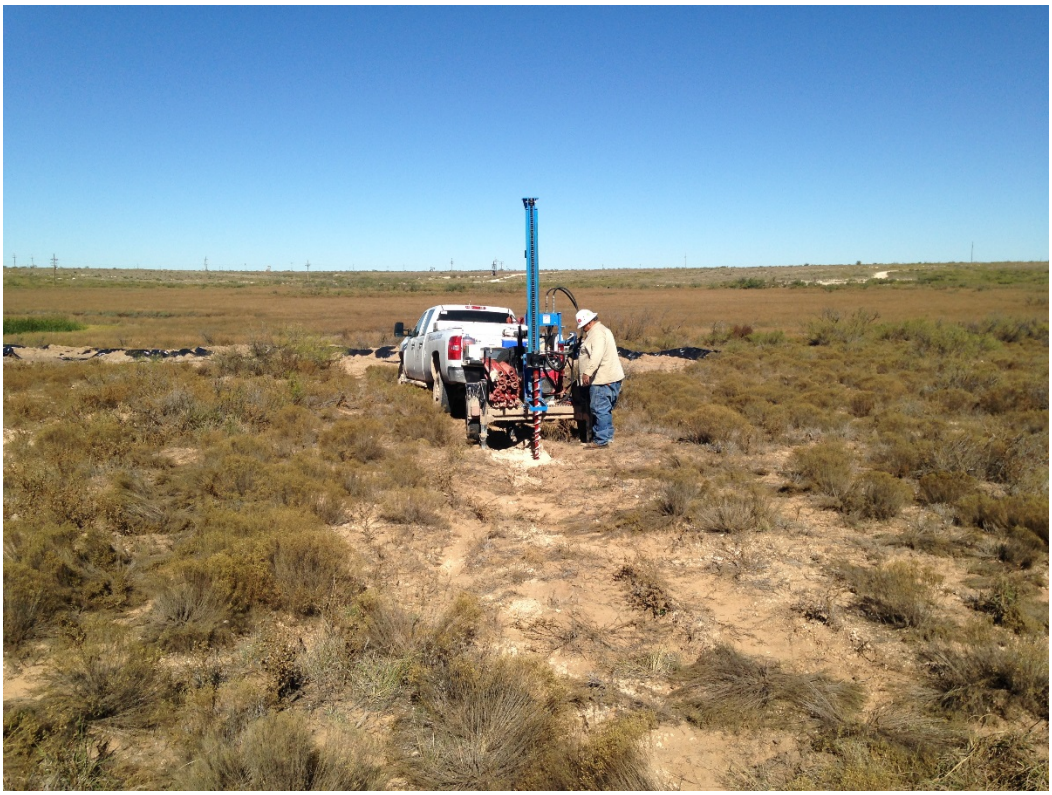


Soil berm installation on north side of spill, with pond in background



Initial scrape of the spill area

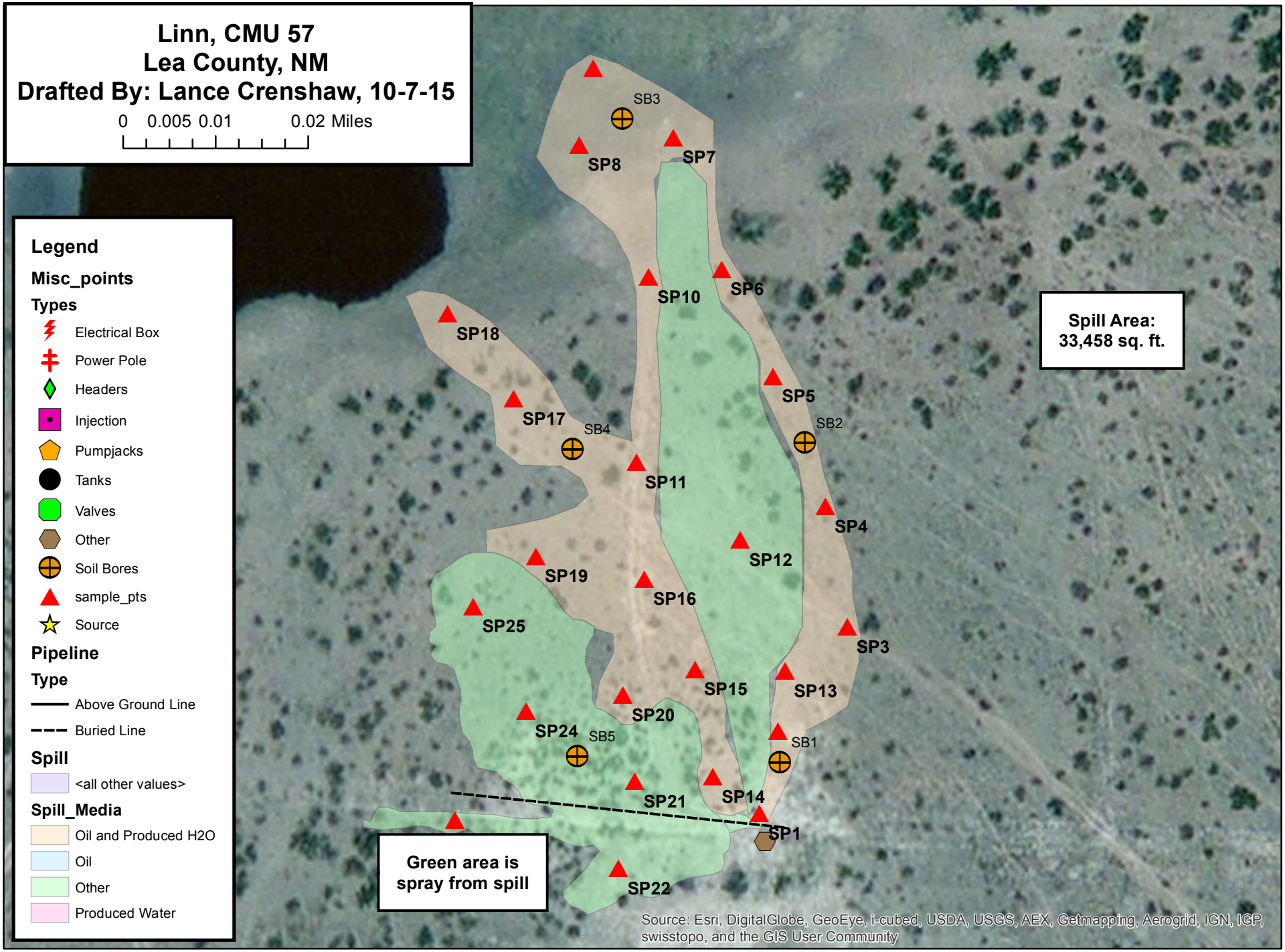
Digging out source of spill so crews could fix line



Drilling for confirmation samples

Obtaining confirmation samples from drilling bore holes

Site Diagram



Diversified Environmental Services

Company Name: Linn
Location Name: CMU 57

SP Date: 10/16/2015
Rel Date:

SP21	CHL	PID
Surface	6,935	3.1
1'	8,346	0.6

SP22	CHL	PID
Surface	5,016	0.5
1'	5,322	0.2

SP23	CHL	PID
Surface	15,253	2.9
1'	5,015	0.1

SP24	CHL	PID
Surface	10,291	0.9
1'	7,544	1.5

SP25	CHL	PID
Surface	2,613	0.6
1'	4,471	1.1

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

Diversified Environmental Services

Company Name: Linn
Location Name: CMU 57

SP Date: 10/7/2015
Rel Date:

SP1	CHL	PID
Surface	8,372	231.2
1'	14,246	62.7

SP2	CHL	PID
Surface	12,571	394.1
1'	12,996	7

SP3	CHL	PID
Surface	2,074	12.1
1'	9,497	8.1

SP4	CHL	PID
Surface	12,246	110.1
1'	11,621	10.7

SP5	CHL	PID
Surface	13,046	26.2
1'	8,747	160.9

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

SP6	CHL	PID
Surface	11,871	28
1'	16,245	499

SP7	CHL	PID
Surface	12,021	86.3
1'	3,924	5.7

SP8	CHL	PID
Surface	4,410	0.9
1'	2,362	0.4

SP9	CHL	PID
Surface	6,548	6.4
1'	26,242	4.7

SP10	CHL	PID
Surface	11	11.3
1'	1,300	38
2'	3,274	28.1

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

SP11	CHL	PID
Surface	18,529	0.9
1'	11,224	3.1

SP12	CHL	PID
Surface	**19,311**	38.8
1'	**6,313**	5.3

SP13	CHL	PID
Surface	**7,629**	492.2
1'	**12,734**	48.8

SP14	CHL	PID
Surface	13,859	29
1'	9,968	3.8

SP15	CHL	PID
Surface	7,951	2.2
1'	9,516	5.5

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

SP16	CHL	PID
Surface	22,791	187.1
1'	7,168	81.3

SP17	CHL	PID
Surface	10,137	2.6
1'	5,016	0.9

SP18	CHL	PID
Surface	395	9.6
1'	5,302	1

SP19	CHL	PID
Surface	1,425	0.3
1'	3,343	2.2

SP20	CHL	PID
Surface	12,109	51.9
1'	9,176	1.5

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

Diversified Environmental Services

Company Name: Linn SP Date: 11/6/2015

Location Name: CMU N. Injection Trunk Line Rel Date:

SB1	CHL	PID
2'	4,050	1.2
3'	3,408	0.7
4'	5,585	0.7
5'	3,669	1.3
6'	3,140	1.5
7'	2,212	2.5
8'	2,126	2.8
9'	1,350	2.5
10'	1,253	1.8
11'	1,121	1.4
12'	1,013	1.2
13'	1,211	1.5
14'	940	0.4
15'	637	0.2
16'	526	0.7
15'	656	
16'	512	

SB2	CHL	PID
2'	5,154	0.6
3'	858	0.6
4'	645	0.3
5'	467	0.5
4'	624	
5'	384	

SB3	CHL	PID
2'	1,036	1.9
3'	1,811	1.7
4'	1,717	1.9
5'	1,378	1.6
6'	878	1.4
7'	1,061	1.2
8'	927	1.1
9'	747	0.9
10'	613	0.4
9'	736	
10'	608	

SB4	CHL	PID
2'	146	0.8
3'	261	1.1
4'	210	0.9
3'	160	
4'	144	

SB5	CHL	PID
3'	4,272	0.5
4'	2,347	0.7
5'	1,852	0.8
6'	1,442	1.1
7'	1,706	0.6
8'	1,875	0.7
9'	2,023	0.6
10'	2,207	0.3
11'	2,380	0.7
12'	2,358	0.6
13'	2,454	1.2
14'	2,534	0.6
15'	2,628	0.5
16'	2,734	0.8
17'	2,751	0.9
20'	2,834	0.7
25'	2,621	1.1
30'	1,999	1
35'	1,324	0.8
40'	229	1.2
45'	227	0.9

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

CARDINAL Laboratories

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

November 11, 2015

JOE HERNANDEZ

LINN OPERATING-HOBBS

2130 W. BENDER

HOBBS, NM 88240

RE: CMU NORTH INJECTION TRUNK LINE

Enclosed are the results of analyses for samples received by the laboratory on 11/06/15 8:15.

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 accreditated 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

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	10/29/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 1 @ 15' (H502944-01)

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	11/09/2015	ND	1.98	98.8	2.00	2.96	
Toluene*	<0.050	0.050	11/09/2015	ND	2.21	110	2.00	3.55	
Ethylbenzene*	<0.050	0.050	11/09/2015	ND	2.02	101	2.00	4.18	
Total Xylenes*	<0.150	0.150	11/09/2015	ND	6.46	108	6.00	4.05	
Total BTEX	<0.300	0.300	11/09/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**656**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *88.9 %* *35-147*

Surrogate: 1-Chlorooctadecane *96.4 %* *28-171*

Cardinal Laboratories *=Accredited Analyte

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	10/29/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 1 @ 16 (H502944-02)

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	11/09/2015	ND	1.98	98.8	2.00	2.96	
Toluene*	<0.050	0.050	11/09/2015	ND	2.21	110	2.00	3.55	
Ethylbenzene*	<0.050	0.050	11/09/2015	ND	2.02	101	2.00	4.18	
Total Xylenes*	<0.150	0.150	11/09/2015	ND	6.46	108	6.00	4.05	
Total BTEX	<0.300	0.300	11/09/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**512**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *86.5 %* *35-147*

Surrogate: 1-Chlorooctadecane *92.9 %* *28-171*

Cardinal Laboratories *=Accredited Analyte

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	11/02/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 2 @ 4' (H502944-03)

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	11/09/2015	ND	1.98	98.8	2.00	2.96	
Toluene*	<0.050	0.050	11/09/2015	ND	2.21	110	2.00	3.55	
Ethylbenzene*	<0.050	0.050	11/09/2015	ND	2.02	101	2.00	4.18	
Total Xylenes*	<0.150	0.150	11/09/2015	ND	6.46	108	6.00	4.05	
Total BTEX	<0.300	0.300	11/09/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *100 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**624**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *89.8 %* *35-147*

Surrogate: 1-Chlorooctadecane *97.2 %* *28-171*

Cardinal Laboratories *=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	11/02/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 2 @ 5' (H502944-04)

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	11/10/2015	ND	1.92	96.2	2.00	0.572	
Toluene*	<0.050	0.050	11/10/2015	ND	2.13	107	2.00	1.10	
Ethylbenzene*	<0.050	0.050	11/10/2015	ND	1.94	96.9	2.00	1.00	
Total Xylenes*	<0.150	0.150	11/10/2015	ND	6.16	103	6.00	1.10	
Total BTEX	<0.300	0.300	11/10/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.9 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**384**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *92.7 %* *35-147*

Surrogate: 1-Chlorooctadecane *100 %* *28-171*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	11/02/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 3 @ 9' (H502944-05)

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	11/10/2015	ND	1.92	96.2	2.00	0.572	
Toluene*	<0.050	0.050	11/10/2015	ND	2.13	107	2.00	1.10	
Ethylbenzene*	<0.050	0.050	11/10/2015	ND	1.94	96.9	2.00	1.00	
Total Xylenes*	<0.150	0.150	11/10/2015	ND	6.16	103	6.00	1.10	
Total BTEX	<0.300	0.300	11/10/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.1 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**736**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *86.8 %* *35-147*

Surrogate: 1-Chlorooctadecane *94.1 %* *28-171*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	11/02/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 3 @ 10' (H502944-06)

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	11/10/2015	ND	1.92	96.2	2.00	0.572	
Toluene*	<0.050	0.050	11/10/2015	ND	2.13	107	2.00	1.10	
Ethylbenzene*	<0.050	0.050	11/10/2015	ND	1.94	96.9	2.00	1.00	
Total Xylenes*	<0.150	0.150	11/10/2015	ND	6.16	103	6.00	1.10	
Total BTEX	<0.300	0.300	11/10/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.8 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**608**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *90.3 %* *35-147*

Surrogate: 1-Chlorooctadecane *98.1 %* *28-171*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	11/02/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 4 @ 3' (H502944-07)

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	11/10/2015	ND	1.92	96.2	2.00	0.572	
Toluene*	<0.050	0.050	11/10/2015	ND	2.13	107	2.00	1.10	
Ethylbenzene*	<0.050	0.050	11/10/2015	ND	1.94	96.9	2.00	1.00	
Total Xylenes*	<0.150	0.150	11/10/2015	ND	6.16	103	6.00	1.10	
Total BTEX	<0.300	0.300	11/10/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.8 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *79.3 %* *35-147*

Surrogate: 1-Chlorooctadecane *84.1 %* *28-171*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	11/02/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 4 @ 4' (H502944-08)

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	11/10/2015	ND	1.92	96.2	2.00	0.572	
Toluene*	<0.050	0.050	11/10/2015	ND	2.13	107	2.00	1.10	
Ethylbenzene*	<0.050	0.050	11/10/2015	ND	1.94	96.9	2.00	1.00	
Total Xylenes*	<0.150	0.150	11/10/2015	ND	6.16	103	6.00	1.10	
Total BTEX	<0.300	0.300	11/10/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *94.9 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *89.8 %* *35-147*

Surrogate: 1-Chlorooctadecane *95.3 %* *28-171*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	11/04/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 5 @ 40' (H502944-09)

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	11/10/2015	ND	1.92	96.2	2.00	0.572	
Toluene*	<0.050	0.050	11/10/2015	ND	2.13	107	2.00	1.10	
Ethylbenzene*	<0.050	0.050	11/10/2015	ND	1.94	96.9	2.00	1.00	
Total Xylenes*	<0.150	0.150	11/10/2015	ND	6.16	103	6.00	1.10	
Total BTEX	<0.300	0.300	11/10/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.3 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *95.3 %* *35-147*

Surrogate: 1-Chlorooctadecane *101 %* *28-171*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	11/06/2015	Sampling Date:	11/04/2015
Reported:	11/11/2015	Sampling Type:	Soil
Project Name:	CMU NORTH INJECTION TRUNK LINE	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	LINN		

Sample ID: SOIL BORE 5 @ 45 (H502944-10)

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	11/10/2015	ND	1.92	96.2	2.00	0.572	
Toluene*	<0.050	0.050	11/10/2015	ND	2.13	107	2.00	1.10	
Ethylbenzene*	<0.050	0.050	11/10/2015	ND	1.94	96.9	2.00	1.00	
Total Xylenes*	<0.150	0.150	11/10/2015	ND	6.16	103	6.00	1.10	
Total BTEX	<0.300	0.300	11/10/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *102 %* *73.6-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	11/09/2015	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	11/09/2015	ND	211	106	200	0.0756	
DRO >C10-C28	<10.0	10.0	11/09/2015	ND	217	108	200	0.480	

Surrogate: 1-Chlorooctane *89.7 %* *35-147*

Surrogate: 1-Chlorooctadecane *95.6 %* *28-171*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

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: Linn Operating	BILL TO
Project Manager: Joe Hernandez	P.O. #:
Address:	Company: Linn
City: State: Zip:	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: Linn	State: Zip:
Project Location: CMU North Injection Trunkline	Phone #:
Sampler Name: Chris Flores	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST		
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	Chloride	TPH	BTEX
H502944-																	
01	Soil Bore 1 @ 15'	G	1			✓					✓		10-29-2015	3:30pm	X	X	X
02	Soil Bore 1 @ 16	G	1			✓					✓			3:40pm	X	X	X
03	Soil Bore 2 @ 4'	G	1			✓					✓		11-2-2015	11:05Am	X	X	X
04	Soil Bore 2 @ 5'	G	1			✓					✓			11:10Am	X	X	X
05	Soil Bore 3 @ 9'	G	1			✓					✓			1:30pm	X	X	X
06	Soil Bore 3 @ 10'	G	1			✓					✓			1:45pm	X	X	X
07	Soil Bore 4 @ 3'	G	1			✓					✓			2:50pm	X	X	X
08	Soil Bore 4 @ 4'	G	1			✓					✓			3:00pm	X	X	X
09	Soil Bore 5 @ 40'	G	1			✓					✓		11-4-2015	4:00pm	X	X	X
10	Soil Bore 5 @ 45	G	1			✓					✓			4:10pm	X	X	X

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Relinquished By:	Date: 11-6-2015	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 8:15		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: email to: lcrenshaw@diversifiedfsi.com, Males@, mburton@, mpatterson@, cflores@, jhernandez@
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 0.2°C

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No

CHECKED BY: (Initials) CK

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

CARDINAL Laboratories

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

October 16, 2015

JOE HERNANDEZ

LINN OPERATING-HOBBS

2130 W. BENDER

HOBBS, NM 88240

RE: PLAYA LAKE NORTH OF CMU 57

Enclosed are the results of analyses for samples received by the laboratory on 10/07/15 13:40.

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 accreditated 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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	10/07/2015	Sampling Date:	10/07/2015
Reported:	10/16/2015	Sampling Type:	Water
Project Name:	PLAYA LAKE NORTH OF CMU 57	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: PLAYA SAMPLE (H502656-01)

BTEX 8021B mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/15/2015	ND	0.019	93.7	0.0200	0.128	
Toluene*	<0.001	0.001	10/15/2015	ND	0.019	94.2	0.0200	0.949	
Ethylbenzene*	<0.001	0.001	10/15/2015	ND	0.019	94.6	0.0200	0.164	
Total Xylenes*	<0.003	0.003	10/15/2015	ND	0.058	96.8	0.0600	0.0293	
Total BTEX	<0.006	0.006	10/15/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID *119 %* *66.2-142*

Chloride, SM4500Cl-B mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**176**	4.00	10/08/2015	ND	104	104	100	0.00	

TPH 8015M mg/L Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<1.00	1.00	10/14/2015	ND	53.0	106	50.0	0.771	
DRO >C10-C28	**1.10**	1.00	10/14/2015	ND	54.3	109	50.0	0.450	
EXT DRO >C28-C35	<1.00	1.00	10/14/2015	ND	0.846		0.00		

Surrogate: 1-Chlorooctane *84.3 %* *36.1-161*

Surrogate: 1-Chlorooctadecane *103 %* *36-171*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

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: Diversified Field Services		**BILL TO**	
Project Manager:		P.O. #:	
Address:		Company: Linn	
City:	State: Zip:	Attn: Joe Hernandez	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location: Playa lake north of CMU 57		Phone #:	
Sampler Name: Lance Crenshaw		Fax #:	

ANALYSIS REQUEST: HOLD | Cl | 8260

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME
H502656 1	Playa sample	G	4	X							X		10-7	11:20a.m.

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Relinquished By:	Date: 10/7/15 Time: 1:40	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 8.8°C	Sample Condition Cool: ☐ Yes ☑ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: lcrenshaw@diversifiedfsi.com mburton@diversifiedfsi.com Jhernandez@linnenergy.com

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

#54

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Sub-basin	Code	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
L 02875	L		LE	2	2	20	17S	33E		623662	3632717*	250	190	60

Average Depth to Water: **190 feet**

Minimum Depth: **190 feet**

Maximum Depth: **190 feet**

Record Count: 1

PLSS Search:

Section(s): 20 **Township:** 17S **Range:** 33E

***UTM location was derived from PLSS - see Help**

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