

# Linn Energy Turner A #045

## CLOSURE REPORT

---

RP-1873

API No. 30-015-28890

Release Date: 8/25/2013

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

March 06, 2014



**Prepared by:**

Environmental Department  
Diversified Field Service, Inc.  
3412 N. Dal Paso  
Hobbs, NM 88240  
Phone: (575)964-8394  
Fax: (575)393-8396

# Table of Contents

---

- 1 Introduction
- 2 Site Activities
- 3 Conclusion

Figure – Site Diagram with Sample Data

## APPENDICES

Appendix I – Initial Form C-141

Appendix II – Site Photographs

Appendix III – Groundwater Data

Appendix IV – Laboratory Analyses

Appendix V – Correspondence

Appendix VI – Final C-141

# Turner A #045

## 1 INTRODUCTION

---

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

The site is located south west of Maljamar NM, in Eddy County. The site incident resulted from a produced water leak in a comprised valve at the wellhead. The line rupture released produced water approximately 500 square feet radius. All fluids impacted pad location only. A vacuum truck recovered approximately 2bbls of standing fluids, and the valve was replaced. An initial form C-141 was submitted to the NMOCD on August 27, 2013 (Appendix I).

## 2 SITE ACTIVITIES

---

On October 01, 2013 DFSI personnel collected surface soil samples from the site (Figure). The samples were field screened for chloride and showed elevated levels in all of the sample points. The samples were submitted to a commercial laboratory for chloride, TPH, and BTEX analyses (Appendix IV).

Visually impacted soils were excavated throughout the entire leak area and removed to a NMOCD approved disposal facility. Simultaneous soil field testing revealed low chloride and hydrocarbon levels at 3 to 8ft. below ground surface (bgs) (Figure). Soil samples were collected from the excavation floor and submitted to a laboratory for confirmation (Appendix IV). At source of spill, SP 1 Chlorides were reduced to 304 mg/kg at 5ft. bgs. The most significant impact was at SP3, whereby Chloride reduction occurred at 8 ft. bgs. TPH totaled less than 10.0 mg/kg GRO and less than 10.0 mg/kg DRO, and BTEX totaled less than 0.300 mg/kg in all samples. Photographs of site activities can be viewed in Appendix II.

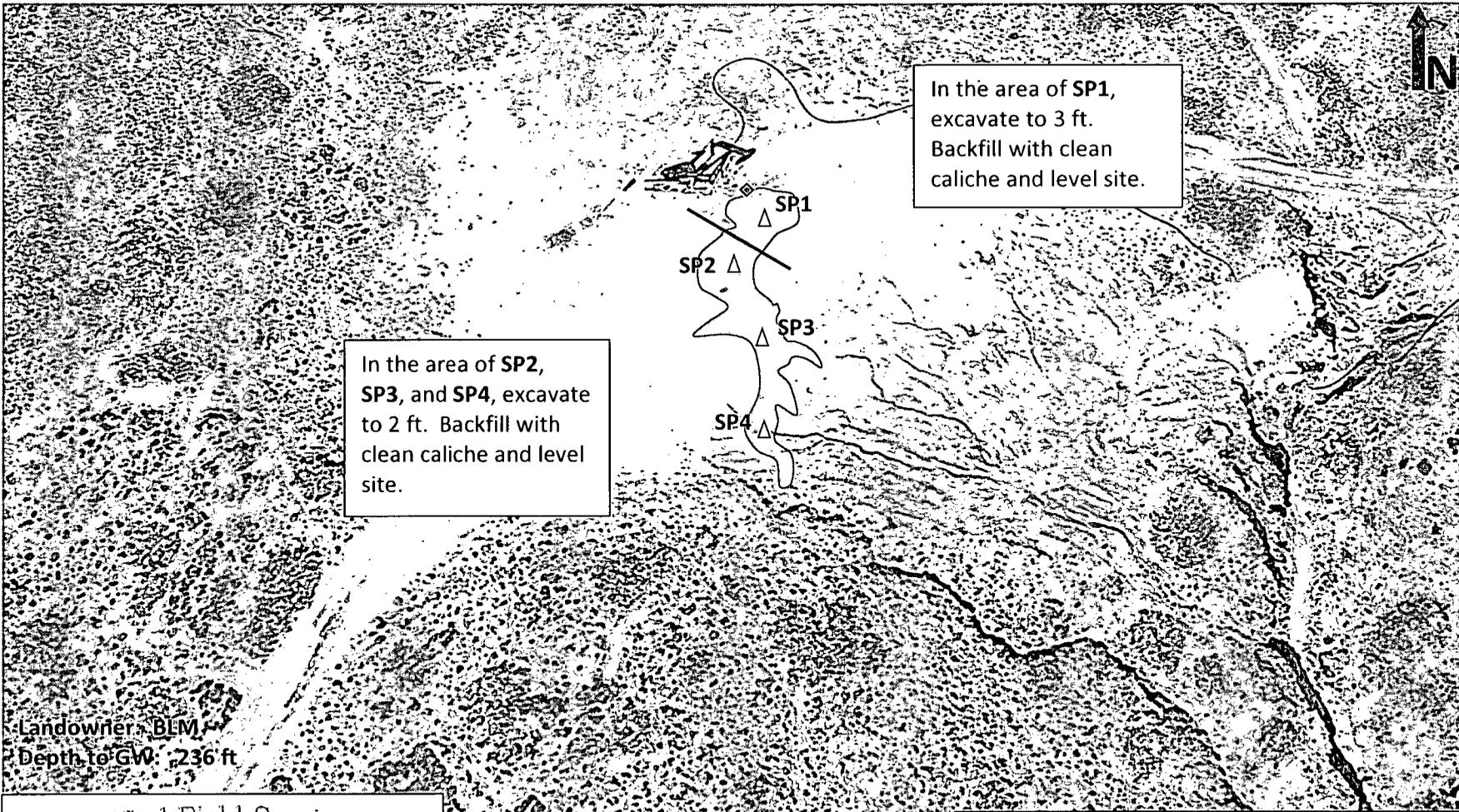
On November 12, 2013, DFSI submitted a plan to excavate and backfill request to NMOCD. On same said date approval was granted via email. The excavated area on the well pad was backfilled with imported caliche and leveled.

## 3 CONCLUSION

---

According to the U.S. Geological Survey and the NM Office of the State Engineer, depth to groundwater in the area averages greater than 236 ft. bgs (Appendix III). Based on the removal of soils containing elevated chloride and visual staining at the site, DFSI, on behalf of Linn, submits the final form C-141 (Appendix V) and respectfully requests the closure of the regulatory file for the site.

# Excavation Diagram



Landowner: BLM  
 Depth to GW: 236 ft

Diversified Field Services, Inc.  
 C.C. & Co, LLC  
 J & M Welding and Fabrication, Inc.  
 Diversified Construction

- Legend
- Stained Area (total 2,500 ft<sup>2</sup>)
  - ◆ Leak Source
  - △ Sample Point

**Linn Energy Turner A**  
**#045**  
 UL/C, Sec 19, T17S R31E  
 Eddy County, NM  
 Drafted By: A.C. Ruth, 12/16/13  
 Not to Scale

# Appendix I

INITIAL FORM C-141

---

Diversified Field Service, Inc.  
3412 N. Dal Paso  
Hobbs, NM 88240  
(575) 964-8394

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

State of New Mexico  
Energy Minerals and Natural Resources

Form C-141  
Revised October 10, 2003

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

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

**Release Notification and Corrective Action**

**OPERATOR**

Initial Report  Final Report

Name of Company: Linn Operating	Contact: Brian Wall
Address: 2130 W. Bender Hobbs, NM 88240	Telephone No.: 575-738-1739
Facility Name: Turner A # 45	Facility Type: Oil Producer
Surface Owner: Federal	Mineral Owner:
API No.: 3001528890	

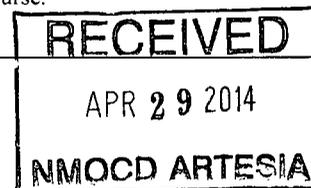
**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
C	19	17S	31E	975	North	1450	West	Eddy

Latitude: 32.8245844236141 Longitude: -103.912171012009

**NATURE OF RELEASE**

Type of Release: Produced Water	Volume of Release: 12 bbls	Volume Recovered: 2bbls
Source of Release: Steel 3" valve	Date and Hour of Occurrence: 08/25/2013 10:45am	Date and Hour of Discovery: 08/25/2013 10:45am
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Bratcher- NM OCD Mike Burton-BLM	
By Whom? Brian Wall	Date and Hour 08/26/2013	
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.\*: I came to Turner A#45, about 10:45 am, noticed a mess on the ground. I estimate 12 bbl. produced water. No oil. It was spread out on our location and Apache Tony #39. I inspected the leak, and found the 3 inch valve, on flowline, at wellhead had a hole in bottom of valve. I shut all valves at well. Then shut the valve at the header. Called Joe Hernandez and reported the spill. Had Lamina trucking suck up the free water, had Diversified change the 3 inch valve.

Describe Area Affected and Cleanup Action Taken.\*: Estimate 200x25 ft. radius of spill. Estimate 2 bbl. water recovered. After repairs I opened all valves and put well back into production.

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:	<u>OIL CONSERVATION DIVISION</u>	
Printed Name: Brian Wall	Approved by District Supervisor:	
Title: Construction Foreman II	Approval Date:	Expiration Date:
E-mail Address: bwall@linenergy.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 08/26/2013	Phone: 806-367-0645	

\* Attach Additional Sheets If Necessary

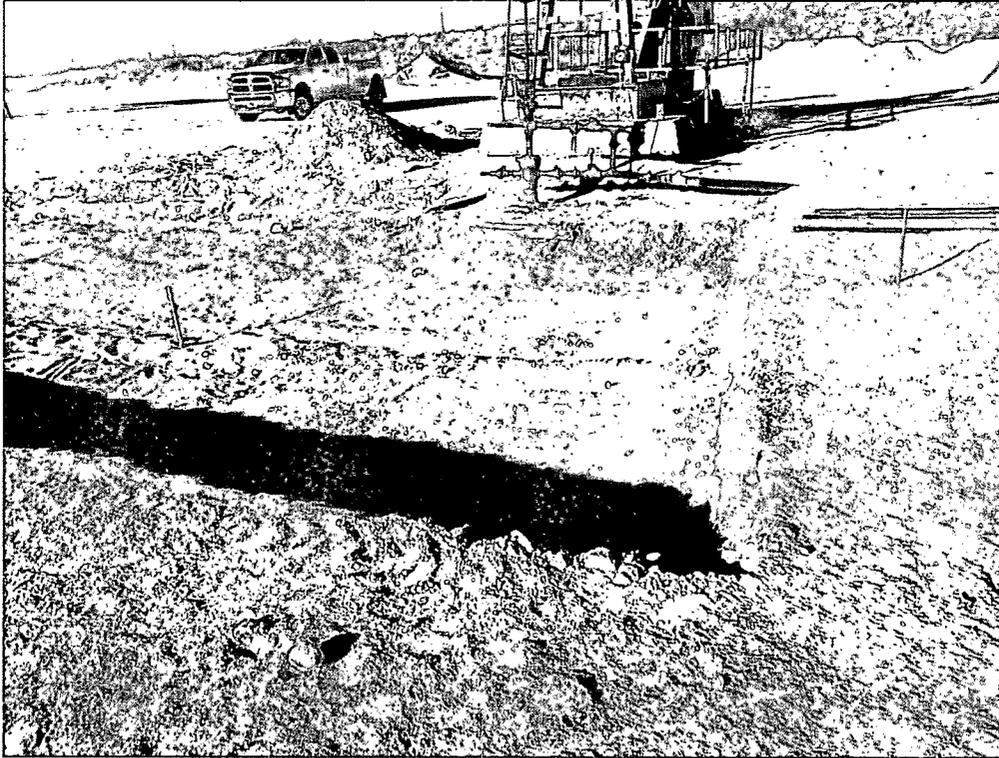
# Appendix II

## SITE PHOTOGRAPHS

---

# Linn Energy Turner A #45

Unit Letter C, Section 19, T17S R31E



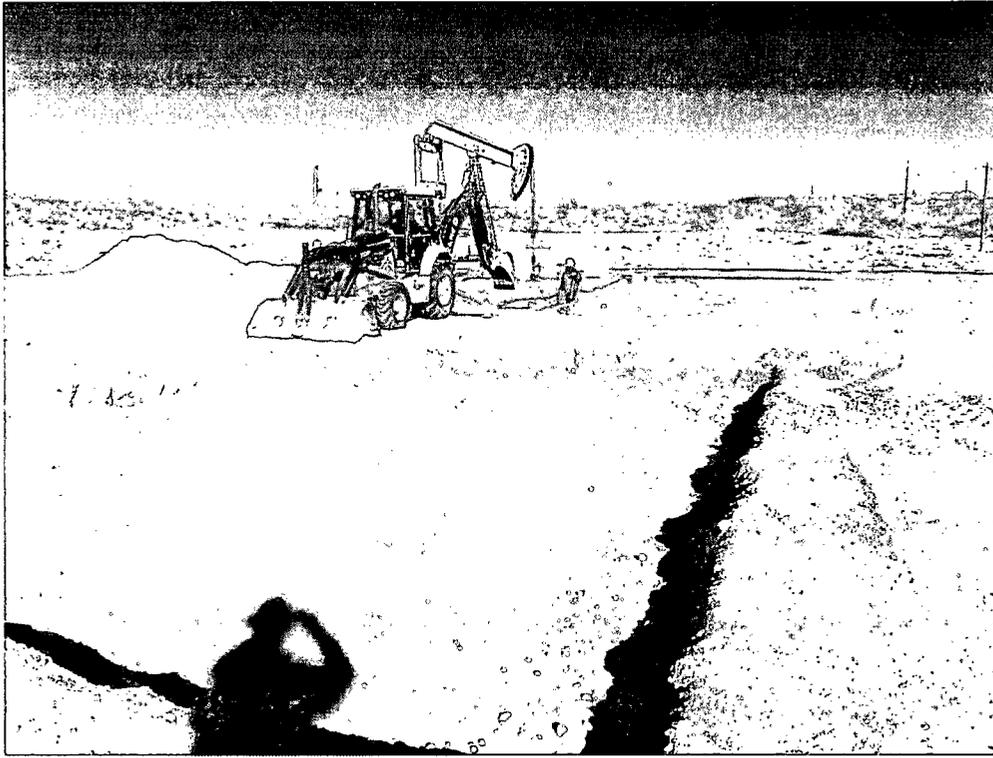
Excavated to 1 ft., facing west

10/26/13



Excavated to 1 ft., facing south

10/26/13



Backfill of excavation 01/13/14



Site at completion 01/22/14

# Appendix III

## GROUNDWATER DATA

---

# GROUND WATER SEARCH

Linn Energy Turner A #045

UL:   C        Sec:   19        T:   17S        R:   31E  

Groundwater Depth:                   236                   ft. (averaged)

- = NM Office of the State Engineer
- = U.S. Geological Survey (unknown well)
- ⊗ = Site Location

*NMOCD GW Trend Map - 325' to 350'*

Date: 03/06/14

By: Rebecca Pons

	<b>16S 30E</b>	288'○ 314'○ <b>16S 31E</b>	254'○ <b>16S 32E</b> 210'○ 221'○ 200'○	65' 260'○ 248'○ 275'○ 215'○
	<b>17S 30E</b>	⊗ <b>17S 31E</b>	<b>17S 32E</b>	○132'
	<b>18S 30E</b>	○98' <b>18S 31E</b>	<b>18S 32E</b>	○65' ○430' ○460'



---

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

---

No records found.

**PLSS Search:**

**Township: 16S**

**Range: 30E**

---

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

4/29/13 12:38 PM

Page 1 of 1

WATER COLUMN/ AVERAGE  
DEPTH TO WATER



# 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		Q Q Q							X	Y	Depth Well	Depth Water	Water Column
	Sub-	Code basin	County	64	16	4	Sec	Tws	Rng					
<u>L 03435</u>	L	LE		1	1	05	16S	31E	602954	3646955*				
<u>L 03852</u>	R	L	LE	2	2	2	14	16S	31E	609126	3643913*	370	314	56
<u>L 03852 POD4</u>	L	LE		3	4	3	13	16S	31E	609744	3642516*	333	299	34
<u>L 03852 POD5</u>	L	LE		3	2	13	16S	31E	610238	3643427*	328	295	33	
<u>L 03852 X</u>	R	L	LE	4	4	4	13	16S	31E	610749	3642526*	333	299	34
<u>L 03852 X2</u>	L	LE		3	2	2	13	16S	31E	610535	3643733*	330	287	43
<u>L 04671</u>	L	LE		1	1	2	12	16S	31E	610114	3645538*	340	288	52
<u>L 10203</u>	L	LE		4	4	3	14	16S	31E	608334	3642495*	310		
<u>L 10206</u>	L	LE		2	2	23	16S	31E	609045	3642204*	280			

Average Depth to Water: **297 feet**  
 Minimum Depth: **287 feet**  
 Maximum Depth: **314 feet**

**Record Count: 9**

**PLSS Search:**

**Township: 16S      Range: 31E**

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



# 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 (quarters are 1=NW 2=NE 3=SW 4=SE)

closed) (quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-		Q Q Q				X	Y	Depth Well	Depth Water	Water Column		
	Code	basin	County	64	16	4						Sec	Tws
<u>L 02381</u>	L	LE	3	1	13	16S	32E	619086	3643515*	308	215	93	
<u>L 02434</u>	L	LE			01	16S	32E	619661	3646531*	337			
<u>L 02449</u>	L	LE			01	16S	32E	619661	3646531*	330	265	65	
<u>L 02617</u>	L	LE	4	4	02	16S	32E	618656	3645924*	322	270	52	
<u>L 02752</u>	L	LE	1	3	26	16S	32E	617521	3639880*	324	280	44	
<u>L 02846</u>	L	LE	4	2	1	11	16S	32E	617956	3645413*	328	275	53
<u>L 02954</u>	L	LE	2	4	03	16S	32E	617043	3646310*	120	65	55	
<u>L 02993</u>	L	LE	3	3	2	15	16S	32E	616572	3643391*	100		
<u>L 03631</u>	L	LE	1	2	02	16S	32E	618240	3647126*	315	250	65	
<u>L 04930</u>	L	LE			1	23	16S	32E	617698	3642092*	307	210	97
<u>L 05494</u>	L	LE			36	16S	32E	619758	3638489*	303	200	103	
<u>L 06557</u>	L	LE	1	4	21	16S	32E	615089	3641466*	295	210	85	
<u>L 06807</u>	L	LE	1	4	4	09	16S	32E	615356	3644383*	290	248	42
<u>L 07823</u>	L	LE	2	2	2	16	16S	32E	615561	3643981*	269	247	22
<u>L 08084</u>	L	LE	1	1	1	16	16S	32E	614157	3643970*	317	260	57
<u>L 08084 POD4</u>	L	LE			2	26	16S	32E	618522	3640492*	303	233	70
<u>L 08084 POD5</u>	L	LE	4	1	4	26	16S	32E	618425	3639788*	296	165	131
<u>L 08084 S3</u>	L	LE			2	26	16S	32E	618522	3640492*	305	205	100
<u>L 08241</u>	L	LE	4	4	02	16S	32E	618656	3645924*	316			
<u>L 10204</u>	L	LE	4	2	2	04	16S	32E	615524	3646993*	319		
<u>L 10205</u>	L	LE	4	1	08	16S	32E	613038	3645066*	330			
<u>L 11189</u>	L	LE	1	1	4	04	16S	32E	614932	3646391*	350		

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Average Depth to Water: **224 feet**

Minimum Depth: **65 feet**

Maximum Depth: **280 feet**

Record Count: 22

PLSS Search:

Township: 16S      Range: 32E



---

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

---

No records found.

**PLSS Search:**

Township: 17S      Range: 30E

---

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

---



# 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 (quarters are 1=NW 2=NE 3=SW 4=SE)

closed) (quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD			Code	basin	County	64	16	4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
	Sub-	Q	Q														
<u>RA 11590 POD1</u>				ED			2	1	3	32	17S	31E	603315	3628545	158		
<u>RA 11590 POD3</u>				ED			3	1	2	32	17S	31E	603932	3629260	60		
<u>RA 11590 POD4</u>				ED			4	1	1	32	17S	31E	603308	3629253	55		

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 3

PLSS Search:

Township: 17S      Range: 31E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



# 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-Code	basin	County	Q Q Q			Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
				64	16	4								
<u>L 04019</u>	L	LE		4	3	4	02	17S	32E	618468	3636166*	182		
<u>L 04020</u>	L	LE		3	3	4	02	17S	32E	618268	3636166*	200		
<u>L 04021</u>	R	L	LE	3	4	4	02	17S	32E	618670	3636170*	190		
<u>L 04021 POD3</u>	L	LE		3	4	03	17S	32E	616761	3636252*	247			
<u>L 04021 S</u>	L	LE		2	4	4	03	17S	32E	617262	3636354*	260		
<u>L 13047 POD1</u>	L	LE					11	17S	32E	618187	3635254*	140		
<u>L 13050 POD1</u>	L	LE		2	2	1	10	17S	32E	616463	3635945*	156	132	24
<u>RA 08855</u>		LE		4	1	1	10	17S	32E	616061	3635742*	158		
<u>RA 09505</u>		LE		2	2	1	10	17S	32E	616462	3635944	147		
<u>RA 09505 S</u>		LE		2	2	1	10	17S	32E	616463	3635945*	144		
<u>RA 10175</u>		LE			2	1	28	17S	32E	614814	3631005*	158		
<u>RA 11684 POD1</u>		LE		1	1	4	11	17S	32E	618216	3635124	275		
<u>RA 11684 POD2</u>		LE		1	1	4	11	17S	32E	618313	3635248	275		
<u>RA 11684 POD3</u>		LE		3	3	1	11	17S	32E	618262	3635371	275		
<u>RA 11684 POD4</u>		LE		1	3	2	11	17S	32E	618334	3635521	275		
<u>RA 11684 POD5</u>		LE		3	1	4	11	17S	32E	618353	3635047	275		
<u>RA 11734 POD1</u>		LE		2	2	1	10	17S	32E	616556	3635929	165		

Average Depth to Water: **132 feet**

Minimum Depth: **132 feet**

Maximum Depth: **132 feet**

**Record Count:** 17

**PLSS Search:**

**Township:** 17S

**Range:** 32E

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



# 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 (quarters are 1=NW 2=NE 3=SW 4=SE)

closed) (quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD		Q Q Q				X	Y	Depth Well	Depth Water	Water Column	
	Sub-Code	basin	County	64	16	4						Sec
<u>CP 00818</u>		LE	1	4	26	18S	30E	599289	3620364*	240		
<u>CP 00819</u>		LE	2	4	32	18S	30E	594878	3618720*	150		
<u>L 01978</u>	L	LE	1	3	23	18S	30E	598469	3621964*	65	44	21

Average Depth to Water: **44 feet**  
 Minimum Depth: **44 feet**  
 Maximum Depth: **44 feet**

**Record Count: 3**

**PLSS Search:**

**Township: 18S      Range: 30E**

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



# 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 (quarters are 1=NW 2=NE 3=SW 4=SE)

closed) (quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD			Q Q Q			X	Y	Depth Well	Depth Water	Water Column		
	Sub-Code	basin	County	64	16	4						Sec	Tws
<u>L 11092</u>	L	LE		2	3	15	18S	31E	606849	3623669*	160	98	62

Average Depth to Water: **98 feet**

Minimum Depth: **98 feet**

Maximum Depth: **98 feet**

Record Count: 1

PLSS Search:

Township: 18S      Range: 31E

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



# 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 (quarters are 1=NW 2=NE 3=SW 4=SE)

closed) (quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Sub-Code	basin	County	Q Q Q			Tws	Rng	X	Y	Depth Well	Depth Water	Water Column	
				64	16	4								
<u>CP 00566</u>		LE		4	4	1	04	18S	32E	614960	3627280*	133	65	68
<u>CP 00672</u>		LE		4	4	07	18S	32E	612475	3624947*	524	430	94	
<u>CP 00672 CLW475398</u>	O	LE		4	4	07	18S	32E	612475	3624947*	540	460	80	
<u>CP 00677</u>		LE		1	1	26	18S	32E	617750	3621373*	700			

Average Depth to Water: 318 feet

Minimum Depth: 65 feet

Maximum Depth: 460 feet

**Record Count: 4**

**PLSS Search:**

Township: 18S

Range: 32E

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

October 03, 2013

BRIAN WALL

LINN ENERGY

RR1, BOX 24 B

KINGFISHER, OK 73750

RE: TURNER A #45

Enclosed are the results of analyses for samples received by the laboratory on 10/01/13 16:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	10/01/2013	Sampling Date:	10/01/2013
Reported:	10/03/2013	Sampling Type:	Soil
Project Name:	TURNER A #45	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SP 1 @ 1' SURFACE (H302385-01)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/02/2013	ND	1.97	98.6	2.00	1.41		
Toluene*	<0.050	0.050	10/02/2013	ND	2.03	102	2.00	2.05		
Ethylbenzene*	<0.050	0.050	10/02/2013	ND	2.13	106	2.00	1.11		
Total Xylenes*	<0.150	0.150	10/02/2013	ND	6.56	109	6.00	1.13		
Total BTEX	<0.300	0.300	10/02/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 115 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GR						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	2800	16.0	10/02/2013	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	10/02/2013	ND	206	103	200	0.565		
DRO >C10-C28	<10.0	10.0	10/02/2013	ND	203	102	200	4.45		

Surrogate: 1-Chlorooctane 99.4 % 65.2-140

Surrogate: 1-Chlorooctadecane 101 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	10/01/2013	Sampling Date:	10/01/2013
Reported:	10/03/2013	Sampling Type:	Soil
Project Name:	TURNER A #45	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SP 2 @ 1' SURFACE (H302385-02)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/02/2013	ND	1.97	98.6	2.00	1.41		
Toluene*	<0.050	0.050	10/02/2013	ND	2.03	102	2.00	2.05		
Ethylbenzene*	<0.050	0.050	10/02/2013	ND	2.13	106	2.00	1.11		
Total Xylenes*	<0.150	0.150	10/02/2013	ND	6.56	109	6.00	1.13		
Total BTEX	<0.300	0.300	10/02/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 114 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GR						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride</b>	<b>5680</b>	16.0	10/02/2013	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	10/02/2013	ND	206	103	200	0.565		
<b>DRO &gt;C10-C28</b>	<b>46.3</b>	10.0	10/02/2013	ND	203	102	200	4.45		

Surrogate: 1-Chlorooctane 108 % 65.2-140

Surrogate: 1-Chlorooctadecane 112 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

 Received: 10/01/2013  
 Reported: 10/03/2013  
 Project Name: TURNER A #45  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/01/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP 3 @ 1' SURFACE (H302385-03)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/02/2013	ND	1.97	98.6	2.00	1.41		
Toluene*	<0.050	0.050	10/02/2013	ND	2.03	102	2.00	2.05		
Ethylbenzene*	<0.050	0.050	10/02/2013	ND	2.13	106	2.00	1.11		
Total Xylenes*	<0.150	0.150	10/02/2013	ND	6.56	109	6.00	1.13		
Total BTEX	<0.300	0.300	10/02/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIE) 112 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GR						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	9730	16.0	10/02/2013	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	10/02/2013	ND	206	103	200	0.565		
DRO >C10-C28	39.1	10.0	10/02/2013	ND	203	102	200	4.45		

Surrogate: 1-Chlorooctane 115 % 65.2-140

Surrogate: 1-Chlorooctadecane 120 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	10/01/2013	Sampling Date:	10/01/2013
Reported:	10/03/2013	Sampling Type:	Soil
Project Name:	TURNER A #45	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SP 4 @ 1' SURFACE (H302385-04)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/02/2013	ND	1.97	98.6	2.00	1.41	
Toluene*	<0.050	0.050	10/02/2013	ND	2.03	102	2.00	2.05	
Ethylbenzene*	<0.050	0.050	10/02/2013	ND	2.13	106	2.00	1.11	
Total Xylenes*	<0.150	0.150	10/02/2013	ND	6.56	109	6.00	1.13	
Total BTEX	<0.300	0.300	10/02/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 113 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GR					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	944	16.0	10/02/2013	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/02/2013	ND	206	103	200	0.565	
DRO >C10-C28	<10.0	10.0	10/02/2013	ND	203	102	200	4.45	

Surrogate: 1-Chlorooctane 109 % 65.2-140

Surrogate: 1-Chlorooctadecane 110 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager



October 25, 2013

BRIAN WALL

LINN ENERGY

RR1, BOX 24 B

KINGFISHER, OK 73750

RE: TURNER A #45

Enclosed are the results of analyses for samples received by the laboratory on 10/21/13 16:07.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

 LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

 Received: 10/21/2013  
 Reported: 10/25/2013  
 Project Name: TURNER A #45  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/21/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP 1 @ 5' (H302539-01)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/22/2013	ND	2.14	107	2.00	0.577		
Toluene*	<0.050	0.050	10/22/2013	ND	2.14	107	2.00	0.813		
Ethylbenzene*	<0.050	0.050	10/22/2013	ND	2.16	108	2.00	0.211		
Total Xylenes*	<0.150	0.150	10/22/2013	ND	6.37	106	6.00	0.365		
Total BTEX	<0.300	0.300	10/22/2013	ND						

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

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	304	16.0	10/22/2013	ND	432	108	400	7.69		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	10/22/2013	ND	200	99.9	200	3.36		
DRO >C10-C28	<10.0	10.0	10/22/2013	ND	192	95.9	200	2.97		

Surrogate: 1-Chlorooctane 125 % 65.2-140

Surrogate: 1-Chlorooctadecane 130 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	10/21/2013	Sampling Date:	10/21/2013
Reported:	10/25/2013	Sampling Type:	Soil
Project Name:	TURNER A #45	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SP 2 @ 3' (H302539-02)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/22/2013	ND	2.14	107	2.00	0.577		
Toluene*	<0.050	0.050	10/22/2013	ND	2.14	107	2.00	0.813		
Ethylbenzene*	<0.050	0.050	10/22/2013	ND	2.16	108	2.00	0.211		
Total Xylenes*	<0.150	0.150	10/22/2013	ND	6.37	106	6.00	0.365		
Total BTEX	<0.300	0.300	10/22/2013	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 103 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	144	16.0	10/22/2013	ND	432	108	400	7.69		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	10/24/2013	ND	180	90.0	200	2.46		
DRO >C10-C28	<10.0	10.0	10/24/2013	ND	175	87.4	200	1.75		

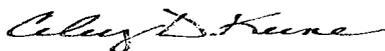
Surrogate: 1-Chlorooctane 89.5 % 65.2-140

Surrogate: 1-Chlorooctadecane 97.4 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

 Received: 10/21/2013  
 Reported: 10/25/2013  
 Project Name: TURNER A #45  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 10/21/2013  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP 3 @ 8' (H302539-03)**

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/22/2013	ND	2.14	107	2.00	0.577		
Toluene*	<0.050	0.050	10/22/2013	ND	2.14	107	2.00	0.813		
Ethylbenzene*	<0.050	0.050	10/22/2013	ND	2.16	108	2.00	0.211		
Total Xylenes*	<0.150	0.150	10/22/2013	ND	6.37	106	6.00	0.365		
Total BTEX	<0.300	0.300	10/22/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 103 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	272	16.0	10/22/2013	ND	432	108	400	7.69		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	10/24/2013	ND	180	90.0	200	2.46		
DRO >C10-C28	<10.0	10.0	10/24/2013	ND	175	87.4	200	1.75		

Surrogate: 1-Chlorooctane 88.4 % 65.2-140

Surrogate: 1-Chlorooctadecane 91.7 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LINN ENERGY  
 BRIAN WALL  
 RR1, BOX 24 B  
 KINGFISHER OK, 73750  
 Fax To: (405) 375-6693

Received:	10/21/2013	Sampling Date:	10/21/2013
Reported:	10/25/2013	Sampling Type:	Soil
Project Name:	TURNER A #45	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SP 4 @ 3' (H302539-04)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/22/2013	ND	2.14	107	2.00	0.577	
Toluene*	<0.050	0.050	10/22/2013	ND	2.14	107	2.00	0.813	
Ethylbenzene*	<0.050	0.050	10/22/2013	ND	2.16	108	2.00	0.211	
Total Xylenes*	<0.150	0.150	10/22/2013	ND	6.37	106	6.00	0.365	
Total BTEX	<0.300	0.300	10/22/2013	ND					

*Surrogate: 4-Bromofluorobenzene (PIE)* 103 % 89.4-126

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>128</b>	16.0	10/22/2013	ND	432	108	400	7.69	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/23/2013	ND	180	90.0	200	2.46	
DRO >C10-C28	<10.0	10.0	10/23/2013	ND	175	87.4	200	1.75	

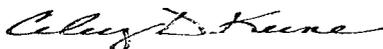
*Surrogate: 1-Chlorooctane* 82.1 % 65.2-140

*Surrogate: 1-Chlorooctadecane* 89.8 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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



Celey D. Keene, Lab Director/Quality Manager

**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

---

**Cardinal Laboratories**

\* = Accredited Analyte

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



---

Celey D. Keene, Lab Director/Quality Manager



# Appendix V

## CORRESPONDENCE

---

Diversified Field Service, Inc.  
3412 N. Dal Paso  
Hobbs, NM 88240  
(575) 964-8394

## Amy Ruth

---

**From:** Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>  
**Sent:** Tuesday, November 12, 2013 11:55 AM  
**To:** Amy Ruth  
**Cc:** Wall, Fred; Michael Patterson  
**Subject:** RE: 2RP-1873 Linn Energy Turner A #45

Reference: Linn Operating \* Turner A 45 \* 30-015-28890 \* C-19-17s-31e \* Eddy County, New Mexico  
NMOCD Tracking number: 2RP-1873 \* Date of release: 8/24/13

Amy,

Your proposal for remediation of the above referenced release is approved. Like approval by BLM required for Federal sites.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

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:** Amy Ruth [mailto:aruth@diversifiedfsi.com]  
**Sent:** Tuesday, November 05, 2013 10:35 AM  
**To:** Bratcher, Mike, EMNRD  
**Cc:** Wall, Fred; Michael Patterson  
**Subject:** 2RP-1873 Linn Energy Turner A #45

Hi Mike,

I had previously submitted a work plan for this site with an initial photo of the leak. We have completed delineating the leak area, and I have enclosed a site diagram, photos, 2 lab reports, and our groundwater search for your reference. I have provided some detail below and would like to propose an excavation to address this leak and backfill with compacted caliche if that is acceptable to you via email.

The site was excavated to 1' bgs to keep the source from percolating. The diagram shows an older view of the caliche pad that was available from Google Earth. The site looks very different now. Apache Corporation has expanded the caliche pad and installed a well immediately south of the Turner A #45, and in fact, shares the new caliche pad with that well. This is more apparent in the included photos. The leak occurred on top of and well within the boundaries of this new caliche pad.

For SP2 and SP4, the delineation field data shows that the numbers are reasonably low at 2'. Chloride at SP1 remains near 1000 mg/kg at 3' though it does show a downward trend with depth. SP3 fluctuates some before showing the

same downward trend to complete at 8' bgs, though the field data does not exceed 1049 mg/kg within the lower profile. Our groundwater study for the surrounding township/ranges averages 236 ft for qualifying wells. The NMOCD groundwater trend map extrapolates depth to groundwater at 325 to 350 ft bgs.

Due to depth of groundwater and the depth of impact at the site, I would like to propose a 3' excavation in the vicinity of SP1 and a 2' excavation across the remaining leak area. Please call me with any questions and suggestions at your convenience.

Thank you!

*Amy C. Ruth*

Environmental Director  
Diversified Field Services, Inc.  
3412 N. Dal Paso  
Hobbs, NM 88240  
Office: (575)964-8394  
Mobile: (575)390-5454  
Fax: (575)964-8396

*"Nothing will work unless you do." -Maya Angelou*

This email and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this email in error please notify the system manager. This message contains confidential information and is intended only for the individual named. If you are not the named addressee you should not disseminate, distribute or copy this e-mail. Please notify the sender immediately by e-mail if you have received this e-mail by mistake and delete this e-mail from your system. If you are not the intended recipient you are notified that disclosing, copying, distributing or taking any action in reliance on the contents of this information is strictly prohibited.

## Amy Ruth

---

**From:** Burton, Michael <mburton@blm.gov>  
**Sent:** Tuesday, November 12, 2013 12:44 PM  
**To:** Amy Ruth  
**Subject:** Re: FW: 2RP-1873 Linn Energy Turner A #45

Amy,  
Yes this action is approved.  
Thanks

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

CONFIDENTIALITY NOTICE: The information in this email may be confidential and/or privileged. If you are not the intended recipient or an authorized representative of the intended recipient, you are hereby notified that any review, dissemination or copying of this email and its attachments, if any, or the information contained herein, is prohibited. If you have received this email in error, please immediately notify the sender by return email and delete this email from your system. Thank you.

On Tue, Nov 12, 2013 at 12:04 PM, Amy Ruth <[aruth@diversifiedfsi.com](mailto:aruth@diversifiedfsi.com)> wrote:

Hi Mike,

Mr. Bratcher has approved this excavation proposal. May we have your permission to proceed with this plan? Please call me with any questions or concerns. Thank you sir!

**From:** Amy Ruth  
**Sent:** Tuesday, November 05, 2013 10:33 AM  
**To:** Mike Bratcher ([mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us))  
**Cc:** 'Wall, Fred'; Michael Patterson - Diversified Field Services, Inc. ([mpatterson@diversifiedfsi.com](mailto:mpatterson@diversifiedfsi.com))  
**Subject:** 2RP-1873 Linn Energy Turner A #45

Hi Mike,

I had previously submitted a work plan for this site with an initial photo of the leak. We have completed delineating the leak area, and I have enclosed a site diagram, photos, 2 lab reports, and our groundwater search for your reference. I have provided some detail below and would like to propose an excavation to address this leak and backfill with compacted caliche if that is acceptable to you via email.

The site was excavated to 1' bgs to keep the source from percolating. The diagram shows an older view of the caliche pad that was available from Google Earth. The site looks very different now. Apache Corporation has expanded the caliche pad and installed a well immediately south of the Turner A #45, and in fact, shares the new caliche pad with that well. This is more apparent in the included photos. The leak occurred on top of and well within the boundaries of this new caliche pad.

For SP2 and SP4, the delineation field data shows that the numbers are reasonably low at 2'. Chloride at SP1 remains near 1000 mg/kg at 3' though it does show a downward trend with depth. SP3 fluctuates some before showing the same downward trend to complete at 8' bgs, though the field data does not exceed 1049 mg/kg within the lower profile. Our groundwater study for the surrounding township/ranges averages 236 ft for qualifying wells. The NMOCD groundwater trend map extrapolates depth to groundwater at 325 to 350 ft bgs.

Due to depth of groundwater and the depth of impact at the site, I would like to propose a 3' excavation in the vicinity of SP1 and a 2' excavation across the remaining leak area. Please call me with any questions and suggestions at your convenience.

Thank you!

*Amy C. Ruth*

Environmental Director

Diversified Field Services, Inc.

3412 N. Dal Paso

Hobbs, NM 88240

Office: (575)964-8394

Mobile: (575)390-5454

Fax: (575)964-8396

# Appendix VI

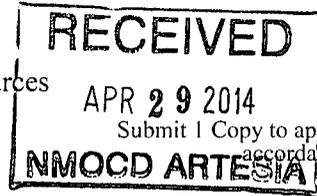
FINAL FORM C-141

---

Diversified Field Service, Inc.  
3412 N. Dal Paso  
Hobbs, NM 88240  
(575) 964-8394

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

**Release Notification and Corrective Action**

**OPERATOR**

Initial Report  Final Report

Name of Company Linn Operating, Inc.	Contact: Brian Wall
Address 2130 W Bender Hobbs. NM 88240	Telephone No. 806-367-0645
Facility Name Turner A #045	Facility Type Oil Production
Surface Owner Federal	Mineral Owner Federal
API No. 30-015-28890	

**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County Eddy
C	19	17S	31E	975	NL	1450	WL	

Latitude 32.8245844236141 Longitude -103.912171012009

**NATURE OF RELEASE**

Type of Release Produced water+	Volume of Release 12 bbls	Volume Recovered 2 bbls
Source of Release 3" steel valve on the wellhead	Date and Hour of Occurrence 10:45 am 08/25/13	Date and Hour of Discovery 10:45 am 08/25/13
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Bratcher NMOCD and Mike Burton BLM	
By Whom? Brian Wall	Date and Hour 08/26/13	
Was a Watercourse Reached? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.\*  
NA

Describe Cause of Problem and Remedial Action Taken.\*  
Production Foreman went to the Turner A #45 about 10:45 AM and noticed a spill on the ground that appeared to be approximately 12 bbls in volume. The media was produced water. There was no evidence of crude oil. The leak was inspected and it was discovered that the leak was due to a 3" valve on a flowline at the wellhead that had a hole located in the bottom of the valve. The valves were closed at the header. The valve was replaced by DFSI. A Vacuum truck recovered approximately 2 bbls of fluid.

Describe Area Affected and Cleanup Action Taken.\*  
Spill affected area approximately 200X25 ft. radius of spill. DFSI delineated the area. Confirmation samples were then submitted to a commercial lab for analyses. Backfill of the excavation was approved by the NMOCD and the BLM. The excavation was backfilled and the site was contoured to the surrounding landscape.

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>		<b>OIL CONSERVATION DIVISION</b>	
Printed Name:		Approved by Environmental Specialist:	
Title:	Approval Date:	Expiration Date:	
E-mail Address:	Conditions of Approval:		Attached <input type="checkbox"/>
Date:	Phone:		

\* Attach Additional Sheets If Necessary