

**REVIEWED**

*By Kellie Jones at 10:42 am, Jan 28, 2016*

**APPROVED** CONDITIONAL

*By Kellie Jones at 10:42 am, Jan 28, 2016*



1. The site has not been delineated. Prior to any remedial work, delineated must be completed. Ensure that at a minimum SP4, SP6, and SP8 be investigated further.
2. After delineation is completed, review what was proposed for remediation and modify as appropriate.
3. Ensure BLM approval.

# MGU #008

## REMEDIATION WORK PLAN

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API No. 30-025-20318

Release Date: October 19, 2015

Unit Letter K, Section 03, Township 17 South, Range 32 East

## November 19, 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, MGU #008– Remediation Work Plan**  
UL/K, Section 03, T17S, R32E  
API No. 30-025-20318

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 east of Maljamar, NM, in Lea County. The leak site resulted from the choke on the injection well breaking in half. The impacted area is on the pad and in the pasture. Approximately 10 bbls of produced water was released, with none recovered. The location is on top of the Caprock Escarpment, and the spill also ran down the slope of the Caprock Escarpment. A site map is attached. A C-141 was drafted on October 19, 2015.

### **Site Assessment and Delineation**

On October 19, 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.

On October 27, 2015 DFSI personnel returned to the site and sampled the spill area. DFSI sampled 10 points of the spill area. 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 depths of 1' and 2' BGS. The field sampling results are attached.

On November 12, 2015, DFSI personnel returned to the location and drilled two soil bores to fully delineate the spill. Those samples were sent to a commercial laboratory for confirmation. Those samples are also attached.

DFSI has conducted a groundwater study of the area and has determined that according to the New Mexico Office of the State Engineer, and the Conoco-Phillips depth to groundwater map, there are no records of groundwater in the area.

## Conclusion

After careful review DFSI, on behalf of Linn Energy, would like to propose the following: Excavate the entire spill on the pad area to 6" BGS, then backfill with fresh caliche. In the areas of SP #4, SP #6, SP #7 and SP #8, excavate to 4' BGS. Then install either a 20 mil liner or impervious river rock, and backfill with native topsoil. All contaminated materials will be hauled to an approved NM State Disposal. Once backfilled, the area will be seeded with an approved BLM mixture.

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  
Sample Data  
Photo Page

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	Maljamar Grayburg Unit #8	Facility Type	Injection
Surface Owner	Federal	Mineral Owner	API No. 30-025-20318

### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	03	17S	32E	2140	South	2180	West	Lea

Latitude 32.862236 Longitude -103.7558517

### NATURE OF RELEASE


Type of Release	Produced Water / BS&W	Volume of Release	10 bbls / 15 gal.	Volume Recovered	0 / 0
Source of Release	Valve Sensor / Alarm Failure	Date and Hour of Occurrence	10/19/2015	Date and Hour of Discovery	10/19/2015 8:00am
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?			
By Whom?	Date and Hour				
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.\* At about 8am this morning I pulled up to location and saw the injection line shooting water into the air. I quickly isolated the inj line to stop the leak. The leak was caused by the choke on the well breaking in half.

Describe Area Affected and Cleanup Action Taken.\* About 10bbls of produced water was spilt. The leak ran south bound about 150 feet a radius of 20 feet of water was around the well head.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	<b><u>OIL CONSERVATION DIVISION</u></b>		
Printed Name: E.L. Gonzales	Approved by Environmental Specialist:		
Title: Production Supervisor	Approval Date:	Expiration Date:	
E-mail Address: elgonzales@linenergy.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 10/20/2015	Phone: 505-504-8002		

\* Attach Additional Sheets If Necessary

# Site Diagram

**Linn, MGU #8**  
**Lea County, NM**  
**Drafted By: Lance Crenshaw, 10-19-15**

0 0.005 0.01 0.02 Miles

## Legend

### Misc\_points

#### Types

- Electrical Box
- Power Pole
- Headers
- Injection
- Pumpjacks
- Tanks
- Valves
- Other
- Soil Bores
- sample\_pts
- Source

### Pipeline

#### Type

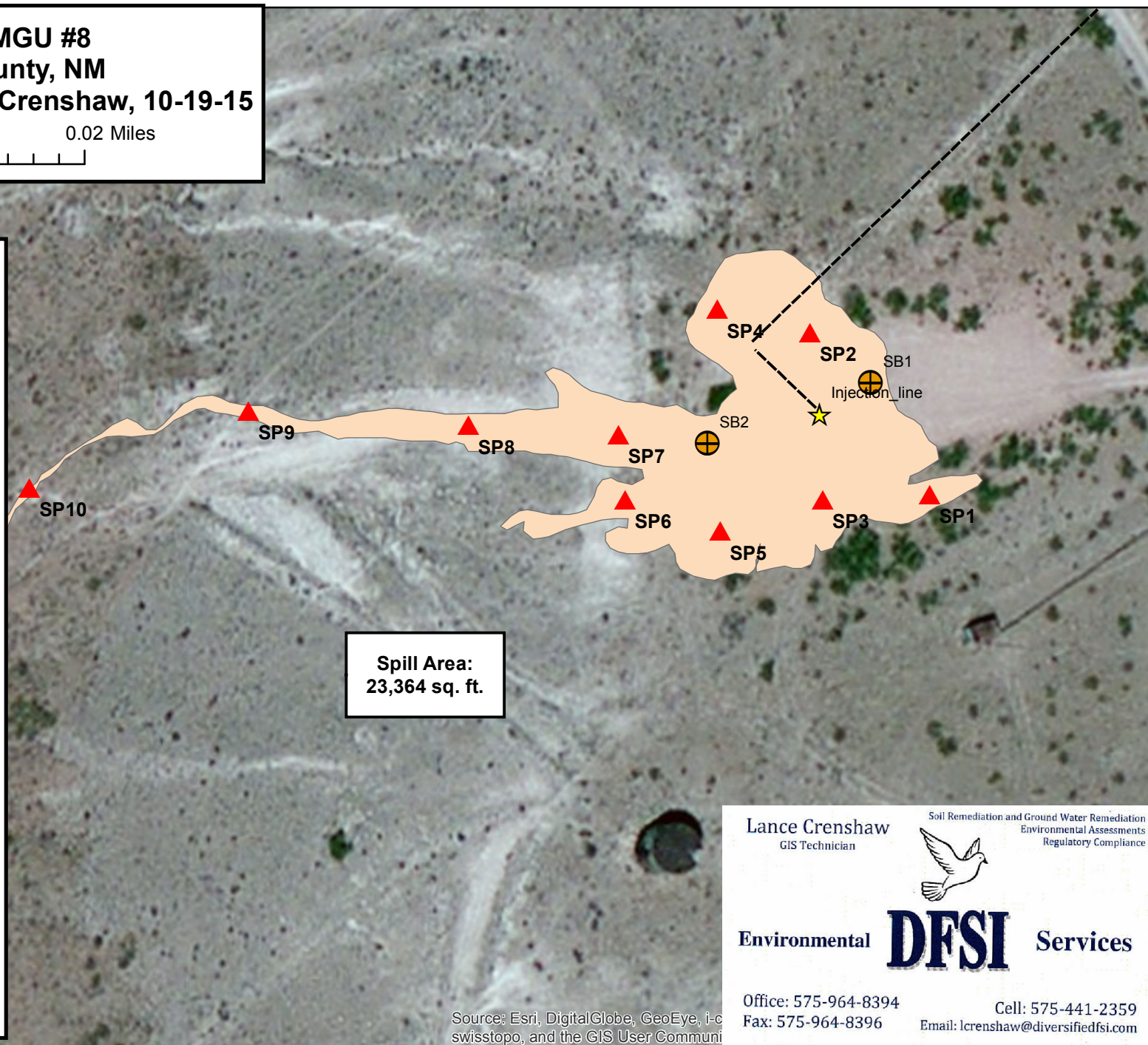
- Above Ground Line
- Buried Line

### Spill

- <all other values>

### Spill\_Media

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



**Lance Crenshaw**  
 GIS Technician

Soil Remediation and Ground Water Remediation  
 Environmental Assessments  
 Regulatory Compliance



**Environmental**

**DFS**

**Services**

Office: 575-964-8394  
 Fax: 575-964-8396

Cell: 575-441-2359  
 Email: lcrenshaw@diversifiedfsi.com

Source: Esri, DigitalGlobe, GeoEye, i-c  
 swisstopo, and the GIS User Communi





# MGU #008

## PHOTO PAGE

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Lease sign marking location





Spill area on pad



Spill area on pad/pasture





Spill area on slope of Caprock Escarpment



Spill area on pad after initial scrape





Using drill for confirmation samples



Obtaining samples from drilling

## Diversified Environmental Services

Company Name:	Linn
Location Name:	MGU #8

SP Date: 10/27/2015 11/12/2015  
Rel Date:

[illegible]

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples

## Diversified Environmental Services

[illegible]

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples



## Diversified Environmental Services

[illegible]

	Lab Confirmation Sample
	Field Sampling
	Needs Delineation and confirmation samples



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

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November 18, 2015

JOE HERNANDEZ

LINN OPERATING-HOBBS

2130 W. BENDER

HOBBS, NM 88240

RE: MGU #8

Enclosed are the results of analyses for samples received by the laboratory on 11/12/15 16:50.

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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 11/12/2015  
 Reported: 11/18/2015  
 Project Name: MGU #8  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 11/12/2015  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SOIL BORE 1 @ 15' (H503007-01)**

BTX 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	11/17/2015	ND	1.96	98.0	2.00	0.526	
Toluene*	<0.050	0.050	11/17/2015	ND	2.22	111	2.00	0.925	
Ethylbenzene*	<0.050	0.050	11/17/2015	ND	2.06	103	2.00	1.09	
Total Xylenes*	<0.150	0.150	11/17/2015	ND	6.46	108	6.00	0.960	
Total BTX	<0.300	0.300	11/17/2015	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	864	16.0	11/13/2015	ND	432	108	400	7.69		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/14/2015	ND	198	99.2	200	6.08	
DRO >C10-C28	<10.0	10.0	11/14/2015	ND	207	103	200	5.76	

Surrogate: 1-Chlorooctane 80.0 % 35-147

Surrogate: 1-Chlorooctadecane 86.7 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

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

Received: 11/12/2015  
 Reported: 11/18/2015  
 Project Name: MGU #8  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 11/12/2015  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SOIL BORE 1 @ 20' (H503007-02)**

BTX 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	11/17/2015	ND	1.96	98.0	2.00	0.526	
Toluene*	<0.050	0.050	11/17/2015	ND	2.22	111	2.00	0.925	
Ethylbenzene*	<0.050	0.050	11/17/2015	ND	2.06	103	2.00	1.09	
Total Xylenes*	<0.150	0.150	11/17/2015	ND	6.46	108	6.00	0.960	
Total BTX	<0.300	0.300	11/17/2015	ND					

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

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	528	16.0	11/13/2015	ND	416	104	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/14/2015	ND	198	99.2	200	6.08	
DRO >C10-C28	<10.0	10.0	11/14/2015	ND	207	103	200	5.76	

Surrogate: 1-Chlorooctane 85.3 % 35-147

Surrogate: 1-Chlorooctadecane 91.9 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 11/12/2015  
 Reported: 11/18/2015  
 Project Name: MGU #8  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 11/12/2015  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SOIL BORE 2 @ 4' (H503007-03)**

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	11/17/2015	ND	1.96	98.0	2.00	0.526	
Toluene*	<0.050	0.050	11/17/2015	ND	2.22	111	2.00	0.925	
Ethylbenzene*	<0.050	0.050	11/17/2015	ND	2.06	103	2.00	1.09	
Total Xylenes*	<0.150	0.150	11/17/2015	ND	6.46	108	6.00	0.960	
Total BTEx	<0.300	0.300	11/17/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.8 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	560	16.0	11/13/2015	ND	432	108	400	7.69	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/14/2015	ND	198	99.2	200	6.08	
DRO >C10-C28	<10.0	10.0	11/14/2015	ND	207	103	200	5.76	

Surrogate: 1-Chlorooctane 77.4 % 35-147

Surrogate: 1-Chlorooctadecane 82.7 % 28-171

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 11/12/2015  
 Reported: 11/18/2015  
 Project Name: MGU #8  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 11/12/2015  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SOIL BORE 2 @ 5' (H503007-04)**

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	11/17/2015	ND	1.96	98.0	2.00	0.526	
Toluene*	<0.050	0.050	11/17/2015	ND	2.22	111	2.00	0.925	
Ethylbenzene*	<0.050	0.050	11/17/2015	ND	2.06	103	2.00	1.09	
Total Xylenes*	<0.150	0.150	11/17/2015	ND	6.46	108	6.00	0.960	
Total BTEx	<0.300	0.300	11/17/2015	ND					

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

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	256	16.0	11/13/2015	ND	416	104	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/14/2015	ND	198	99.2	200	6.08	
DRO >C10-C28	<10.0	10.0	11/14/2015	ND	207	103	200	5.76	

Surrogate: 1-Chlorooctane 82.9 % 35-147

Surrogate: 1-Chlorooctadecane 89.0 % 28-171

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Celey D. Keene, Lab Director/Quality Manager



**Notes and Definitions**

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

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



## Page 7 of 7

a: *Ph. Amph.*

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



# 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 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
<a href="#">L 04021 POD3</a>	L	LE		3	4	03		17S	32E	616761	3636252*	247		
<a href="#">L 04021 S</a>	L	LE		2	4	4	03	17S	32E	617262	3636354*	260		

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 2

PLSS Search:

Section(s): 03

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.