

APPROVED

By Olivia Yu at 11:33 am, Apr 04, 2018

NMOCD approves of the
proposed additional
delineation for 1RP-4269.

**1RP-4269
DELINEATION PLAN
J.M. Denton #002 Tank Battery
Crude Oil & Produced Water Spill
Lea County, New Mexico**

Latitude: N33.02741°
Longitude: W-103.168076°

LAI Project No. 17-0175-26

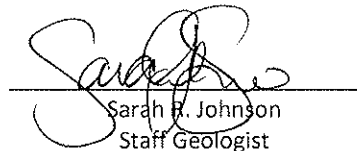
February 20, 2018

Prepared for:
Legacy Reserves Operating, LP
303 West Wall Street, Suite 1300
Midland, Texas 79701

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld Street, Suite 205
Midland, Texas 79701



Mark J. Larson, P.G.
Certified Professional Geologist #10490



Sarah R. Johnson
Staff Geologist

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1.0 INTRODUCTION

Larson & Associates, Inc. (LAI) has prepared this delineation plan on behalf of Legacy Reserves Operating, LP (Legacy) for submittal to the New Mexico Oil Conservation Division (OCD) District I for a crude oil and produced water spill at the J.M. Denton #002 Tank Battery (Site) located in Unit O (SW/4, SE/4), Section 11, Township 15 South, Range 37 East in Lea County, New Mexico. The geodetic position is North 33.027241° and West -103.168076°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

1.1 Background

The spill occurred due to malfunction of the transfer pump, releasing approximately 40 barrels of crude oil and produced water. Approximately 35 bbl were recovered. The affected area is within the caliche pad and measures about 3,300 square feet. An overspray area to the northeast of the Site measures about 12,300 square feet. The initial C-141 was submitted on May 5, 2016 and assigned remediation permit number 1RP-4269. Appendix A presents an initial C-141.

On May 26, 2016, Environmental Plus, Inc. (EPI) collected a soil sample on the south side of the battery at a depth of 3 feet below ground surface (bgs). EPI delivered the sample to Cardinal Laboratories in Hobbs, New Mexico, under preservation and chain of custody. The soil sample was analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX), total petroleum hydrocarbons (TPH), including gasoline range organics (GRO) and diesel range organics (DRO) by EPA SW-846 Methods 8021B and 8015M, respectively, and chloride by titration method SM4500-cl-B. The laboratory reported BTEX and TPH below the RRAL and chloride below 250 milligrams per kilogram (mg/Kg). EPI treated the overspray area with Microblaze.

On December 20, 2016, EPI personnel collected soil samples at five (5) locations. The samples were collected at a depth of 70 feet bgs (SP1) and 20 feet bgs (SP2-SP5). The samples were delivered to Cardinal and analyzed for BTEX, TPH and chloride. The laboratory reported BTEX and TPH below the RRAL and chloride below 600 mg/Kg. Appendix B presents the laboratory results.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,790 feet above mean sea level (msl);
- The topography slopes gradually to the southeast;
- There are no surface water features within 1,000 feet of the Site;
- The soils are designated as “Kimbrough gravelly loam, 0 to 3 percent slopes”, consisting of 0 to 3 inches of gravelly loam underlain by 3 to 10 inches of loam;
- The surface geology is the Ogallala Formation (lower Pliocene to middle Miocene)- Alluvial and eolian deposits, and petrocalcic soils of the southern High Plains;
- Groundwater occurs in the Ogallala formation at approximately 52.48 feet below ground surface (bgs) (1996);
- The nearest freshwater well is in Unit L (NW/4, SW/4), Section 12, Township 15 South, Range 37 East or, about 0.50 miles northeast of the Site.

1.3 Recommended Remediation Action Levels

The recommended remediation action levels (RRAL) were calculated for benzene, BTEX and TPH based on the following criteria established by the OCD in *"Guidelines for Remediation of Leaks, Spills and Releases, pp.6-7, August 13, 1993"*:

Criteria	Result	Score
Depth-to-Groundwater	50 - 99 Feet	10
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1,000 Horizontal Feet	0

The following RRAL apply to release ranking score: 10

- Benzene 10 mg/Kg
- BTEX 50mg/Kg
- TPH 1,000 mg/Kg

Depth to groundwater 50 to 99 feet bgs requires vertical delineation of chloride to 600 milligrams per kilogram (mg/Kg) and maintained a minimum 5 feet farther in depth.

2.0 DELINEATION PLAN

LAI proposes to collect soil samples at seven (7) locations inside the firewall near the tank and separator. Soil samples will be collected at four (4) locations outside the firewall for horizontal delineation. The samples will be collected at 1 foot intervals to approximately 4 feet bgs and 2 foot intervals to approximately 12 feet bgs using direct push technology (DPT) depending on subsurface conditions. Four (4) soil samples will be collected within the overspray area and at three (3) locations outside the overspray area. The overspray samples will be collected to about 6 inches bgs. The soil samples will be delivered under chain of custody and preservation to Xenco Laboratories (Xenco) in Midland, Texas. The upper sample (0 to 1 foot) from each location will be analyzed for BTEX, TPH, including gasoline range organics (GRO), diesel range organics (DRO) and oil range organics (ORO) by EPA SW-846 Methods 8021B and 8015M, respectively. All samples will be analyzed for chloride by EPA Method 300. Pending laboratory results, further delineation may be required to reach cleanup level standards. Appendix C presents photographs.

3.0 REMEDIATION PLAN

Legacy will include a remediation plan in the delineation report to be submitted to the OCD upon receipt of the laboratory report.

Figures

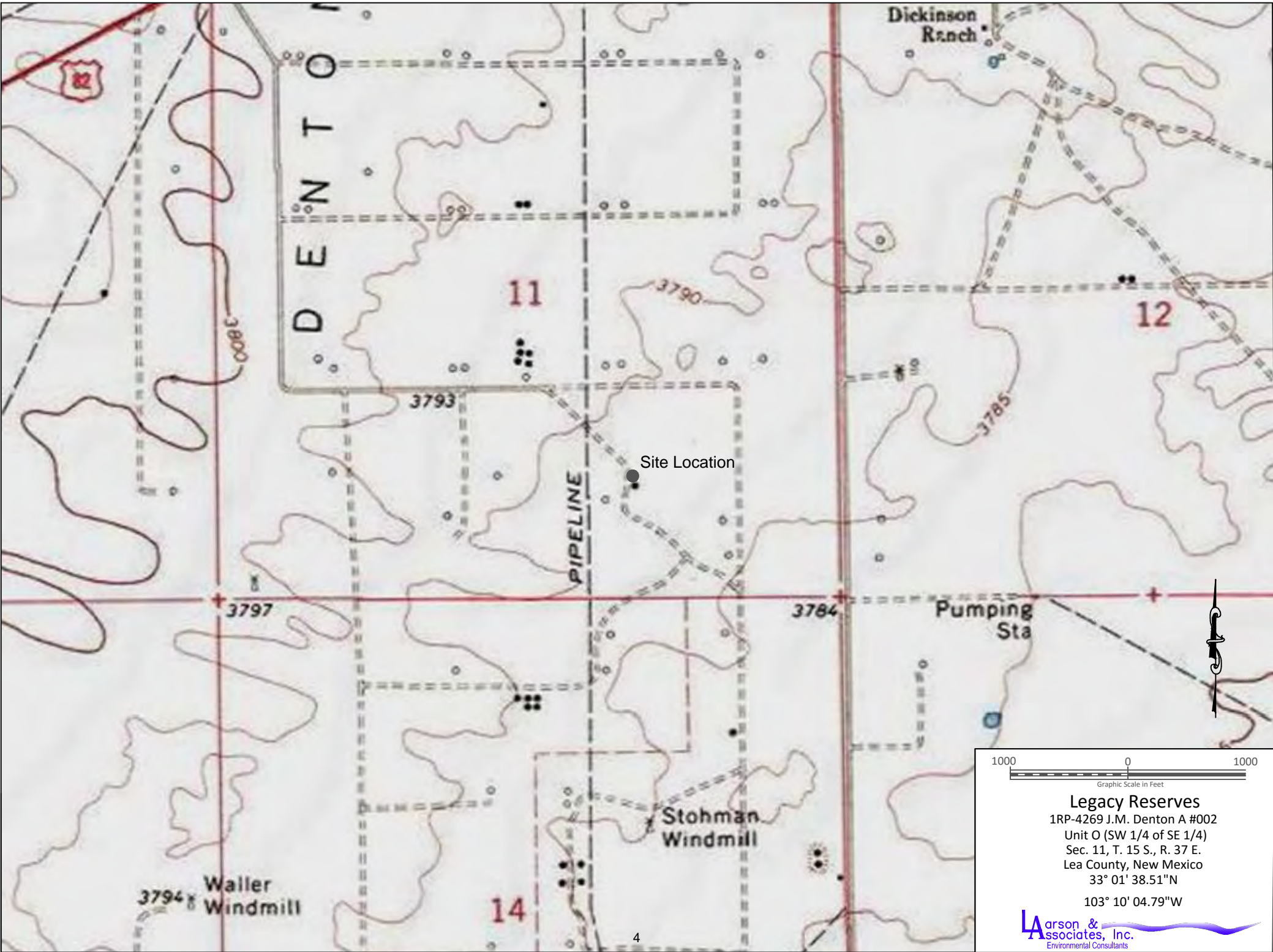


Figure 1 - Topographic Map



Figure 2 - Aerial Map

Appendix A
Initial C-141

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: Legacy, L.P.	Contact: Manuel Soriano
Address: P.O. Box 10848, Midland, Texas 79702	Telephone No. 432-269-8806
Facility Name: JM Denton A #2	Facility Type: Battery
Surface Owner: Darr Angell	Mineral Owner: API No. 30-025-05274

LOCATION OF RELEASE

Unit Letter O	Section 11	Township 15S	Range 37E	Feet from the 810	North/South Line South	Feet from the 1980	East/West Line East	County Lea
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Latitude: N 33.027241° Longitude: W 103.168076°

NATURE OF RELEASE

Type of Release: oil and produced water	Volume of Release: ~40 bbls	Volume Recovered: ~35 bbls
Source of Release: transfer pump quit	Date and Hour of Occurrence:	Date and Hour of Discovery:
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" 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: Not Applicable	
If a Watercourse was Impacted, Describe Fully.* Not Applicable		
Describe Cause of Problem and Remedial Action Taken.* The transfer pump quit causing the release of approximately 40 bbls oil and produced water. Vacuum trucks were called in to draw up standing fluid.		
Describe Area Affected and Cleanup Action Taken.* The spill impacted approximately 3,300 sq. ft. of caliche tank battery pad. An overspray area of approximately 12,300 sq. ft. was treated with Micro-Blaze. Vacuum trucks collected approximately 35 bbls of fluid from within containment. The stained soil has been scraped up and hauled to a state approved disposal facility.		
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: Manuel Soriano	Approved by Environmental Specialist: 	
Title: Production Foreman	Approval Date: 05/05/2016	Expiration Date: 07/05/2016
E-mail Address: jsoriano@legacylp.com	Conditions of Approval: Discrete samples only. Delineate and remediate per NMOCD guidelines.	Attached <input type="checkbox"/> IRP 4269
Date: 5-5-2016 Phone: 432-269-8806		

* Attach Additional Sheets If Necessary

nJXK1612649578
pJXK1612649830

Appendix B
EPI Laboratory Reports



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

June 03, 2016

Daniel Dominguez

Environmental Plus, Inc.

P.O. Box 1558

Eunice, NM 88231

RE: J M DENTON A #2

Enclosed are the results of analyses for samples received by the laboratory on 05/27/16 15:37.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

Environmental Plus, Inc.
Daniel Dominguez
P.O. Box 1558
Eunice NM, 88231
Fax To: (505) 394-2601

Received: 05/27/2016
Reported: 06/03/2016
Project Name: J M DENTON A #2
Project Number: NONE GIVEN
Project Location: UL-O SEC. 11, T15S, R37E

Sampling Date: 05/26/2016
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: SP 1 (3') (H601174-01)

BTEX 8021B			mg/kg		Analyzed By: CK				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/01/2016	ND	1.81	90.5	2.00	3.57	
Toluene*	<0.050	0.050	06/01/2016	ND	1.88	94.2	2.00	2.83	
Ethylbenzene*	<0.050	0.050	06/01/2016	ND	1.74	87.0	2.00	3.93	
Total Xylenes*	<0.150	0.150	06/01/2016	ND	5.41	90.2	6.00	3.99	
Total BTEX	<0.300	0.300	06/01/2016	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	112	16.0	06/01/2016	ND	400	100	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	05/31/2016	ND	191	95.7	200	1.97	
DRO >C10-C28	18.5	10.0	05/31/2016	ND	210	105	200	2.11	

Surrogate: 1-Chlorooctane 76.8 % 35-147

Surrogate: 1-Chlorooctadecane 95.6 % 28-171

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside if QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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

Chain of Custody Form



LAB Cardinal

12

Legacy

JM Denton A #2

Legend

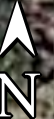
-  Release Area
-  Sample Location

Google earth

© 2016 Google

13

90 ft



Appendix C

Photographs



Site Location



Site Prior to Remediation Viewing East, September 14, 2017



Site Prior to Remediation Viewing South East, September 14, 2017



Site Prior to Remediation Viewing North, September 14, 2017



Site Prior to Remediation Viewing East, September 14, 2017



Site Prior to Remediation Viewing North, September 14, 2017