

APPROVED

By Olivia Yu at 9:52 am, Apr 09, 2018

NMOCD approves of the
proposed delineation plan
for 1RP-4230.

**1RP-4230
DELINEATION PLAN
Forgotten State #001 Battery
Crude Oil Spill
Lea County, New Mexico**

Latitude: N32° 54' 48.45"
Longitude: W-103° 37' 25.76"

LAI Project No. 17-175-22

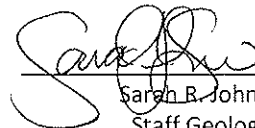
February 20, 2018

Prepared for:
Legacy Reserves Operating, LP
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Midland, Texas 79701

Prepared by:
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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 (OCD) District I for a crude oil spill at the Forgotten State #001 Battery (Site) located in Unit D (NW/4, NW/4), Section 24, Township 16 South, Range 33 East, in Lea County, New Mexico. The geodetic position is North 32° 54' 48.45" and West 103° 37' 25.76". Figure 1 presents a topographic map. Figure 2 presents an aerial map.

1.1 Background

The spill occurred on March 31, 2016, due to a leak in a circulating line releasing about 60 barrels (bbl) of crude oil. Approximately 30 bbl were recovered. The initial C-141 was submitted on April 1, 2016 and assigned remediation permit number 1RP-4230. Appendix A presents the initial C-141.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 4,175 feet above mean sea level (msl);
- The surface topography gradually slopes towards the southeast;
- The nearest surface water is a seasonal playa approximately 0.50 miles east of the Site;
- The soils are designated as Kimbrough-Lea complex, dry, 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 135 feet below ground surface (bgs);
- The nearest fresh water well is located in Unit C (NE/4, NW/4), Section 25, Township 16 South, Range 33 East, about 1.10 miles southeast of the Site.

1.3 Recommended Remediation Action Levels

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	>100 Feet	0
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1,000 Horizontal Feet	0

The following RRAL apply to release ranking score: 0

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 5,000 mg/Kg

Depth to groundwater greater than 100 feet bgs requires vertical delineation for chloride to 600 milligrams per kilogram (mg/Kg) and maintained for a minimum of 5 feet farther in depth.

2.0 DELINEATION PLAN

LAI proposes to collect soil samples at three (3) locations within the contaminated area. 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. Additional samples will be collected at five (5) locations in each cardinal direction (north, south, east and west) of the spill at the same depth intervals for horizontal delineation. 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 and total petroleum hydrocarbons (TPH), including gasoline range organics (GRO), diesel range organics (DRO) and oil range organics (ORO) by EPA SW-846 Method 8021B and 8015M, respectively. All samples will be analyzed for chloride by EPA Method 300. Pending laboratory results, further delineation may be determined to reach cleanup level standards. Appendix B 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.

Figures

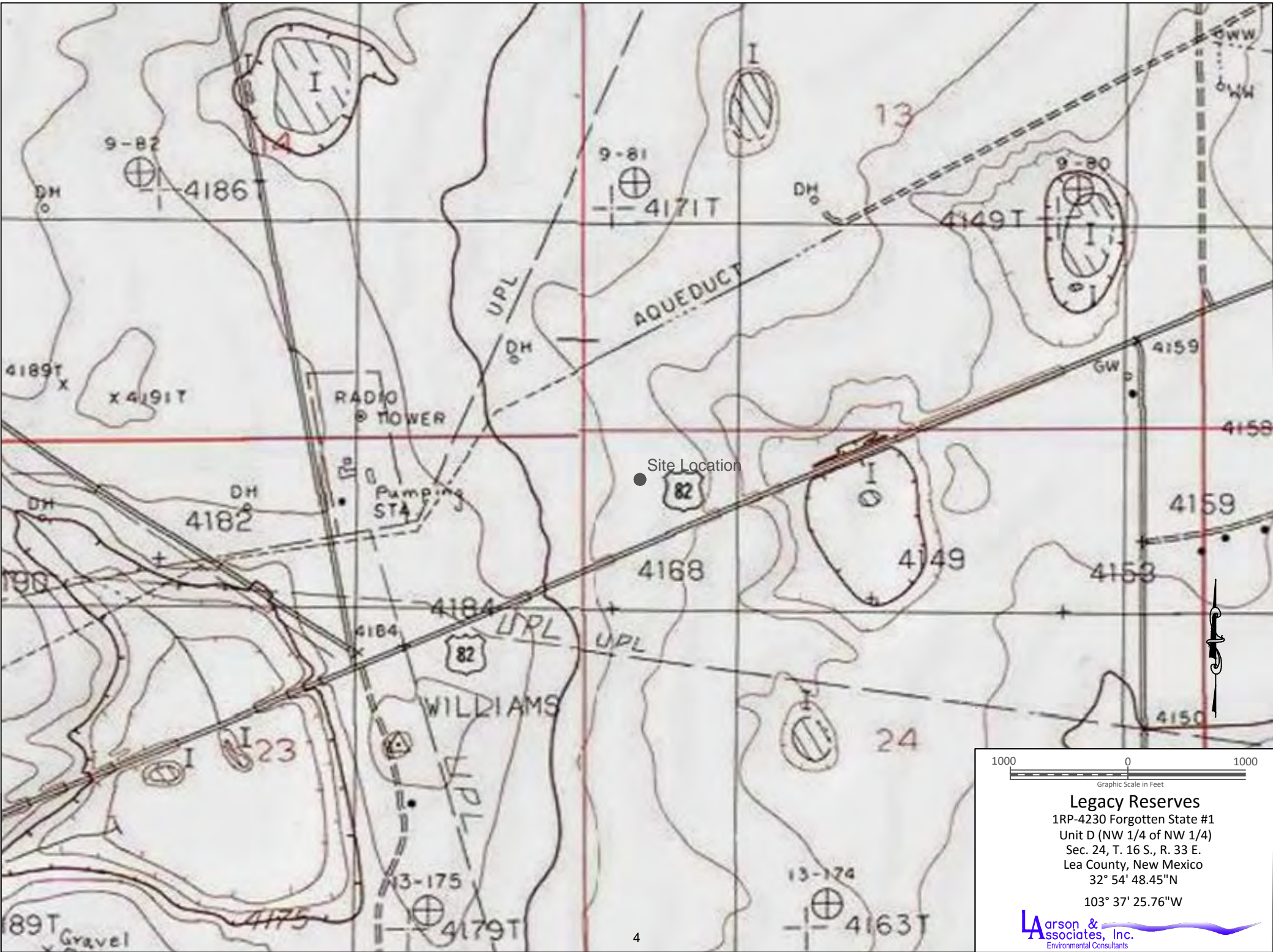


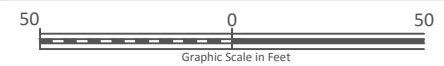


Figure 1 - Topographic Map



Legend

-  - Spill Area
-  - Proposed Sample Location



Legacy Reserves
1RP-4230 Forgotten State #1
Unit D (NW 1/4 of NW 1/4)
Sec. 24, T. 16 S., R. 33 E.
Lea County, New Mexico
32° 54' 48.45"N
103° 37' 25.76"W



Figure 3 - Aerial Map Showing Proposed Sample Locations

Appendix A
Initial C-141

04/04/2016 10:26

RECEIVED (AX)

P.003/004

By JKeyes at 1:27 pm, Apr 05, 2016

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 Reserves	Contact Jesse Garcia
Address P O Box 10848	Telephone No. 432-853-3535
Facility Name Forgotten State #001	Facility Type Oil
Surface Owner State	Mineral Owner
API No. 300486.01 30-025-37406	

LOCATION OF RELEASE

Unit Letter D	Section 24	Township 16S	Range 33E	Feet from the 330	North/South Line North	Feet from the 330	East/West Line West	County Lea
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Latitude 32.913597 Longitude -103.623772

NATURE OF RELEASE

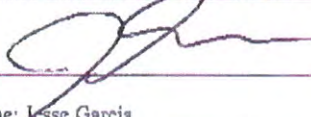

Type of Release Oil	Volume of Release 60	Volume Recovered 30
Source of Release Battery	Date and Hour of Occurrence 3:00 PM 3/31/16	Date and Hour of Discovery 3:00 PM 3/31/16
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Left a voice Mail	
By Whom?	Date and Hour 10:00 AM <u>4/1/16</u>	
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.* N/A

Describe Cause of Problem and Remedial Action Taken.*
circulating pump line got a leak, excess oil was picked up

Describe Area Affected and Cleanup Action Taken.*
Will clean up location, and replace with clean dirt

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: Jesse Garcia	Approved by Environmental Specialist: 	
Title: Foreman	Approval Date: 04/05/2016	Expiration Date: 06/05/2016
E-mail Address: jgarcia@lccacylp.com	Conditions of Approval:	
Date: 4/1/16	Discrete site samples only. Delineate and remediate per NMOCD guidelines. Geotagged photos of	Attached <input type="checkbox"/> 1RP 4230
Phone: 432-853-3535	remediate recommended.	

* Attach Additional Sheets If Necessary

nJXK1609648244
pJXK1609648320

Appendix " **Photographs**



Site Location



Site Prior to Remediation Viewing North, September 11, 2017



Site Prior to Remediation Viewing West, September 11, 2017



Site Prior to Remediation Viewing East, September 11, 2017



Site Prior to Remediation Viewing North, September 14, 2017