

APPROVED

By Olivia Yu at 9:56 am, Jul 24, 2018

NMOCD approves of the
proposed delineation for
1RP-1283.

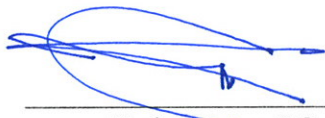
**1RP-1283
DELINEATION PLAN
LMPSU #521
Produced Water Spill
Lea County, New Mexico**

LAI Project No. 17-0175-01

June 27, 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



Ashton H. Thielke
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 produced water spill at the LMPSU #521 (Site) located in Unit P (SE/4, SE/4), Section 21, Township 22 South and Range 37 East in Lea County, New Mexico. The geodetic position is North 32.37195 and West -103.16155. Figure 1 presents a topographic map.

1.1 Background

The spill occurred on April 3, 2007, due to a leak in the 2-3/8" tubing below a valve, allowing for approximately 25 barrels (bbl) of produced water to be released. Approximately 15 bbl were recovered. The affected area measures approximately 60 X 80 feet or about 4,800 square feet. The valve was closed and the leak was repaired. The initial C-141 was submitted on April 4, 2007, and assigned remediation permit number 1RP-1283. Appendix A presents the initial C-141.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,345 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 "Pyote and maljamar fine sands, 0 to 3 percent slope", consisting of 0 to 30 inches of fine sand underlain by 30 to 60 inches of fine sandy loam;
- The surface geology is Eolian and Piedmont deposits from the Holocene to middle Pleistocene, the deposits consisting of interlayered eolian sands and piedmont-slope deposits underlain by the Tertiary-age Blackwater Draw and Ogallala formations in descending order;
- Groundwater occurs in the Ogallala formation at approximately 38.97 feet below ground surface (bgs) (1996);
- The nearest freshwater well is located in Unit K (NE/4, SW/4), Section 12, Township 22 South and Range 37 East about 2 miles northeast of the Site.

1.3 Remediation Action Levels

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

Criteria	Result	Score
Depth-to-Groundwater	<50 Feet	20
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1,000 Horizontal feet	0

The following RRAL apply to the release for ranking score: 20

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 100 mg/Kg

Depth to groundwater less than 50 feet bgs requires vertical delineation for chloride to 250 milligrams per kilogram (mg/Kg) and maintained for a minimum of 10 feet farther in depth.

2.0 DELINEATION PLAN

LAI proposed to collect soil samples at three (3) locations within the spill 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 in each cardinal direction (north, south, east and west) of the spill area at the same depth intervals, depending on subsurface conditions, for horizontal delineation. The soil samples will be delivered under preservation and chain of custody to a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory which will analyze the upper sample (0 to 1 foot) from each location for benzene, toluene, ethylbenzene and xylenes (BTEX) and total petroleum hydrocarbons (TPH), including gasoline range organics (C6-C12), diesel range organics (>C12-C28) and oil range organics (>C28-C35) 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 achieve the RRALs. Figure 2 presents the proposed sample locations. Appendix B presents photographs.

3.0 REMEDIATION

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

Figures

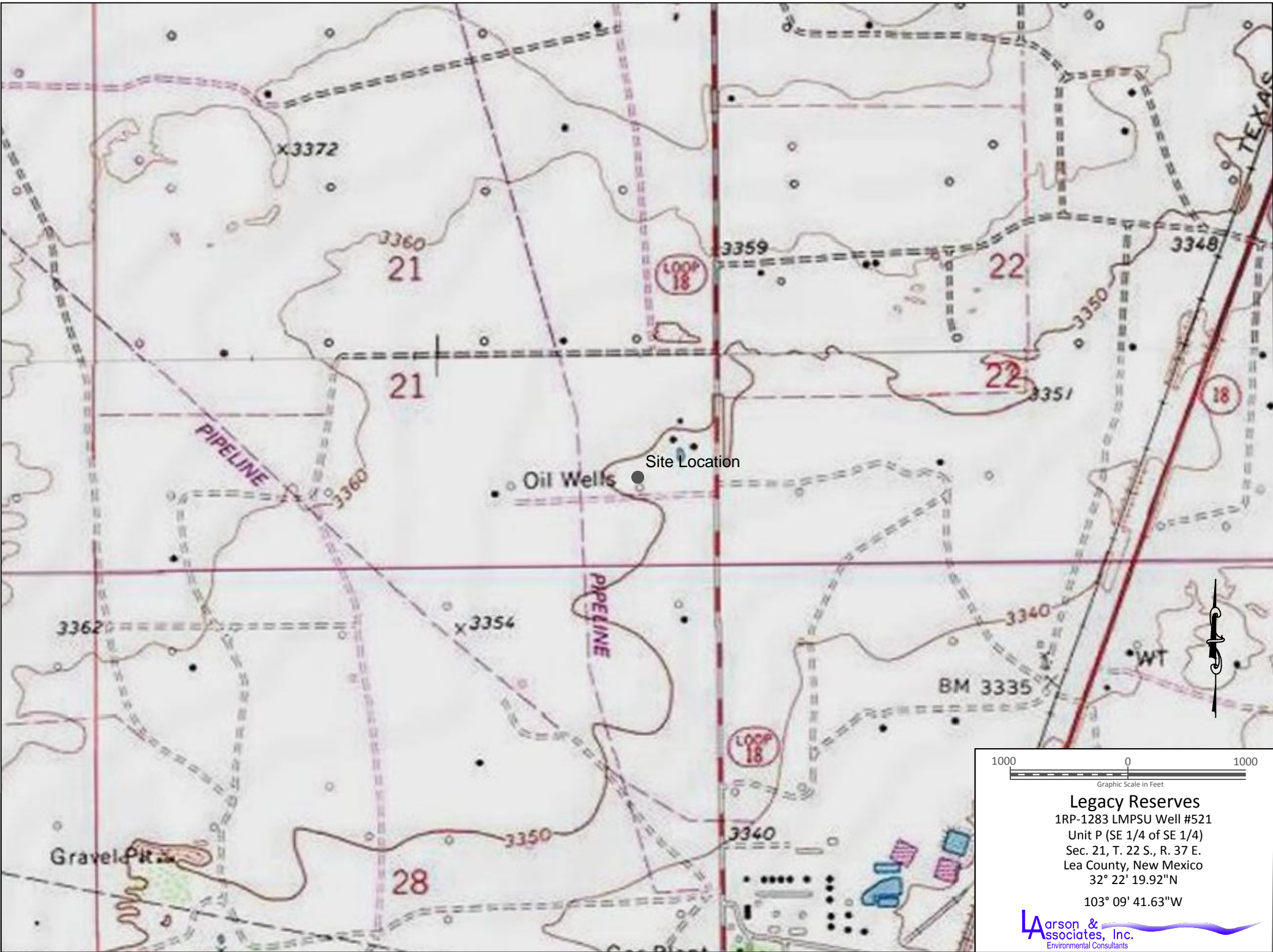
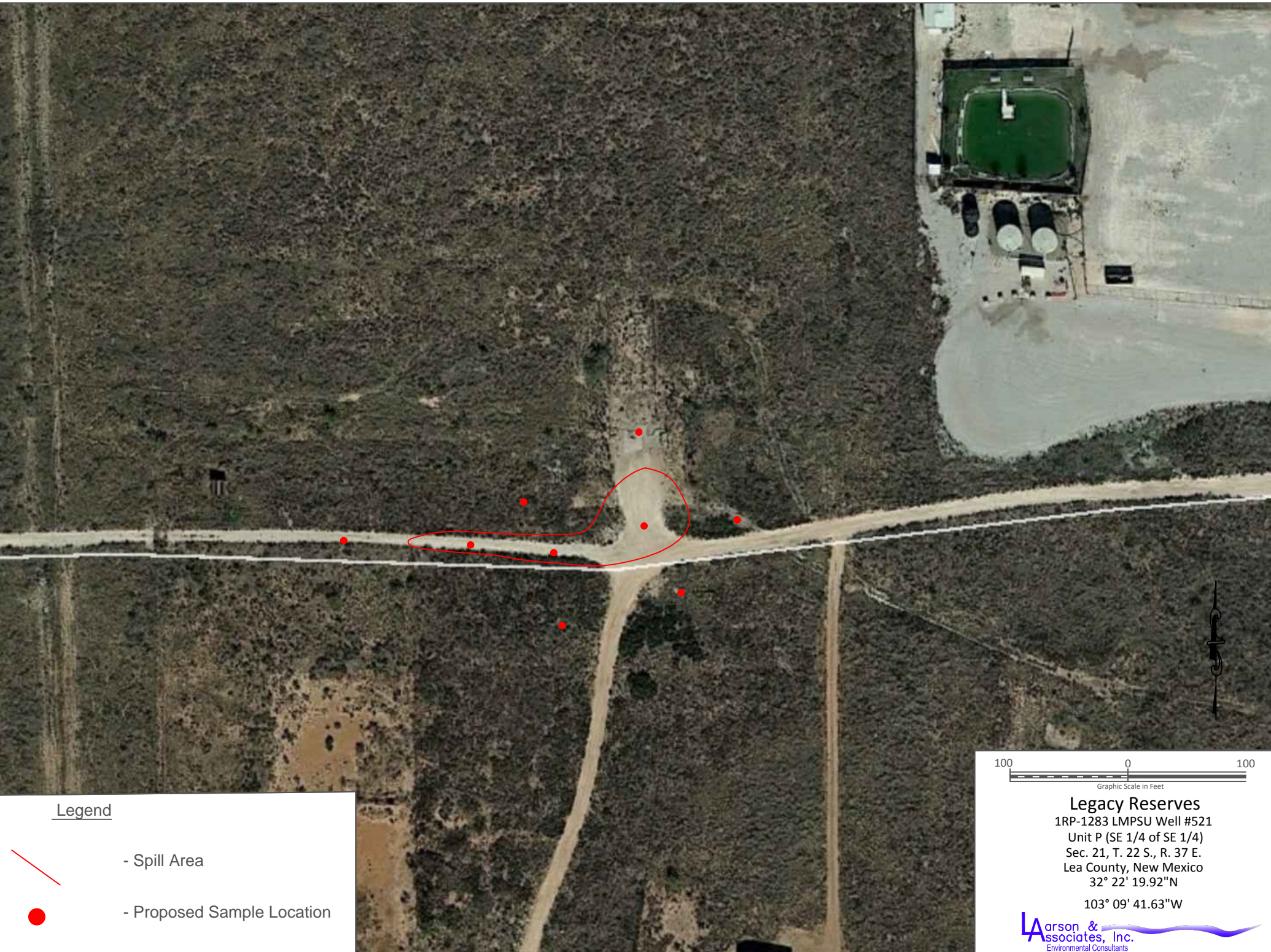
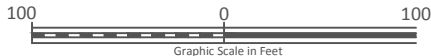


Figure 1 - Topographic Map



Legend

- Spill Area
- Proposed Sample Location



Legacy Reserves

1RP-1283 LMPSU Well #521
Unit P (SE 1/4 of SE 1/4)
Sec. 21, T. 22 S., R. 37 E.
Lea County, New Mexico
32° 22' 19.92"N
103° 09' 41.63"W



Figure 2 - Aerial Map Showing Spill Area and Proposed Soil Sample Locations

Appendix A

Initial C-141

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

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

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR

X ☐ Initial Report

☒ Final Report

Name of Company	Legacy Reserves Operating LP	Contact	Danny M. Brock
Address	P. O. Box 10848 Midland, Texas 79702	Telephone No.	432-682-2516
Facility Name	LMPSU well #521	Facility Type	wellhead
			API # 30025 10379-0000

Surface Owner	Charlie Ferbarache	Mineral Owner		Lease No.	LC-032573
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LOCATION OF RELEASE

API 30-025-10379

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	21	22S	37E	660'	South	660'	East	Lea

Latitude _____ Longitude _____

NATURE OF RELEASE

Type of Release	Leaking below valve	Volume of Release	25 BW	Volume Recovered	15 BW
Source of Release	2 - 3/8" tubing	Date and Hour of Occurrence	4/3/07 10:00 a.m.	Date and Hour of Discovery	4/3/07 2:08 p.m.

Was Immediate Notice Given?

x ☐ Yes ☐ No ☐ Not Required

If YES, To Whom?

Pat Kimberton w/ OCD

By Whom? Tommy Hill

Date and Hour 4/3/07 4:21 p.m.

Was a Watercourse Reached?

☐ Yes. X ☐ No

If YES, Volume Impacting the Watercourse.

N/A

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Developed a hole in 2-3/8" tubing below valve allowing liquids to spray out of hole. The well was turned off and the leak repaired.

Describe Area Affected and Cleanup Action Taken.*

The water sprayed over an area of 60' x 80', 15 BW were recovered. The remaining soil that has been contaminated will be removed and replaced.

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: x <u>Danny M. Brock</u>		OIL CONSERVATION DIVISION	
Printed Name: Danny M. Brock		Approved by District-Supervisor: <u>Chris Williams</u>	
Title: Production Superintendent		Approval Date: <u>4/16/08</u>	Expiration Date: <u>4/16/09</u>
E-mail Address: <u>DM BROCK@LEGACYLP.COM</u>		Conditions of Approval:	
Date: 4/4/07 Phone: 432-682-2516		Attached <input type="checkbox"/>	

* Attach Additional Sheets If Necessary

4-10-07
2:30P

Called Brock, left message w/ RECEPTIONIST
FOR HIM TO E-MAIL CHLORIDE CONTENT OF SPILLED
WTR & DISPOSITION OF CONTAM SOIL.

RP# 1283

Appendix B
Photographs



Site Location, September 8, 2017



Site Prior to Remediation Viewing North, September 8, 2017



Site Prior to Remediation Viewing South, September 8, 2017



Site Prior to Remediation Viewing Southwest, September 8, 2017