

1RP-4616

DELINEATION PLAN

Pogo Oil & Gas Operating, Inc., Langlie Jal Unit #39

Produced Water Spill

Lea County, New Mexico

APPROVED

By Olivia Yu at 3:16 pm, Sep 18, 2017

LAI Project No. 17-0174-01

August 29, 2017

Prepared for:

Pogo Oil & Gas Operating, Inc.

1515 Calle Sur, Suite 174

Hobbs, NM 88240

Prepared by:

Larson & Associates, Inc.

507 North Marienfeld Street, Suite 205

Midland, Texas 79701

A blue ink signature of Mark J. Larson, consisting of a large, stylized 'M' and 'L'.

Mark J. Larson, P.G.

Certified Professional Geologist #10490

A black ink signature of Sarah R. Johnson, featuring a stylized 'S' and 'J'.

Sarah R. Johnson

Staff Geologist

NMOCD approves of the proposed delineation for 1RP-4616. Laboratory analyses must reflect depths at which permissible levels were obtained and maintained for a minimum of 5 ft. further in depth.

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1.0 INTRODUCTION

Larson & Associated Inc. (LAI) has prepared this delineation plan on behalf of Pogo Oil and Gas, LLC (Pogo) for submittal to the New Mexico Oil Conservation Division (OCD) District 1 for a produced water spill at the Langlie Jal Unit 39 (Site) located in Unit D (NW/ 4, NW/4), Section 4, Township 25 South, and Range 37 East in Lea County, New Mexico. The geodetic position is North 32.16569722° and West - 103.17305556°. Figure 2 presents a topographic map. Figure 2 presents an aerial map.

1.1 Background

The spill occurred on February 12, 2017, due to failure in a buried flow line, causing the release of approximately 25 barrels (bbl) of produced water. No liquid was recovered. The topography allowed for the liquid to pool at the surface and migrate south of the failure point covering an area of approximately 434 square feet. The spill stayed within the vicinity of the caliche pad and extended into the lease road. The spill was discovered by the landowner, Buddy Hill, whom reported the spill to Pogo personnel. It was determined that the failure in Unit #39 was due to corrosion of the flow line. On February 12, 2017, approximately 30 minutes after the spill occurred, M. Y. Merchant reported the incident to OCD District 1 (verbal communication with Maxey Brown). The initial C-141 was submitted to the OCD on February 15, 2017 and was assigned remediation permit number 1RP-4616.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,238 feet above mean sea level (msl);
- The topography slopes gently to the southeast;
- The spill stayed within the vicinity of the caliche pad and extended into the lease road;
- The nearest surface water is a playa approximately 1,777 feet north of the Site;
- The soils are designated as “Sharvana loamy fine sand, dry, 0 to 3 percent slope” consisting of 0 to 7 inches of loamy fine sand underlain by 7 to 18 inches of fine sandy loam;
- Surface geology is of the Ogallala formation from the lower Pliocene to middle Miocene, the depositional environment is of alluvial and eolian nature with petrocalcic soils of the southern High Plains;
- Groundwater occurs in the Ogallala formation;
- The nearest fresh water well is located in Unit O (SW/4, SE/4), Section 34, Township 24 South, Range 37 East about 1.3 miles northeast from the Site;
- Depth to groundwater is reported at 55.99 feet below ground surface (bgs) (1979).

1.3 Remediation Action Levels

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, August 13, 1993*”:

Criteria	Result	Score
Depth-to-Groundwater	50 – 99 Feet	10
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1000 Horizontal Feet	0

The following RRAL apply to the release for ranking score: 10

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

2.0 PRELIMINARY DELINEATION

On May 16, 2017, Phoenix Environmental, LLC (Phoenix) personnel conducted a Site visit, photographed the spill, and collected soil samples. A background sample was collected about 200 feet northwest of the Site to determine lateral migration. Soil samples were collected at Test Hole 1 at a depth of 5 and 10 feet and at Test Hole 3 at a depth of 5 feet bgs. The soil samples were delivered to Cardinal Laboratories under preservation and chain of custody and tested for total petroleum hydrocarbons (TPH), BTEX (sum of benzene, toluene, ethylbenzene, and xylene), and chloride. TPH was only reported to C28 (diesel range organics) and was reported below the RRAL for all samples. Chloride was analyzed by titration method and reported above the OCD delineation limit of 600 milligrams per kilogram (mg/Kg) at Test Hole 1 at 8,500 mg/Kg in the sample from 0 – 6” and 5’. Pogo contracted a backhoe operator to excavate soil from the center of the spill to about 1 foot bgs.

3.0 DELINEATION PLAN

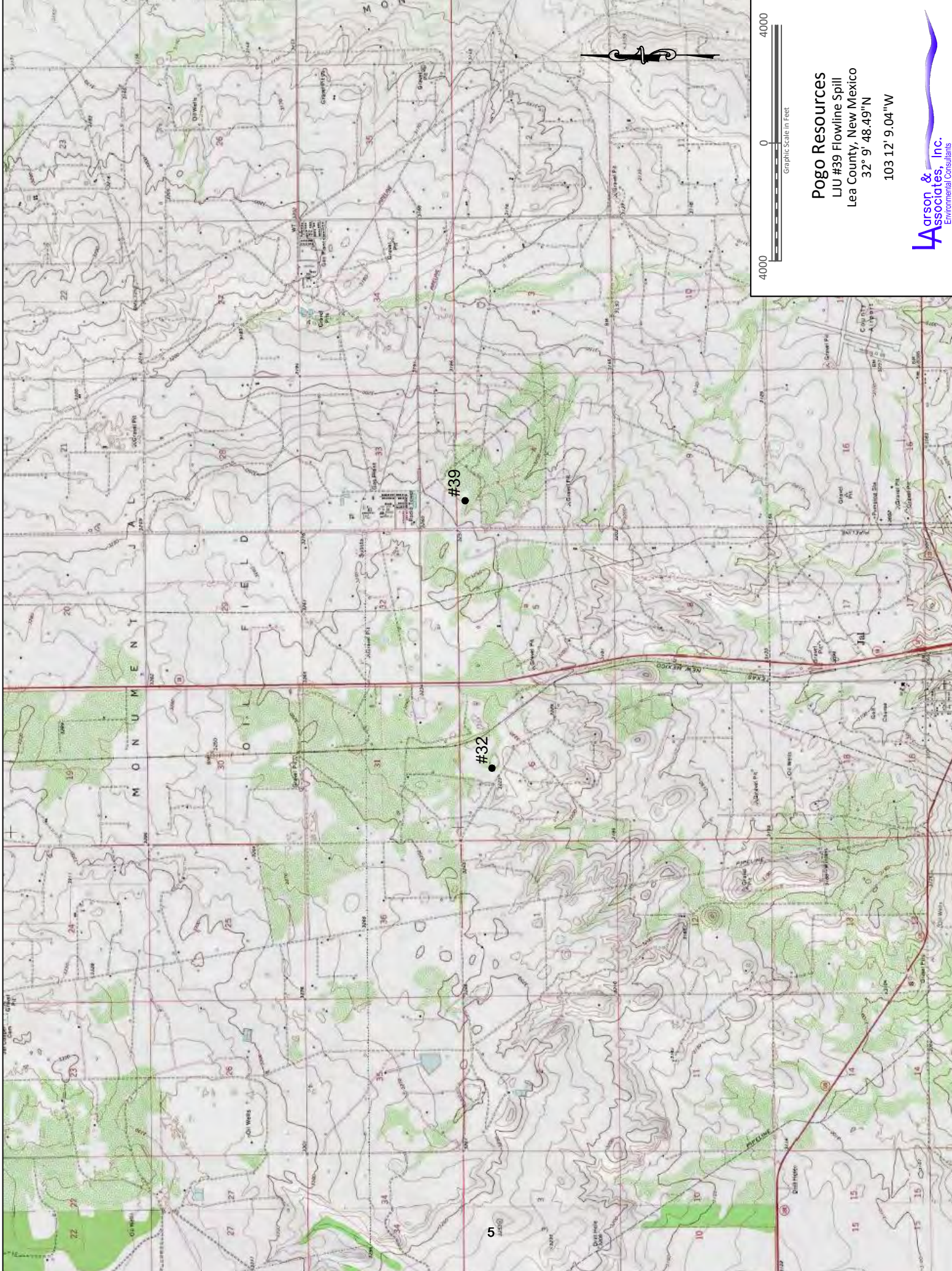
LAI proposes to collect soil samples at three (3) locations from the bottom of the excavation. The samples will be collected with direct push technology (DPT) at a depth of 0.5, 1.0, 3.0, 4.0, 5.0, 6.0, 8.0 and 12.0 feet below the bottom of the excavation based on the subsurface conditions. Samples will be collected from each sidewall opposite (north and south) of the bottom samples, as well as opposite ends (west and east). Samples will be collected outside of the excavation in each cardinal direction (north, south, east, and west) at depths of 0.5, 1.0, 3.0, 4.0, 5.0, 6.0, 8.0 and 12.0 feet bgs, depending on subsurface conditions, as well as the soil stock pile. The soil samples will be delivered under preservation and chain of custody to Permian Basin Environmental Lab (PBEL) in Midland, Texas, and analyzed for BTEX, TPH, including gasoline range organics (GRO), diesel range organics (DRO), and oil range organics (ORO) and chloride by EPA SW-846 Methods 8021B, 8015M and 300, respectively. Pending laboratory

results, further delineation will be determined to reach cleanup standards. Figure 3 presents a site map showing proposed soil sample locations.

4.0 REMEDIATION PLAN

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

Figures



Pogo Resources
LU #39 Flowline Spill
Lea County, New Mexico
32° 9' 48.49"N
103° 12' 9.04"W



Figure 1 - Topographic Map



Pogo Resources
LJU #39 Flowline Spill
Unit D, S.4 T.25.S, R.37.E
Lea County, New Mexico
32° 9' 56.51"N
103° 10' 23.34"W

Larson & Associates, Inc.
Environmental Consultants

Legend

- Excavation Area

Figure 2 - Aerial Map



Figure 3 - Site Map Showing Excavation and Proposed Sample Locations

Attachment A

Photographs



Location Sign, August 23, 2017



Excavated Soil Prior to Remediation Viewing North, August 23, 2017



Excavated Soil Prior to Remediation Viewing South, August 23, 2017



Excavated Soil Prior to Remediation Viewing East, August 23, 2017



Excavated Soil Prior to Remediation Viewing West, August 23, 2017

Attachment B

Initial C-141

VII Conclusion

Based on the C-141 documentation along with the preliminary delineation work provided above, Penroc Oil Corporation will provide a subsequent delineation report along with a proposed remediation workplan once sampling analyses has been completed. The operator respectfully request the NMOCD's to review the data provided to date and provide insight on remediation plans once the subsequent sampling report is submitted.

VIII Initially Reviewed C-141

District I
1625 N. French Dr., Hobbs, NM 88241
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

HOBBS OCD
FEB 16 2017
RECEIVED

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

PENROC OIL CORPORATION ☒ Initial Report ☐ Final Report

Name of Company Penroc Oil Corporation	Contact M.Y. Merchant
Address PO Box 2769, Hobbs, NM 88241	Telephone No. 575-492-1236
Facility Name Langlie Jal Unit #039	Facility Type Injector Well

Surface Owner Woolworth Trust	Mineral Owner Multiple Ownerships	API No. 30-025-11442
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LOCATION OF RELEASE

Unit Letter D	Section 04	Township 25S	Range 37E	Feet from the 330	North/South Line North	Feet from the 990	East/West Line West	County Lea
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Latitude 32.1656418 Longitude -103.1731644 NAD83

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 25 bbl.	Volume Recovered 0 at time of report
Source of Release Buried flowline failure	Date and Hour of Occurrence 2/12/17 at approx. 4:15 PM	Date and Hour of Discovery 2/12/17 at 4:45 PM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Masey Brown	
By Whom? M.Y. Merchant	Date and Hour 2/12/17 at 4:45 PM	
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.*

Please see attached documentation

Describe Area Affected and Cleanup Action Taken.*

Please see attached documentation

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: Kyle Townsend	Approved by Environmental Specialist: 	
Title: Agent	Approval Date: 2/21/2017	Expiration Date:
E-mail Address: kyle@pegooilandgas.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>
Date: 2/15/17 Phone: 713-305-9886		

* Attach Additional Sheets If Necessary

1RP-4616

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