



Turner A Battery - Turner A #51

REMEDIATION WORK PLAN

API No. 30-015-28758

Release Date: January 24, 2012

Unit Letter I, Section 19, Township 17 South, Range 31 East

RP# 2RP-1015

BLM Event# NU12074TG

August 7, 2017

Prepared by:

Michael Alves

Environmental Department

Diversified Field Service, Inc.

206 W. Snyder

Hobbs, NM 88240

Phone: (575)964-8394

Fax: (575)393-8396

Mike Bratcher
Environmental Specialist
NM Oil Conservation District – Division 2
811 S. First St.
Artesia, NM 88210

RE: **Linn - Turner A Battery - Turner A #051**
Closure Request
UL/I, Section 19, T17S, R31E
API No. 30-015-28758
NMOCD Case #: 2R-1015
BLM Event #: NU12074TG

Mr. Bratcher,

Linn Energy (Linn) has retained Diversified Field Service, Inc. (DFSI) to address environmental issues for the site detailed herein.

The site is located south west of Maljamar NM, in Eddy County. The spill resulted from a worn clamp bolt, releasing a total of 100 barrels of produced water down a lease road, approximately 100 yards south, with 70 barrels recovered. An initial C-141 was submitted to the NMOCD on February 1, 2012, and approved on February 14, 2012 (Appendix I).

During inspection of the site, a non-reportable spill was located within the battery, near the heater treater. The secondary spill site will be remediated concurrently.

Site Assessment and Delineation

On May 15, 2014, DFSI personnel were on site to obtain samples within the leak area (Figure 1). Six samples were obtained and field sampled for chloride levels, as well as BTEX. The BTEX samples were performed using a Mini Rae Photoionization Detector (PID). All clean field samples under NMOCD and BLM regulatory guidelines were submitted for analysis at Cardinal Laboratories of Hobbs, NM to obtain confirmation.

On May 16, 2014, DFSI personnel obtained samples within the secondary spill site. Two samples were obtained and field samples for chloride levels, as well as BTEX. The BTEX samples were performed using a Mini Rae Photoionization Detector (PID). All clean field samples under NMOCD and BLM regulatory guidelines were submitted for analysis at Cardinal Laboratories of Hobbs, NM to obtain confirmation.

DFSI personnel returned to the site to resample and fully delineate the spill area on February 18 and March 28, 2016. The initial six sample points were reevaluated for chloride levels, as well as BTEX. The BTEX samples were performed using a Mini Rae Photoionization Detector (PID). All clean field samples under NMOCD and BLM regulatory guidelines were submitted for analysis at Cardinal Laboratories of Hobbs, NM and Hall Environmental of Albuquerque, NM to obtain confirmation.

DFSI has conducted a groundwater study of the area and has determined that according to the New Mexico Office of the State Engineer the average depth to groundwater for this area is 280 foot below ground surface. Therefore, no eminent danger of groundwater impact or threat to life is anticipated (Appendix II).

On April 11, 2017, DFSI personnel were on site to begin approved remediation activities (Appendix III). The area around SP3 was excavated to a depth of 4' bgs. At the base of the excavation, a 20-mil reinforced poly liner was installed to inhibit the downward migration of constituents. The areas around SP1, SP4 and SP 6 was excavated to a depth 3' bgs. The areas around SP2 and SP5 were scraped 6" bgs. The entire area was backfilled with clean, imported soil to ground surface and contoured to the surrounding area. The pasture area was seeded with an approved BLM-NMOCD mix (Appendix IV).

The area within the battery was excavated to a depth of 4' bgs. The excavation was backfilled with caliche to ground surface and contoured to the surrounding area. The contaminated soils were properly disposed of at an approved NMOCD facility.

Conclusion

Due to completion of approved remediation activities, DFSI, on behalf of Linn Energy, submits the final C-141 (Appendix V) and respectfully requests the closure of the regulatory file for this site.

Please feel free to contact me with any questions concerning this closure request.

Sincerely,

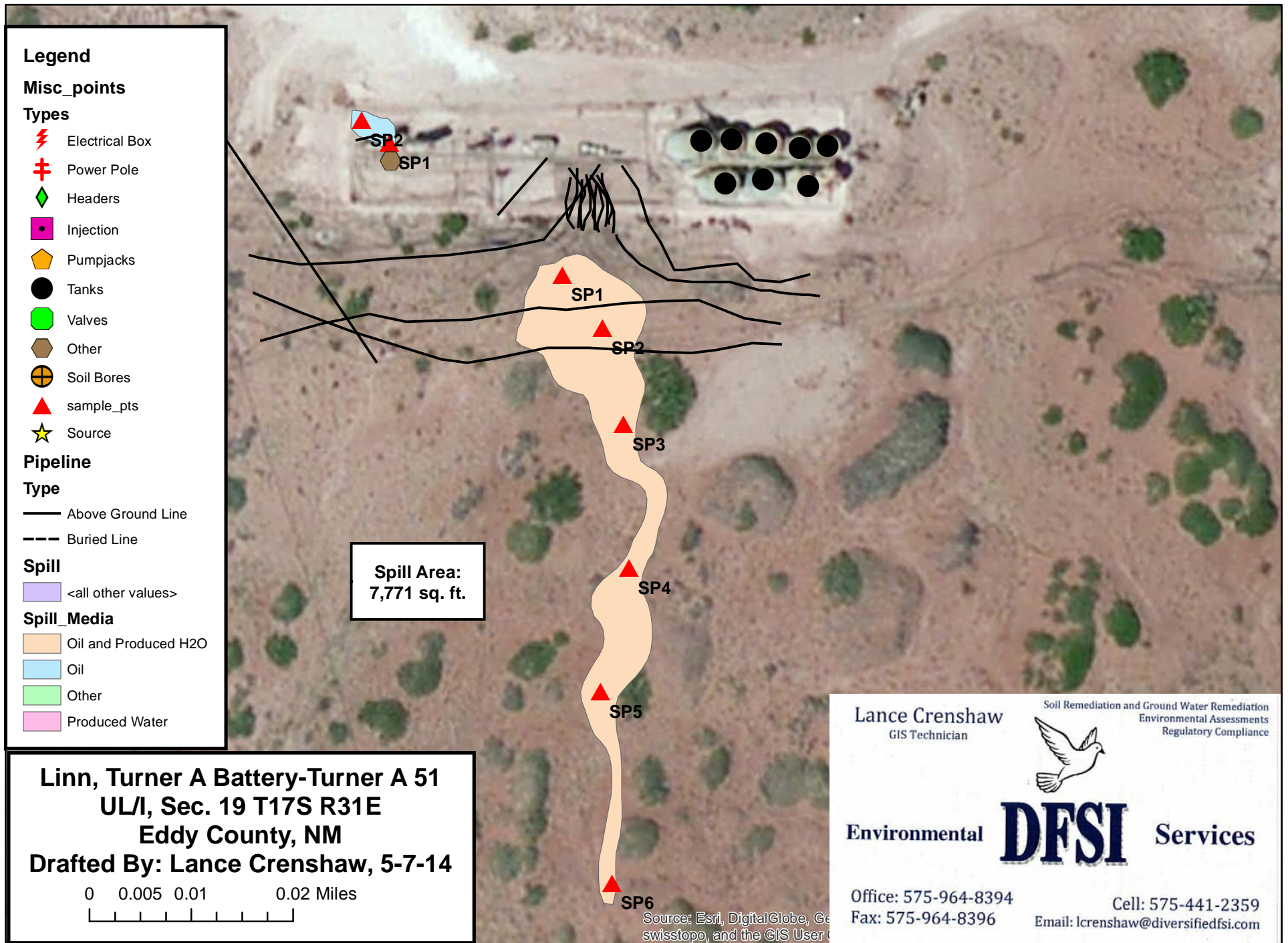


Michael Alves
Environmental Operations Foreman | Diversified Field Service, Inc.
206 West Snyder | Hobbs, NM 88240
Office: (575)964-8394 | Mobile: (575)631-3364
Fax: (575)964-8396 | Email: Malves@diversifiedfsi.com

cc Shelly Tucker

Figure 1 – Site Map
Appendix I – Initial C-141
Appendix II – Groundwater Study
Appendix III – Site Photos
Appendix IV – Seeding Documentation
Appendix V – Final C-141

Site Diagram



Appendix I

INITIAL C-141

Diversified Field Service, Inc.
206 W. Snyder
Hobbs, NM 88240
(575) 964-8394

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

RECEIVED

FEB 01 2012

Form C-141
Revised October 10, 2003

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 | 269324 | Contact: Joe Hernandez |
| Address: 2130 W. Bender Hobbs, NM 88240 | | Telephone No.: 575-738-1739 |
| Facility Name: Turner A Battery- Turner A #51 | | Facility Type: WaterFlood |
| Surface Owner: BLM | Mineral Owner: BLM | API No.: 3001528758 |

LOCATION OF RELEASE

| | | | | | | | | |
|------------------|---------------|-----------------|--------------|-----------------------|---------------------------|---------------------|------------------------|----------------|
| Unit Letter I | Section 19 | Township 17S | Range 31E | Feet from the 2632 | North/South Line North | Feet from the 75 | East/West Line East | County Eddy |
|------------------|---------------|-----------------|--------------|-----------------------|---------------------------|---------------------|------------------------|----------------|

Latitude: N32° 49' 16.2" Longitude: W103° 44' 48.2"

NATURE OF RELEASE

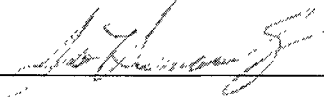
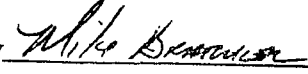
| | | |
|--|--|--|
| Type of Release: Produced Water | Volume of Release: 100 | Volume Recovered: 70 |
| Source of Release: Pipeline | Date and Hour of Occurrence: 01/24/2012 9:00am | Date and Hour of Discovery: 01/24/2012 9:30am |
| Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required | If YES, To Whom? M. Bratcher -NM OCD Terry Gregston-BLM | |
| By Whom? Joe Hernandez | Date and Hour 01/24/2012 3:00pm | |
| 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 *: Bolts on clamp rotted. Transfer pump was running and caused water to leak and run down lease road south about 100 yards. Shut down leases and replaced with new piece of pipe and two clamps on both sides. Next day pressure up and no leaks.

Describe Area Affected and Cleanup Action Taken.*: Loco Hills East on 82 to mile marker 137, turn north .3miles leak on west side of lease road. Sucked up water.

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: Joe Hernandez | Signed By  Approved by District Supervisor: | |
| Title: Production Foreman | Approval Date: FEB 14 2012 | Expiration Date: |
| E-mail Address: jhernandez@linenergy.com | Conditions of Approval: Remediation per OCD Rules & Guidelines. SUBMIT REMEDIATION PROPOSAL NOT LATER THAN: 3/14/2012 | Attached <input type="checkbox"/> |
| Date: 2/01/2012 Phone: 575-942-9492 | | |

* Attach Additional Sheets If Necessary

2RP-1015

Appendix II

GROUNDWATER STUDY

Diversified Field Service, Inc.
206 W. Snyder
Hobbs, NM 88240
(575) 964-8394



New Mexico Office of the State Engineer **Water Column/Average Depth to Water**

No records found.

Basin/County Search:

County: Eddy

PLSS Search:

Section(s): 19, 20, 29, 30, 17, 18 **Township:** 17S **Range:** 31E

Appendix III

SITE PHOTOS

Turner A Battery – Turner A #051

Photo Page



Site prior



Site prior



Collecting samples by auger



Collect samples by auger



Excavating site



Exporting soil



Excavating site



Excavation completed



Site completed



Site completed



Seeding site



Seeding site

Appendix IV

SEEDING DOCUMENTATION

Diversified Field Service, Inc.
206 W. Snyder
Hobbs, NM 88240
(575) 964-8394

Curtis and Curtis, Inc.
 4500 North Prince
 Clovis, NM 88101
 Phone: (575) 762-4759
 www.curtisseed.com

*Turner A
Battery*

Diversified Construction
 1 Acre BLM LPC Mix, Broadcast Rate
 2 - 1/2 Acre Bags @ 26.66 Bulk Pounds Each
 Linn - Turner A Tank Battery

Lot# M-14518-2

| Item | Origin | Purity | Germ | Dormant | Total Germination | Test Date | Total PLS Pounds |
|---------------------|----------|-----------------------------------|--------|---------|--------------------|-----------|------------------|
| Plains Bristlegrass | Oklahoma | 19.34% | 6.00% | 91.00% | 97.00%(TZ) | 05/17 | 12.00 |
| Not Stated | | | | | | | |
| Sand Bluestem | Kansas | 19.14% | 95.00% | 3.00% | 98.00% | 02/17 | 10.00 |
| Chet | | | | | | | |
| Little Bluestem | Texas | 11.49% | 98.00% | 0.00% | 98.00% | 05/17 | 6.00 |
| Cimarron | | | | | | | |
| Big Bluestem | Kansas | 22.97% | 98.00% | 0.00% | 98.00% | 11/16 | 12.00 |
| Kaw | | | | | | | |
| Coreopsis | Kansas | 7.82% | 96.00% | 0.00% | 96.00% | 06/17 | 4.00 |
| Plains | | | | | | | |
| Sand Dropseed | Colorado | 3.83% | 98.00% | 0.00% | 98.00%(TZ) | 02/17 | 2.00 |
| Not Stated | | | | | | | |
| Other Crop: | 0.02% | There Are 2 Bags For This Mix | | | Total Bulk Pounds: | | 53.31 |
| Weed Seed: | 0.01% | This Bag Weighs 26.66 Bulk Pounds | | | | | |
| Inert Matter: | 15.38% | Use This Bag For 1/2 Acres | | | | | |

Curtis and Curtis, Inc.
 4500 North Prince
 Clovis, NM 88101
 Phone: (575) 762-4759
 www.curtisseed.com

*Turner A
Battery*

Diversified Construction
 1 Acre BLM LPC Mix, Broadcast Rate
 2 - 1/2 Acre Bags @ 26.66 Bulk Pounds Each
 Linn - Turner A Tank Battery

Lot# M-14518-2

| Item | Origin | Purity | Germ | Dormant | Total Germination | Test Date | Total PLS Pounds |
|---------------------|----------|-----------------------------------|--------|---------|--------------------|-----------|------------------|
| Plains Bristlegrass | Oklahoma | 19.34% | 6.00% | 91.00% | 97.00%(TZ) | 05/17 | 12.00 |
| Not Stated | | | | | | | |
| Sand Bluestem | Kansas | 19.14% | 95.00% | 3.00% | 98.00% | 02/17 | 10.00 |
| Chet | | | | | | | |
| Little Bluestem | Texas | 11.49% | 98.00% | 0.00% | 98.00% | 05/17 | 6.00 |
| Cimarron | | | | | | | |
| Big Bluestem | Kansas | 22.97% | 98.00% | 0.00% | 98.00% | 11/16 | 12.00 |
| Kaw | | | | | | | |
| Coreopsis | Kansas | 7.82% | 96.00% | 0.00% | 96.00% | 06/17 | 4.00 |
| Plains | | | | | | | |
| Sand Dropseed | Colorado | 3.83% | 98.00% | 0.00% | 98.00%(TZ) | 02/17 | 2.00 |
| Not Stated | | | | | | | |
| Other Crop: | 0.02% | There Are 2 Bags For This Mix | | | Total Bulk Pounds: | | 53.31 |
| Weed Seed: | 0.01% | This Bag Weighs 26.66 Bulk Pounds | | | | | |
| Inert Matter: | 15.38% | Use This Bag For 1/2 Acres | | | | | |

Curtis, Inc.

Box

101

(575) 762-4759

www.curtisseed.com

Turner A Battely

Diversified Construction
1 Acre BLM LPC Mix, Broadcast Rate
2 - 1/2 Acre Bags @ 26.66 Bulk Pounds Each
Linn - HE West B 83

Lot# M-14518-1

| Item | Origin | Purity | Germ | Dormant | Total Germination | Test Date | Total PLS Pounds |
|---------------------|----------|--------|--------|---------|-------------------|-----------|------------------|
| Plains Bristlegrass | Oklahoma | 19.34% | 6.00% | 91.00% | 97.00%(TZ) | 05/17 | 10.00 |
| Not Stated | | | | | | | |
| Sand Bluestem | Kansas | 19.14% | 95.00% | 3.00% | 98.00% | 02/17 | 10.00 |
| Chet | | | | | | | |
| Little Bluestem | Texas | 11.49% | 98.00% | 0.00% | 98.00% | 05/17 | 6.00 |
| Cimarron | | | | | | | |
| Big Bluestem | Kansas | 22.97% | 98.00% | 0.00% | 98.00% | 11/16 | 12.00 |
| Kaw | | | | | | | |
| Coreopsis | Kansas | 7.82% | 96.00% | 0.00% | 96.00% | 06/17 | 4.00 |
| Plains | | | | | | | |
| Sand Dropseed | Colorado | 3.83% | 98.00% | 0.00% | 98.00%(TZ) | 02/17 | 2.00 |
| Not Stated | | | | | | | |

Other Crop: 0.00%
Weed Seed: 0.01%
Inert Matter: 15.38%

There Are 2 Bags For This Mix
This Bag Weighs 26.66 Bulk Pounds
Use This Bag For 1/2 Acres

Total Bulk Pounds: 53.31

Appendix V

FINAL C-141

Diversified Field Service, Inc.
206 W. Snyder
Hobbs, NM 88240
(575) 964-8394

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

Form C-141
Revised August 8, 2011

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

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 Energy | Contact: Aaron Hickert |
| Address: 2130 W Bender, Hobbs, NM 88240 | Telephone No. 432-363-9496 |
| Facility Name: Turner A Battery - Turner A #051 | Facility Type: Water Flood |

| | | |
|------------------------|------------------------|----------------------|
| Surface Owner: Federal | Mineral Owner: Federal | API No. 30-015-28758 |
|------------------------|------------------------|----------------------|

LOCATION OF RELEASE

| | | | | | | | | |
|------------------|---------------|-----------------|--------------|-----------------------|---------------------------|-----------------|------------------------|----------------|
| Unit Letter 1 | Section 19 | Township 17S | Range 31E | Feet from the 2632 | North/South Line North | Feet from 75 | East/West Line East | County Eddy |
|------------------|---------------|-----------------|--------------|-----------------------|---------------------------|-----------------|------------------------|----------------|

Latitude: 32.8211667 Longitude: -103.7467222

NATURE OF RELEASE

| | | |
|--|---|--|
| Type of Release: Produced Water | Volume of Release: 100 bbls | Volume Recovered: 70 bbls |
| Source of Release: Pipeline | Date and Hour of Occurrence 01/24/2012 9:00 AM | Date and Hour of Discovery 01/24/2012 9:30 AM |
| Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required | If YES, To Whom? M. Bratcher - NMOCD, Terry Gregston - BLM | |
| By Whom? Joe Hernandez | Date and Hour: 01/24/2012 3:00 PM | |
| 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.*

Bolts on clamp rotted. Transfer pump was running and caused water to leak and run down lease road south about 100 yards. Shut down leases and replaced with new piece of pipe and two clamps on both sides. Next day pressure up and no leaks.

Describe Area Affected and Cleanup Action Taken.

On May 15, 2014, DFSI personnel were on site to obtain samples within the leak area. Six samples were obtained and field sampled for chloride levels, as well as BTEX. The BTEX samples were performed using a Mini Rae Photoionization Detector (PID). All clean field samples under NMOCD and BLM regulatory guidelines were submitted for analysis at Cardinal Laboratories of Hobbs, NM to obtain confirmation. On May 16, 2014, DFSI personnel obtained samples within the secondary spill site. Two samples were obtained and field samples for chloride levels, as well as BTEX. The BTEX samples were performed using a Mini Rae Photoionization Detector (PID). All clean field samples under NMOCD and BLM regulatory guidelines were submitted for analysis at Cardinal Laboratories of Hobbs, NM to obtain confirmation. DFSI personnel returned to the site to resample and fully delineate the spill area on February 18 and March 28, 2016. The initial six sample points were reevaluated for chloride levels, as well as BTEX. The BTEX samples were performed using a Mini Rae Photoionization Detector (PID). All clean field samples under NMOCD and BLM regulatory guidelines were submitted for analysis at Cardinal Laboratories of Hobbs, NM to obtain confirmation. On April 11, 2017, DFSI personnel were on site to begin approved remediation activities. The area around SP3 was excavated to a depth of 4' bgs. At the base of the excavation, a 20-mil reinforced poly liner was installed to inhibit the downward migration of constituents. The areas around SP1, SP4 and SP 6 was excavated to a depth 3' bgs. The areas around SP2 and SP5 were scraped 6" bgs. The entire area was backfilled with clean, imported soil to ground surface and contoured to the surrounding area. The pasture area was seeded with an approved BLM-NMOCD mix. The area within the battery was excavated to a depth of 4' bgs. The excavation was backfilled with caliche to ground surface and contoured to the surrounding area. The contaminated soils were properly disposed of at an approved NMOCD 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: Aaron Hickert | | Approved by Environmental Specialist: | |
| Title: Sr EH&S Representative | Approval Date: | Expiration Date: | |
| E-mail Address: ahickert@linenergy.com | Conditions of Approval: | | Attached <input type="checkbox"/> |
| Date: 08/2/2017 Phone: 432-363-9496 | | | |

* Attach Additional Sheets If Necessary