Souder, Miller & Associates♦201 S. Halagueno St.♦Carlsbad, NM 88220
(575) 689-8801

April 9, 2020

#5E29133-BG3

NMOCD District 2
811 S. First Street
Artesia, New Mexico 88210

SUBJECT: Remediation Closure Report for the Cotton Draw Unit #294H Release (2RP-4543), Eddy County, New Mexico

To Whom It May Concern:

On behalf of Devon Energy Production Company, Souder, Miller & Associates (SMA) has prepared this Remediation Closure Report that describes the remediation of a release of liquids related to oil and gas production activities at the Cotton Draw Unit #294H site. The site is in Unit Letter N, Section 36, Township 24S, Range 31E, Eddy County, New Mexico, on State/Federal land. Figure 1 illustrates the vicinity and site location on an USGS 7.5 minute quadrangle map.

Table 1 summarizes release information and Closure Criteria.

| Table 1: Release Information and Closure Criteria | | | |
|---|---|---|---|
| Name | Cotton Draw Unit #294H | Company | Devon Energy Production Company |
| API Number | 30-015-44105 | Location | 32.1667 -103.7324 |
| Incident Number | 2RP-4543 | | |
| Estimated Date of Release | December 21, 2017 | Date Reported to NMOCD | December 22, 2017 |
| Land Owner | State and Federal | Reported To | OCD, BLM, SLO |
| Source of Release | Bad gasket on transfer hose | | |
| Released Volume | 209 BBLS | Released Material | Produced Water |
| Recovered Volume | 50 BBLS | Net Release | 159 BBLS |
| NMOCD Closure Criteria | >100 feet to groundwater | | |
| SMA Response Dates | 3/14/2020 | | |

## 1.0 Background

On December 21, 2017, a release was discovered on the lease road due to a bad gasket on a transfer hose pumping produced water to Cotton Draw Unit #294H during completion operations. Initial response activities were conducted by Devon Energy Production Company, and included source elimination, containment, and site stabilization activities, which recovered approximately 50 barrels of fluid. Figure 1 illustrates the vicinity and site location, Figure 2 illustrates the release location. The C-141 form is included in Appendix A.

## 2.0 Site Information and Closure Criteria

The release location for the Cotton Draw Unit #294H is located approximately 20 miles southeast of Malaga, New Mexico on Federal (BLM) and State land at an elevation of approximately 3472 feet above mean sea level (amsl).

Based upon New Mexico Office of the State Engineer and United States Geological Survey (Appendix B), depth to groundwater in the area is estimated to be 300 feet below grade surface (bgs). There are no known water sources within ½-mile of the location, according to the New Mexico Office of the State Engineer (NMOSE) online water well database (https://gis.ose.state.nm.us/gisapps/ose_pod_locations/; accessed 4/6/2020). There are three water wells with depth to groundwater (C-02569,C-02573,C-03830) data within a mile of the release. Water well C-02569 is 0.67 of a mile with an average depth to groundwater of 395 feet bgs, water well C-02573 is 0.71 of a mile with an average depth to groundwater of 429 feet bgs, C-03830 is 0.9 of a mile with depth to groundwater at 300 feet bgs. The nearest significant watercourse is an unnamed playa, located approximately 3.3 miles to the southwest. Figure 2 illustrates the site with 200 and 300-foot radii to indicate that it does not lie within a sensitive area as described in 19.15.29.12.C(4) NMAC.

Based on the information presented herein, the applicable NMOCD Closure Criteria for this site is for a groundwater depth of greater than 100 feet bgs. The site has been restored to meet the standards of Table I of 19.15.29.12 NMAC. In addition to meeting the Closure Criteria, the top four (4) feet of impacted areas off of the well pad meet the Reclamation requirement of 19.15.29.13(D)(1).

Table 2 demonstrates the Closure Criteria applicable to this location. Pertinent well data is attached in Appendix B.

## 3.0 Release Characterization and Remediation Activities

On March 14, 2020, SMA conducted confirmation sampling of the walls and base of the excavation, which measured approximately 24 X 90 X 1 feet. The release area had been previously excavated by Devon Energy Damage Prevention/Asset Maintenance Division. NMOCD was notified on March 12, 2020 that confirmation samples would be collected in the next two business days.

Confirmation samples were comprised of five-point composites of the base (CS1-CS4) and walls (SW1-SW4).

A total of eight (8) samples were collected for laboratory analysis for total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D. Laboratory samples were collected in accordance with the sampling protocol included in Appendix C. Samples were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico (Appendix D).

Figure 3 shows the extent of the excavation and sample locations. Laboratory results are summarized in Table 3. Analytical results indicate that closure criteria and reclamation requirements have been met.

SMA recommends no further action for this release (2RP-4543)

## 5.0 Scope and Limitations

The scope of our services included: assessment sampling; verifying release stabilization; regulatory liaison; remediation; and preparing this closure report. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin in New Mexico.

If there are any questions regarding this report, please contact either Ashley Maxwell at 505-320-8975 or Shawna Chubbuck at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES

Reviewed by:

Ashley Maxwell
Project Scientist

Shawna Chubbuck
Senior Scientist

**ATTACHMENTS:**

**Figures:**

Figure 1: Vicinity and Well Head Protection Map
Figure 2: Surface Water Radius Map
Figure 3: Site and Sample Location Map

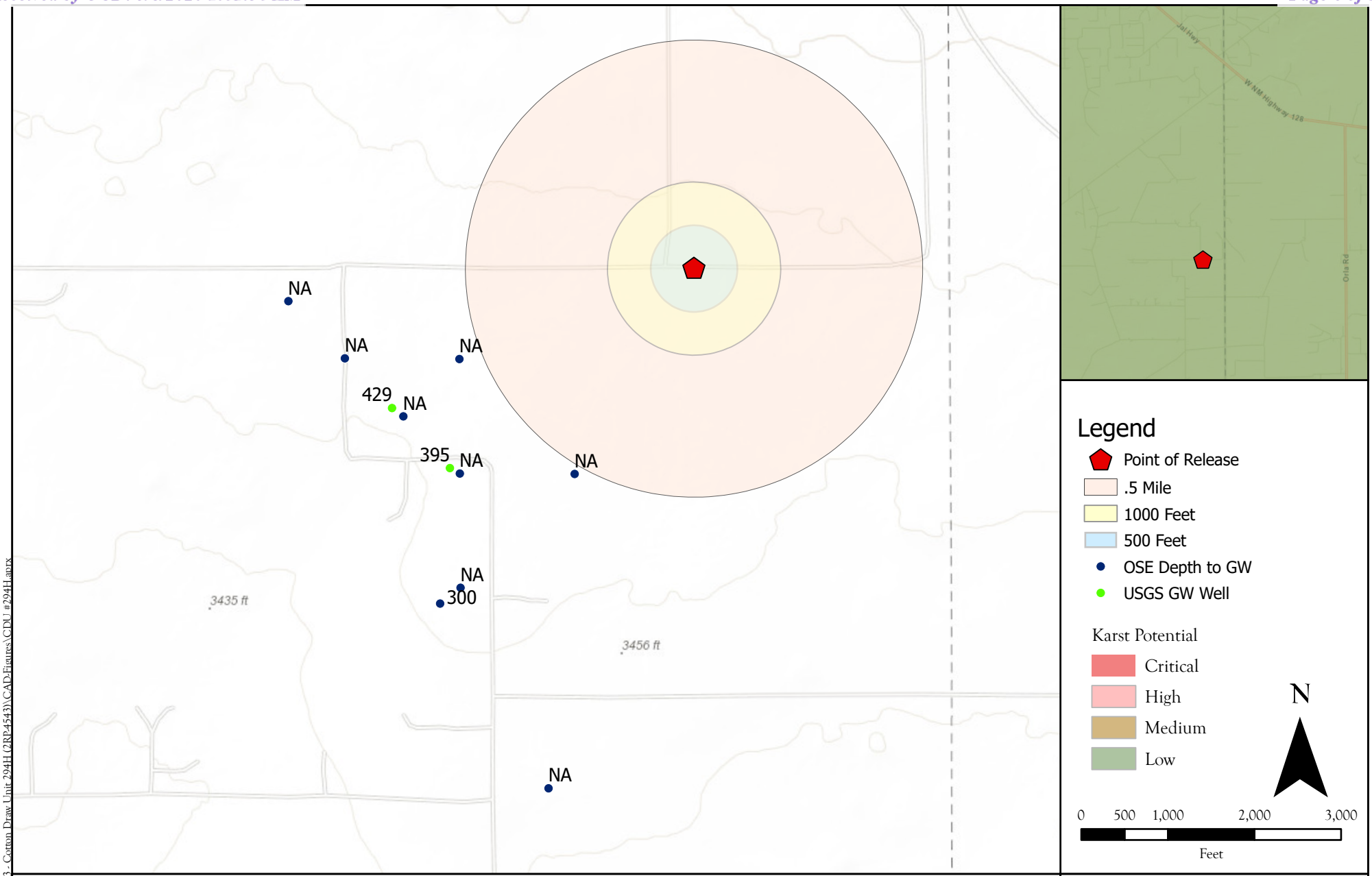
**Tables:**

Table 2: NMOCD Closure Criteria Justification
Table 3: Summary of Sample Results

**Appendices:**

Appendix A: Form C141
Appendix B: NMOSE Wells Report
Appendix C: Sampling Protocol, Field Notes & Photo Log
Appendix D: Laboratory Analytical Reports

# FIGURES




*Site Map*
*Cotton Draw Unit #294H - Devon Energy Production Company*
*UL: N S: 36 T: 24S R: 31E, Eddy County, New Mexico*

*Figure 1*

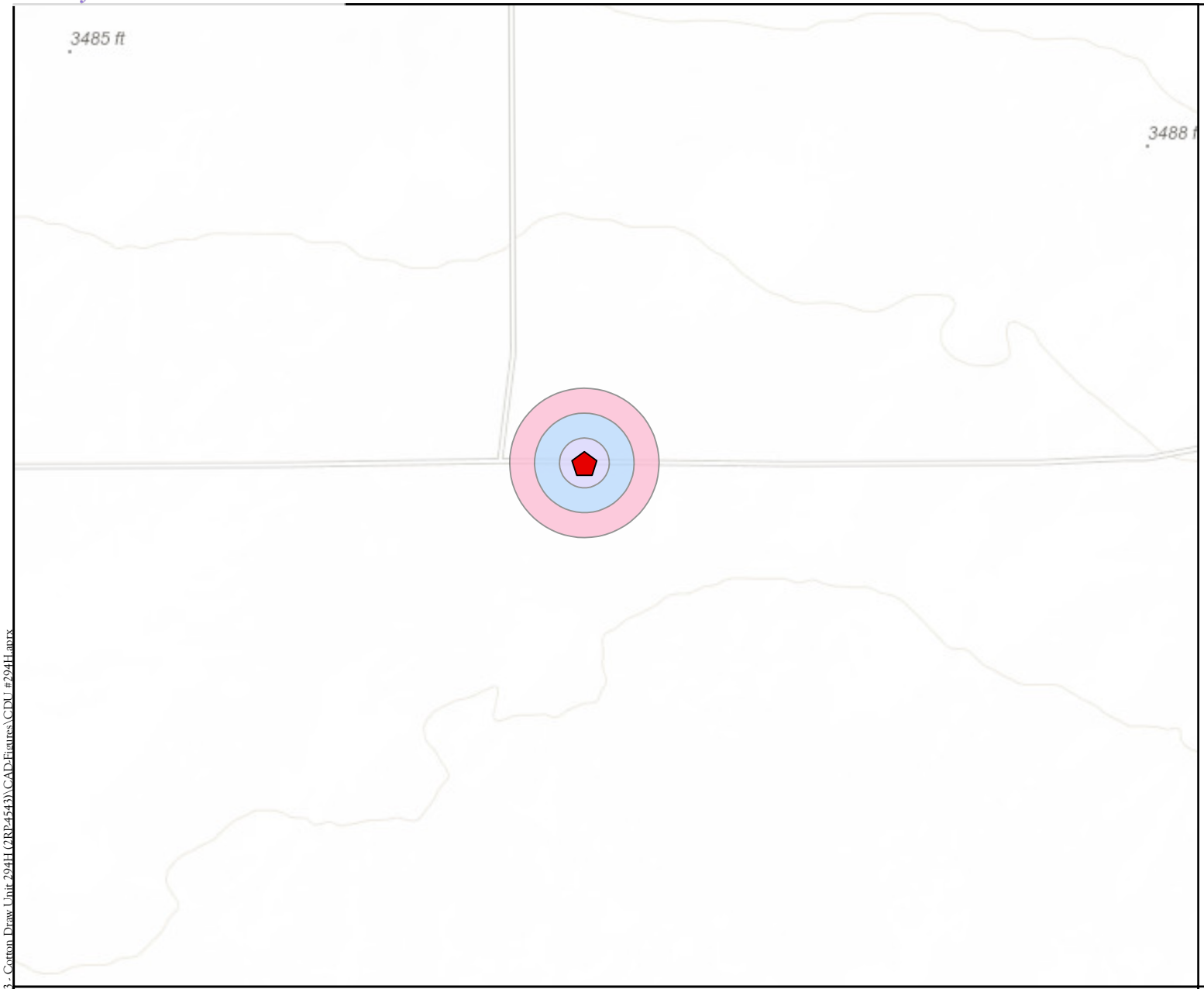
P:\5-Devon MSA 2020 (5E29133)\FG3 - Cotton Draw Unit 294H (2RP4543)\CAD\Figures\CDU #294H.mxd
Date Saved: 4/7/2020

Revisions
By: _____ Date: _____ Descr: _____
By: _____ Date: _____ Descr: _____



Drawn Lynn A. Acosta
Date 4/9/2020
Checked
Approved

SMA
201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689-7040
Serving the Southwest & Rocky Mountains




Buffer Distance
- 300 Feet
- 200 Feet
- 100 Feet
- Springs & Seeps
- Streams & Canals
- Rivers
- Flowlines SENM
- NM Wetlands
- Lakes & Playas
- FEMA Flood Zones 2011
- Point of Release

N

0 195 390 780 1,170

Feet

*Surface Water Protection Map*
*Cotton Draw Unit #294H- Devon Energy Production Company*
*UL: N S: 36 T: 24S R: 31E Eddy County, New Mexico*

*Figure 2*

P:\5-Devon MSA 2020 (5E29133)\FG3 - Cotton Draw Unit 294H (2RP4543)\CAD Figures\CDU #294H.mxd
Date Saved: 4/6/2020

Revisions
By: Date: Descr:
By: Date: Descr:



Drawn Lynn A. Acosta
Date 4/7/2020
Checked
Approved

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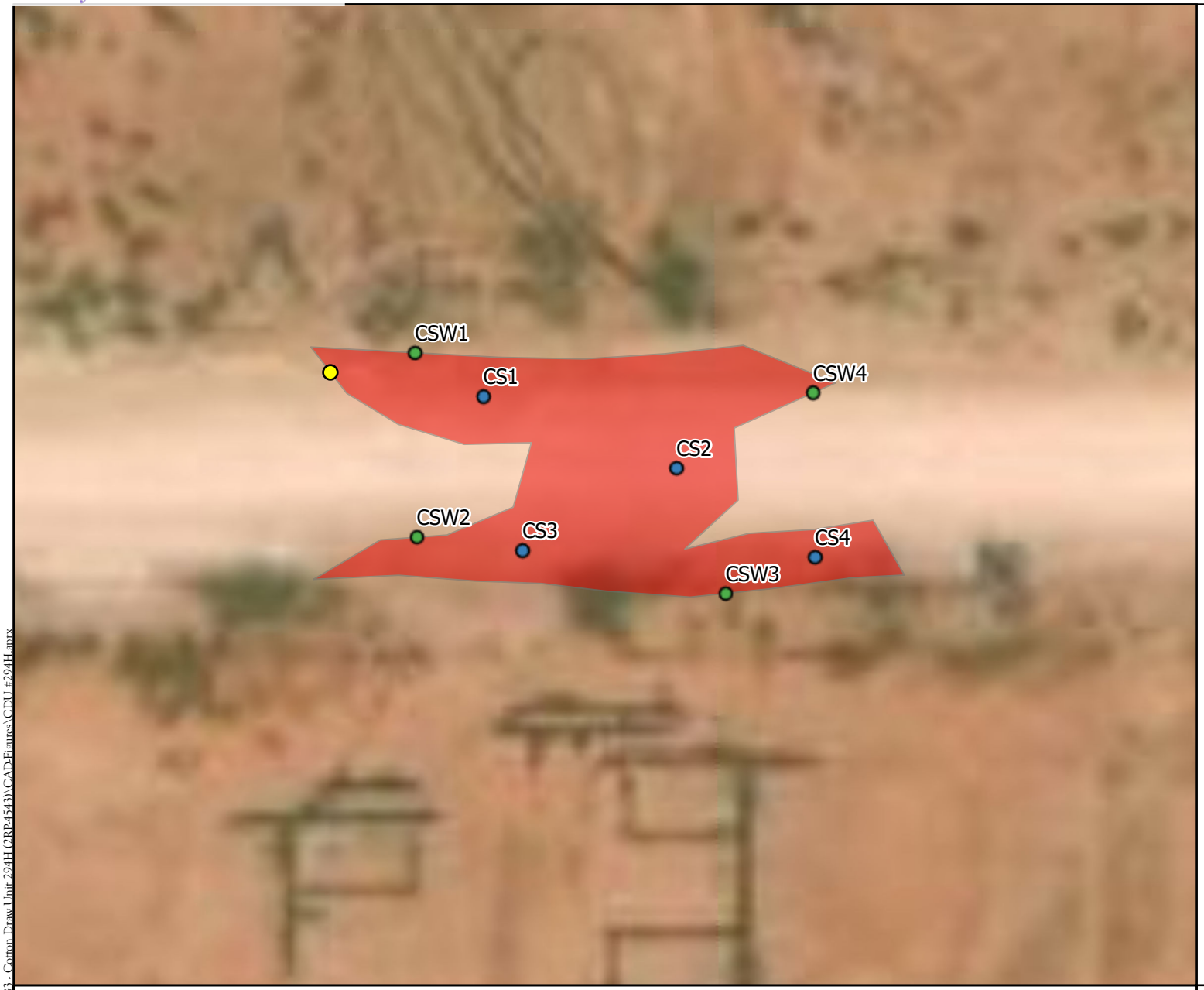


Legend

- Point of Release
- Soil Samples
- Side Wall Samples
- Release/Excavated Area

N

0 5 10 20 30

Feet

*Site and Sample Location Map*
*Cotton Draw Unit #294H- Devon Energy Production Company*
*UL: N S: 36 T: 24S R: 31E Eddy County , New Mexico*

*Figure 3*

P:\5-Devon MSA 2020 (5E29133)\FG3 - Cotton Draw Unit 294H (2RP4543)\CAD Figures\CDU #294H.mxd
Date Saved: 4/7/2020

Revisions
By: Date: Descr:
By: Date: Descr:



Drawn Lynn A. Acosta
Date 4/9/2020
Checked
Approved

SMA

201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689-7040
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# TABLES

Table 2:
NMOCD Closure Criteria

Devon Energy Production Company
Cotton Draw Unit #294H (2RP-4543)



| Site Information (19.15.29.11.A(2, 3, and 4) NMAC) | | Source/Notes |
|---|---|---|
| **Depth to Groundwater (feet bgs)** | 300 | New Mexico Office of the State Engineer |
| **Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)** | NA | United States Geological Survey Topo Map |
| **Hortizontal Distance to Nearest Significant Watercourse (ft)** | 17,546 | United States Geological Survey Topo Map |

| Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC) | | | | | | |
|---|---|---|---|---|---|---|
| **Depth to Groundwater** | | **Closure Criteria (units in mg/kg)** | | | | |
| | | **Chloride** *numerical limit or background, whichever is greater | **TPH** | **GRO + DRO** | **BTEX** | **Benzene** |
| < 50' BGS | | 600 | 100 | | 50 | 10 |
| 51' to 100' | | 10000 | 2500 | 1000 | 50 | 10 |
| >100' | X | 20000 | 2500 | 1000 | 50 | 10 |
| **Surface Water** | **yes or no** | **if yes, then** | | | | |
| <300' from continuously flowing watercourse or other significant watercourse? | No | 600 | 100 | | 50 | 10 |
| <200' from lakebed, sinkhole or playa lake? | No | | | | | |
| **Water Well or Water Source** | | | | | | |
| <500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes? | No | | | | | |
| <1000' from fresh water well or spring? | No | | | | | |
| **Human and Other Areas** | | | | | | |
| <300' from an occupied permanent residence, school, hospital, institution or church? | No | | | | | |
| within incorporated municipal boundaries or within a defined municipal fresh water well field? | No | | | | | |
| <100' from wetland? | No | | | | | |
| within area overlying a subsurface mine | No | | | | | |
| within an unstable area? | No | | | | | |
| within a 100-year floodplain? | No | | | | | |

SMA #

Table 3:
Summary of Sample Results

Devon Energy Production Company
Cotton Draw Unit #294 (2RP-4543)

| Sample ID | Sample Date | Depth (feet bgs) | Proposed Action/ Action Taken | BTEX mg/Kg | Benzene mg/Kg | GRO mg/Kg | DRO mg/Kg | MRO mg/Kg | **Total TPH** mg/Kg | Cl- mg/Kg |
|---|---|---|---|---|---|---|---|---|---|---|
| NMOCD Closure Criteria | | | | 50 | 10 | 1000 | | | 100 | 600 |
| CS1 | 3/14/2020 | 1 | In-Situ | <0.222 | <0.025 | <4.9 | <9.5 | <47 | <61.4 | <60 |
| CS2 | 3/14/2020 | 1 | In-Situ | <0.211 | <0.023 | <4.7 | <9.3 | <46 | <60 | <60 |
| CS3 | 3/14/2020 | 1 | In-Situ | <0.220 | <0.024 | <4.9 | <9.9 | <46 | <60.8 | <60 |
| CS4 | 3/14/2020 | 1 | In-Situ | <0.213 | <0.024 | <4.7 | <9.4 | <47 | <61.1 | <60 |
| SW1 | 3/14/2020 | 1 | In-Situ | <0.216 | <0.024 | <4.8 | <9.2 | <46 | <60 | <60 |
| SW2 | 3/14/2020 | 0-1 | In-Situ | <0.216 | <0.024 | <4.8 | <9.5 | <47 | <61.3 | <60 |
| SW3 | 3/14/2020 | 0-1 | In-Situ | <0.224 | <0.025 | <5.0 | <9.2 | <46 | <60.2 | <61 |
| SW4 | 3/14/2020 | 0-1 | In-Situ | <0.208 | <0.023 | <4.6 | <9.6 | <48 | <62.2 | <60 |

"--" = Not Analyzed

SMA #

# APPENDIX A
# FORM C141

NM OIL CONSERVATION
ARTESIA DISTRICT
JAN 04 2018
RECEIVED



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 April 3, 2017

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

# Release Notification and Corrective Action

nAB1800555602

## OPERATOR

☒ Initial Report ☐ Final Report

| | |
|---|---|
| Name of Company Devon Energy Production Company 6137 | Contact Stephen Richards, Devon Completions Foreman |
| Address 6488 Seven Rivers Hwy Artesia, NM 88210 | Telephone No. 575-252-3717 |
| Facility Name Cotton Draw Unit 294H (near the Cotton Draw Unit 113H API# 30-015-39517) | Facility Type Oil |

| | | |
|---|---|---|
| Surface Owner State/Federal | Mineral Owner State/Federal | API No. 30-015-44105 |

## LOCATION OF RELEASE

| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County |
|---|---|---|---|---|---|---|---|---|
| N | 36 | 24S | 31E | | | | | Eddy |

**Latitude**_32.1667_ **Longitude**_103.7324_ NAD83

## NATURE OF RELEASE

| | | |
|---|---|---|
| Type of Release<br>Produced Water | Volume of Release<br>209 BBLS | Volume Recovered<br>50 BBLS |
| Source of Release<br>Bad Gasket on Transfer Hose | Date and Hour of Occurrence<br>12/21/2017 @ 11:30 PM MST | Date and Hour of Discovery<br>12/21/2017 @ 11:30 PM MST |
| Was Immediate Notice Given?<br>☒ Yes ☐ No ☐ Not Required | If YES, To Whom?<br>OCD: Mike Bratcher/Crystal Weaver<br>BLM: Shelly Tucker<br>SLO: Amber Groves | |
| By Whom?<br>Mike Shoemaker, EHS Professional | Date and Hour<br>12/22/17 @ 4:33 PM MST | |
| Was a Watercourse Reached?<br>☐ Yes ☒ No | If YES, Volume Impacting the Watercourse.<br>N/A | |

If a Watercourse was Impacted, Describe Fully.*
N/A

Describe Cause of Problem and Remedial Action Taken.*
During completion operations water was being transferred to the location and a bolt on the 12" hose connection failed, which allowed the end to separate from the hose. A bad gasket was identified in contributing to the incident. The pumping operations were shut down and the hose and gasket were repaired. A vacuum truck was dispatched to recover any available fluids. The following lat/long (32.1667/103.7324) has been provided for this release and is the most easterly point of the release. Approximately 209 bbls of produced water was released and approximately 50 bbls produced water was recovered by the vacuum truck.

Describe Area Affected and Cleanup Action Taken.*
Approximately 209 barrels of produced water spilled on to the ground. A vacuum truck was dispatched and 50 barrels of produced water was recovered. The spill starts on State surface and minerals but crosses the property boundary and also has impacted Federal surface and minerals. A remediation contractor will be contacted to assist with the delineation and remediation of the impacted area.

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: *Denise Menoud* | OIL CONSERVATION DIVISION<br>Approved by Environmental Specialist: Signed By | |
| Printed Name: Denise Menoud | | |
| Title: Field Admin Support | Approval Date: 1/5/18 | Expiration Date: N/A |
| E-mail Address: Denise.Menoud@dvn.com | Conditions of Approval: See attached | Attached ☐ 2RP-4543 |
| Date: 12/27/2017 Phone: 575-746-5544 | | |

* Attach Additional Sheets If Necessary

1/4/18 AB

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 1/4/2018 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 2RP-4543 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 2 office in ARTESIA on or before 2/4/2018. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. *Modest extensions of time to these deadlines may be granted, but only with acceptable justification.***

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; $C_6$ thru $C_{36}$), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; $C_6$ thru $C_{36}$), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

- Nominal detection limits for field and laboratory analyses must be provided.

- Composite sampling is not generally allowed.

- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

●Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

● If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

● Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

**Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.**

**Jim Griswold**
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

State of New Mexico
Oil Conservation Division

| | |
|---|---|
| Incident ID | |
| District RP | 2RP-4543 |
| Facility ID | |
| Application ID | |

# Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

**Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.***

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: ____Lupe Carrasco_____ Title: ___EHS Professional_____

Signature: Lupe Carrasco Date: ___4/16/20_____

email: __Lupe.Carrasco@dvn.com_____ Telephone: ___575-748-0176_____

**OCD Only**

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Jocelyn Harimon Date: 07/06/2022

Printed Name: _____ Title: Environmental Specialist

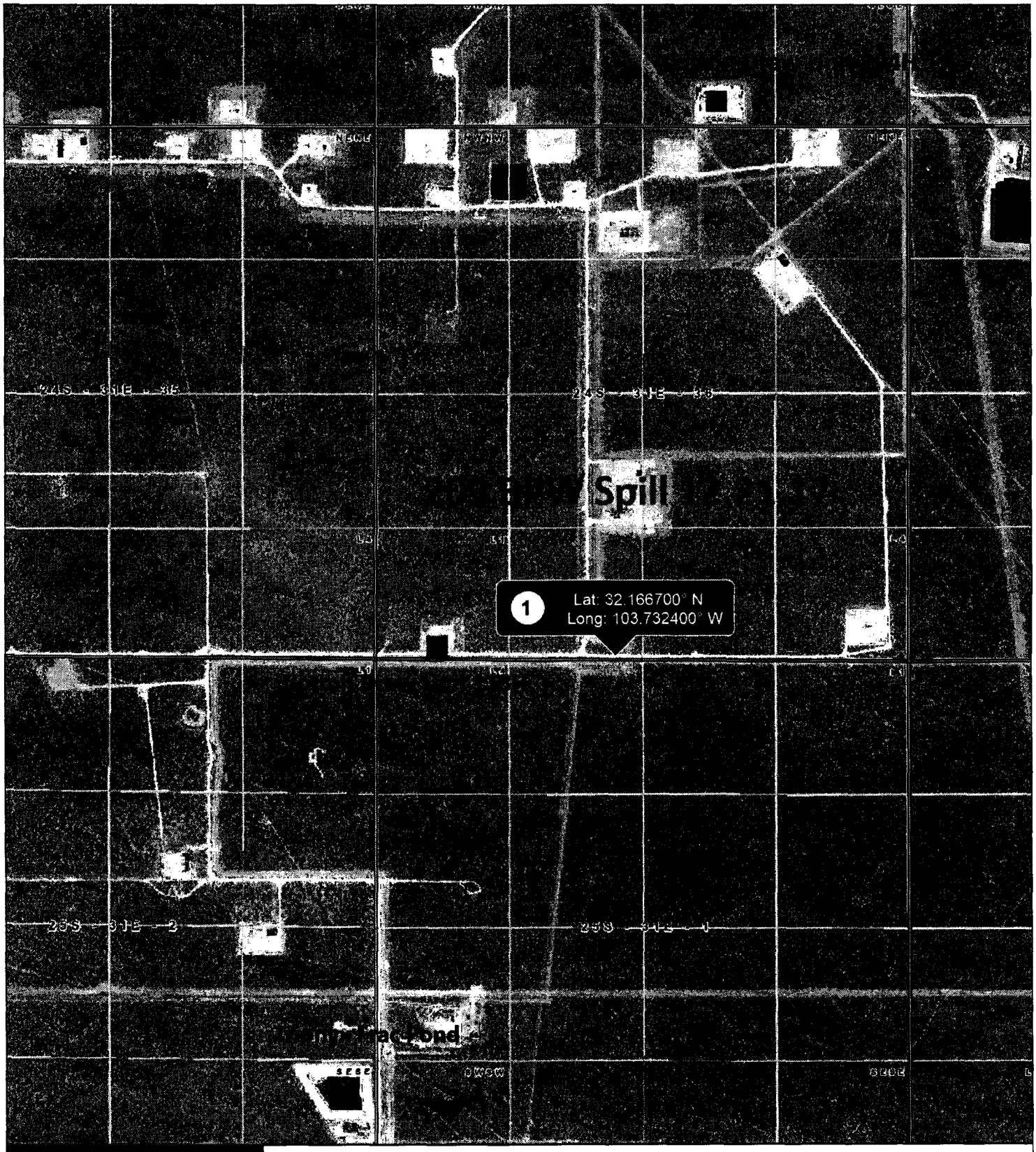
## Bratcher, Mike, EMNRD

**From:** Menoud, Denise <Denise.Menoud@dvn.com>
**Sent:** Thursday, January 4, 2018 3:31 PM
**To:** Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD; Shelly Tucker; agroves@slo.state.nm.us
**Cc:** Shoemaker, Mike; Menoud, Denise
**Subject:** Cotton Draw Unit 294H - Spill 12.21.17 - Initial C-141
**Attachments:** CDU 294H_209 bbls PW_Initial C-141_12.21.17.doc; CDU 294H Spill 12.21.17 GIS.PDF

Please see attached Initial C-141 and GIS mapping of spill that occurred on the Cotton Draw Unit 294H on 12/21/17.

Thank you.

***Denise Menoud***
Admin Field Support 4 / Completions
Devon Energy Production Co. LP/Artesia NM
Denise.Menoud@dvn.com
575-746-5544




CDU 294H Spill 12.21.17

209 BPW, Rec 50 BPW

devon

This map is for illustrative purposes only and is neither a legally recorded map nor survey and is not intended to be used as one. Devon makes no warranty, representation, or guarantee of any kind regarding this map.

WGS_1984_Web_Mercator_Auxiliary_Sphere
Prepared by: Menoud
Map is current as of: 04-Jan-2018

N

Miles
0 0.07 0.14 0.28 1:14,228

## Weaver, Crystal, EMNRD

**From:** Shoemaker, Mike <Mike.Shoemaker@dvn.com>
**Sent:** Friday, December 22, 2017 4:33 PM
**To:** Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD; Shelly Tucker (stucker@blm.gov); Amber Groves (agroves@slo.state.nm.us)
**Cc:** Fulks, Brett
**Subject:** Spill notification for the Cotton Draw Unit 294H (API #30-015-44105)

Good Afternoon,

Devon had the following release occur at 11:30 PM MST on 12/21/17. The incident is described below.

1. Cotton Draw Unit 294H (API #30-015-44105)
    a. During completion operations water was being transferred to the location and a bolt on the 12" hose connection failed, which allowed the end to separate from the hose. A bad gasket was identified in contributing to the incident. The pumping operations were shut down and the hose and gasket were repaired. The following lat/long (32.1667/103.7324) has been provided for this release and is the most easterly point of the release. Approximately 209 bbls of produced water was released and approximately 50 bbls produced water was recovered.

The coordinate that is provided has this release being on State/State surface but both Federal surface and minerals are in close proximity. In turn, I have included Shelly on this notification in case it is deemed that federal surface or minerals have been impacted. This will be further clarified when the C-141 is prepared.

A C-141 will be prepared and submitted with GPS coordinates of the area affected.

Thanks,

**Mike Shoemaker**
EHS Representative

**Devon Energy Corporation**
6488 Seven Rivers Highway
Artesia, New Mexico 88210
575-746-5566 Office
575-513-5035 Mobile

devon

# APPENDIX B
# NMOSE WELLS REPORT

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

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

| POD Number | Code | POD Sub-basin | County | Q 64 | Q 16 | Q 4 | Sec | Tws | Rng | X | Y | | Distance | Depth Well | Depth Water | Water Column |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C 02568 | | CUB | ED | 4 | 3 | 1 | 01 | 25S | 31E | 619103 | 3558892* | | 835 | 1025 | | |
| C 02572 | | CUB | ED | 4 | 2 | 2 | 02 | 25S | 31E | 618695 | 3559294* | | 884 | 852 | | |
| C 02569 | | CUB | ED | 4 | 4 | 2 | 02 | 25S | 31E | 618699 | 3558891* | | 1094 | 1016 | | |
| C 02573 | | CUB | ED | 1 | 4 | 2 | 02 | 25S | 31E | 618499 | 3559091* | | 1146 | | | |
| C 02571 | | CUB | ED | 4 | 1 | 2 | 02 | 25S | 31E | 618292 | 3559294* | | 1267 | 860 | | |
| C 02570 | | CUB | ED | 4 | 2 | 4 | 02 | 25S | 31E | 618704 | 3558489* | | 1391 | 895 | | |
| C 02574 | | CUB | ED | 1 | 1 | 2 | 02 | 25S | 31E | 618092 | 3559494* | | 1431 | | | |
| C 03830 POD1 | | CUB | ED | 4 | 2 | 4 | 02 | 25S | 31E | 618632 | 3558432 | | 1478 | 450 | | |

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

**Record Count:** 8

**UTMNAD83 Radius Search (in meters):**

**Easting (X):** 619518 **Northing (Y):** 3559617 **Radius:** 3000

***UTM location was derived from PLSS - see Help**



4/6/20 10:49 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

# National Water Information System: Web Interface



Click to hideNews Bulletins

- **Notice** - The USGS Water Resources Mission Area's priority is to maintain the safety and well-being of our communities, including providing critical situational awareness in times of flooding in all 50 U.S. states and additional territories. Our hydrologic monitoring stations continue to send data in near real-time to NWISWeb, and we are continuing critical water monitoring activities to protect life and property on a case-by-case basis. The health and safety of the public and our employees are our highest priorities, and we continue to follow guidance from the White House, the CDC, and state and local authorities.

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

Groundwater levels for the Nation

## Search Results -- 1 sites found

**site_no list =**

- 320932103443801

**Minimum number of levels =** 1

Save file of selected sites to local disk for future upload

---

## USGS 320932103443801 25S.31E.02.23441

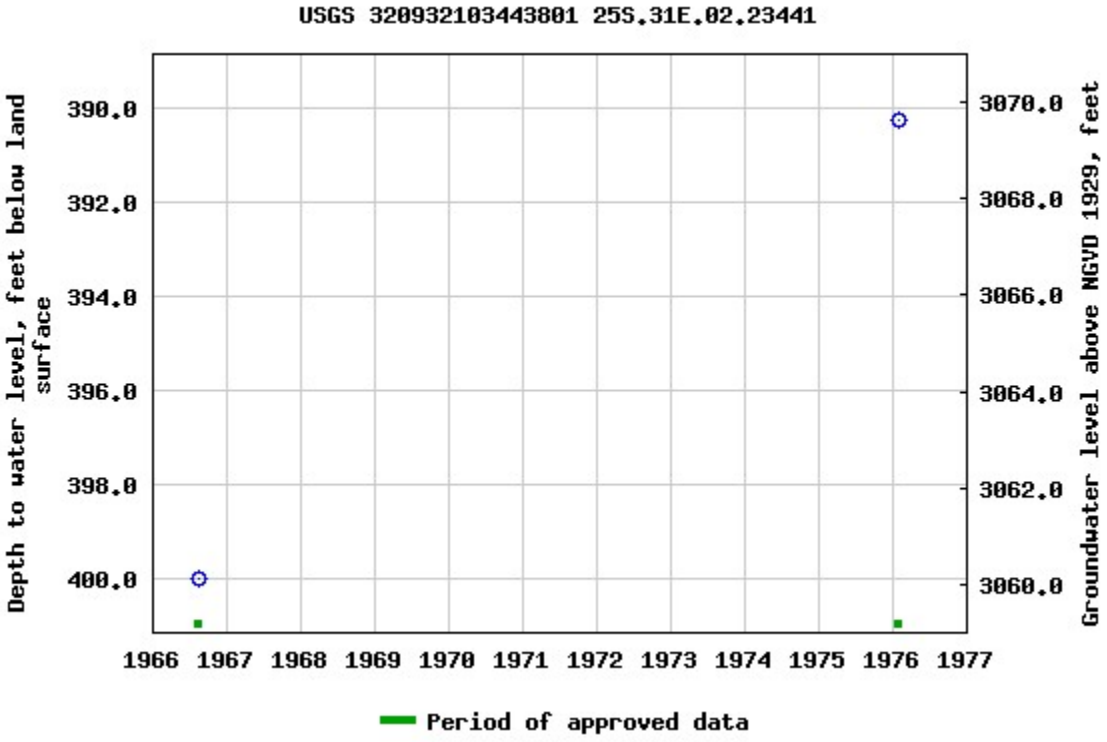
**Available data for this site** Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13070001
Latitude 32°09'37.4", Longitude 103°44'29.6" NAD83
Land-surface elevation 3,460.00 feet above NGVD29
The depth of the well is 1,016 feet below land surface.
This well is completed in the Rustler Formation (312RSLR) local aquifer.

**Output formats**

| |
|---|
| Table of data |

| |
|---|
| Tab-separated data |
| Graph of data |
| Reselect period |




Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

---

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

# National Water Information System: Web Interface



Click to hideNews Bulletins

- **Notice** - The USGS Water Resources Mission Area's priority is to maintain the safety and well-being of our communities, including providing critical situational awareness in times of flooding in all 50 U.S. states and additional territories. Our hydrologic monitoring stations continue to send data in near real-time to NWISWeb, and we are continuing critical water monitoring activities to protect life and property on a case-by-case basis. The health and safety of the public and our employees are our highest priorities, and we continue to follow guidance from the White House, the CDC, and state and local authorities.

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

Groundwater levels for the Nation

## Search Results -- 1 sites found

**site_no list =**

- 320952103444401

**Minimum number of levels =** 1

Save file of selected sites to local disk for future upload

---

## USGS 320952103444401 25S.31E.02.214411

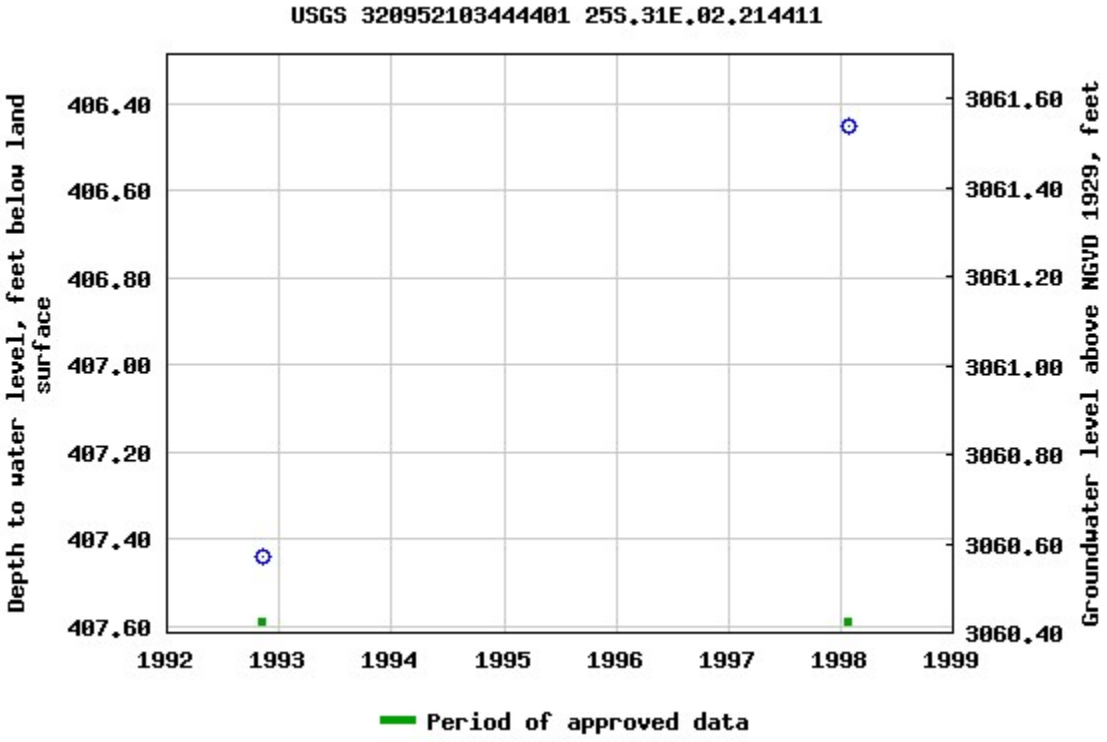
**Available data for this site** Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13070001
Latitude 32°09'50.0", Longitude 103°44'41.2" NAD83
Land-surface elevation 3,468.0 feet above NGVD29
This well is completed in the Azotea Tongue of Seven Rivers Formation (313AZOT) local aquifer.

**Output formats**

| |
|---|
| Table of data |

| |
|---|
| Tab-separated data |
| Graph of data |
| Reselect period |




Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

---

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
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News

Accessibility Plug-Ins FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey

**Title: Groundwater for USA: Water Levels**
**URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?**

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2020-04-07 10:59:24 EDT
0.55 0.49 nadww01

# WELL RECORD & LOG

## OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

### 1. GENERAL AND WELL LOCATION

| | |
|---|---|
| OSE POD NUMBER (WELL NUMBER): 1 | OSE FILE NUMBER(S): C-3830 |
| WELL OWNER NAME(S): ROCKHOUSE RANCH INC. | PHONE (OPTIONAL): 575-995-6920 |
| WELL OWNER MAILING ADDRESS: 1108 W PIEARCE ST. | CITY: CARLSBAD STATE: NM ZIP: 88220 |

| WELL LOCATION (FROM GPS) | DEGREES | MINUTES | SECONDS | |
|---|---|---|---|---|
| LATITUDE | 32 | 09 | 22 | N |
| LONGITUDE | 103 | 44 | 31 | W |

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

SE 1/4,NE 1/4, SE 1/4, SECTION 2, TOWNSHIP 25S, RANGE 31E

### 2. DRILLING & CASING INFORMATION

| LICENSE NUMBER | NAME OF LICENSED DRILLER | NAME OF WELL DRILLING COMPANY |
|---|---|---|
| WD-1607 | LUIS A. (TONY) DURAN | DURAN DRILLING |

| DRILLING STARTED | DRILLING ENDED | DEPTH OF COMPLETED WELL (FT) | BORE HOLE DEPTH (FT) | DEPTH WATER FIRST ENCOUNTERED (FT) |
|---|---|---|---|---|
| 1/28/15 | 2/02/15 | 451 | 450 | 300 |

COMPLETED WELL IS: ○ ARTESIAN ○ DRY HOLE ◉ SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT):

DRILLING FLUID: ○ AIR ◉ MUD ADDITIVES – SPECIFY: DRILLING MUD

DRILLING METHOD: ◉ ROTARY ○ HAMMER ○ CABLE TOOL ○ OTHER – SPECIFY:

| DEPTH (feet bgl) FROM | DEPTH (feet bgl) TO | BORE HOLE DIAM (inches) | CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen) | CASING CONNECTION TYPE | CASING INSIDE DIAM. (inches) | CASING WALL THICKNESS (inches) | SLOT SIZE (inches) |
|---|---|---|---|---|---|---|---|
| 0 | 220 | 12 | STEEL | STEEL PERF | 7 | 1/4 | - |
| 220 | 450 | 12 | STEEL PERF | STEEL | 7 | 1/4 | 1/8 |

STATE ENGINEER OFFICE RECEIVED FEB 13 AM 10:23

### 3. ANNULAR MATERIAL

| DEPTH (feet bgl) FROM | DEPTH (feet bgl) TO | BORE HOLE DIAM. (inches) | LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL | AMOUNT (cubic feet) | METHOD OF PLACEMENT |
|---|---|---|---|---|---|
| 0 | 20 | 12 | 20 BGS 80 LBS CEMENT | | MIXER |
| 20 | 450 | 12 | 22 YARDS 1/4" GRAVEL | | |

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

| FILE NUMBER | POD NUMBER | TRN NUMBER |
|---|---|---|
| C-3830 | 1 | 560005 |

25S.31E.2.424 EXPL

**4. HYDROGEOLOGIC LOG OF WELL**

| DEPTH (feet bgl) FROM | DEPTH (feet bgl) TO | THICKNESS (feet) | COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units) | WATER BEARING? (YES / NO) | ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm) |
|---|---|---|---|---|---|
| 0 | 1 | 1 | TOPSOIL | ○ Y ◉ N | |
| 1 | 4 | 3 | CALICHE | ○ Y ◉ N | |
| 4 | 16 | 12 | SAND | ○ Y ◉ N | |
| 90 | 99 | 9 | CLAY | ○ Y ◉ N | |
| 99 | 190 | 91 | SAND | ○ Y ◉ N | |
| 190 | 250 | 60 | BROWN CLAY | ○ Y ◉ N | |
| 250 | 265 | 15 | SAND | ○ Y ◉ N | |
| 265 | 340 | 75 | CLAY | ○ Y ◉ N | |
| 340 | 348 | 8 | SAND | ○ Y ◉ N | |
| 348 | 378 | 30 | GRAVEL | ◉ Y ○ N | 10 |
| 378 | 384 | 6 | CALY | ○ Y ◉ N | |
| 384 | 448 | 64 | SAND | ◉ Y ○ N | 5 |
| 448 | 450 | 2 | RED BED | ○ Y ◉ N | |
| | | | | ○ Y ◉ N | |
| | | | | ○ Y ○ N | |
| | | | | ○ Y ○ N | |
| | | | | ○ Y ○ N | |
| | | | | ○ Y ○ N | |
| | | | | ○ Y ○ N | |
| | | | | ○ Y ○ N | |
| | | | | ○ Y ○ N | |

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ○ AIR LIFT ◉ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 15

**5. TEST; RIG SUPERVISION**

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:
LUIS A. DURAN

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2015 FEB 23 AM 8:23

**6. SIGNATURE**

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Luis A. Duran LUIS A. DURAN
SIGNATURE OF DRILLER / PRINT SIGNEE NAME

2-02-15
DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

| FILE NUMBER | POD NUMBER | TRN NUMBER |
|---|---|---|
| C-3830 | / | 560005 |

255.31E.2.424

EXPL

# APPENDIX C
# SAMPLING PROTOCOL,
# FIELD NOTES & PHOTO LOG

Souder, Miller & Associates ♦ 201 S. Halagueno ♦ Carlsbad, NM 88220
(575) 689-8801

# Sampling Protocol

Representatives from SMA chose the Judgmental Sampling Method as described in EPA's Final Sampling Guidance for SW-846, 2002 to adequately quantify contaminant concentrations on Cotton Draw Unit #294H Location. The utility of this particular method functions on the sufficient knowledge of the contaminant, which we possess. This design is also useful when identifying the composition of a release, which we have documented. In addition, this sampling design was chosen for this project because of the locations uniform soil type, and the several operational considerations (such as the liner within the battery and the construction of a new facility) that precluded the implementation of a different statistical design.

The soil samples were collected in laboratory supplied containers in accordance with this sampling protocol, immediately placed on ice and sent under standard chain-of-custody protocols to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico for analysis. A total of eight (8) samples were collected for laboratory analysis for total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D.

# Sampling Analysis Field Quality Assurance Procedures

A unique sample numbering was used to identify each sample collected and designated for on-site and off-site laboratory analysis. The purpose of this numbering scheme was to provide a tracking system for the retrieval of analytical and field data on each sample. Sample identification numbers were recorded on sample labels or tags, field notes, chain-of-custody records (COC) and all other applicable documentation used during the project. Sample labels were affixed to all sample containers during sampling activities. Information was recorded on each sample container label at the time of sample collection. The information recorded on the labels were as follows: sample identification number; sample type (discrete or composite); site name and area/location number; analysis to be performed; type of chemical preservative present in container; date and time of sample collection; and sample collector's name and initials. All samples were packed in ice in an approved rigid body container, custody sealed signed and shipped to the appropriate laboratory via insured currier service.

COC procedures implemented for the project provided documentation of the handling of each sample from the time of collection until completion of laboratory analysis. A COC form serves as a legal record of possession of the sample. A sample is considered to be under custody if one or more of the following criteria are met: the sample is in the sampler's possession; the sample is in the sampler's view after being in possession; the sample was in the sampler's possession and then was placed into a locked area to prevent tampering; and/or the sample is in a designated secure area. Custody was documented throughout the project field sampling activities by a chain-of custody form initiated each day during which samples are collected. Container custody seals placed on either individual samples or on the rigid body container were used to ensure that no sample tampering occurs between the time the samples are placed into the containers and the time the containers are opened for analysis at the laboratory. Container custody seals were signed and dated by the individual responsible for completing the COC form contained within the container.

# Field Screening

**Location Name:** CDU 294 **Date:** 3/14/20

| Sample Name: | Collection Time: | EC (mS) | Temp (°C) | PID Reading /PF | Soil Color | Primary Soil Type | Moisture Level | Other Remarks/Notes: |
|---|---|---|---|---|---|---|---|---|
| CS1 | 1416 | 0.03 | 19.1 | | (Light) Tan Gray Yellow / Dark Brown Olive Red | (Gravel) (Rock) Sand Silt Clay | (Dry) Moist Wet | Caliche lease road |
| CS2 | 1420 | 0.04 | 19.0 | | (Light) Tan Gray Yellow / Dark Brown Olive Red | (Gravel) (Rock) Sand Silt Clay | (Dry) Moist Wet | " " |
| CS3 | 1426 | 0.02 | 18.8 | | (Light) Tan ~~Gray~~ Yellow / Dark Brown ~~Olive~~ Red | (Gravel) Sand (Rock) Silt Clay | (Dry) ~~Moist~~ Wet | " " |
| CS4 | 1428 | 0.03 | 18.7 | | (Light) Tan Gray Yellow / Dark Brown Olive Red | (Gravel) Sand (Rock) Silt Clay | (Dry) Moist Wet | " " |
| SW 1 | 1430 | 0.02 | 18.6 | | ~~Light~~ Tan Gray Yellow / (Dark) ~~Brown~~ Olive Red | Gravel Rock (Sand) Silt Clay | Dry (Moist) Wet | Sand, N of lease road |
| SW 2 | 1433 | 0.03 | 18.9 | | ~~Light~~ Tan Gray Yellow / (Dark) ~~Brown~~ Olive Red | Gravel Rock (Sand) Silt Clay | Dry (Moist) Wet | Sand S of lease road |
| SW 3 | 1436 | 0.01 | 18.7 | | (Light) Tan Gray Yellow / Dark Brown Olive Red | (Gravel) (Rock) Sand Silt Clay | (Dry) Moist Wet | Caliche, lease road Ewy! sidewa |
| SW 4 | 1440 | 0.04 | 18.9 | | (Light) Tan Gray Yellow / Dark Brown Olive Red | (Gravel) (Rock) Sand Silt Clay | (Dry) Moist Wet | " " West sidewalk |
| | | | | | Light Tan Gray Yellow / Dark Brown Olive Red | Gravel Rock Sand Silt Clay | Dry Moist Wet | |

Photo #1

Facing Southwest 32.1667 -103.731

Photo #2

Facing Southwest 32.1668 -103.7321

# APPENDIX D

# LABORATORY ANALYTICAL REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

March 24, 2020

Ashley Maxwell

Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL:
FAX

RE: CDU 294 OrderNo.: 2003766

Dear Ashley Maxwell:

Hall Environmental Analysis Laboratory received 8 sample(s) on 3/17/2020 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**
Lab Order **2003766**
Date Reported: **3/24/2020**

**CLIENT:** Souder, Miller & Associates
**Client Sample ID:** CS1
**Project:** CDU 294
**Collection Date:** 3/14/2020 2:16:00 PM
**Lab ID:** 2003766-001 **Matrix:** SOIL **Received Date:** 3/17/2020 8:20:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/23/2020 4:53:50 PM | 51261 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** | |
| Diesel Range Organics (DRO) | ND | 9.5 | | mg/Kg | 1 | 3/20/2020 1:46:59 AM | 51188 |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 3/20/2020 1:46:59 AM | 51188 |
| Surr: DNOP | 95.3 | 55.1-146 | | %Rec | 1 | 3/20/2020 1:46:59 AM | 51188 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 3/21/2020 4:04:05 AM | 51182 |
| Surr: BFB | 95.3 | 66.6-105 | | %Rec | 1 | 3/21/2020 4:04:05 AM | 51182 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 3/21/2020 4:04:05 AM | 51182 |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 3/21/2020 4:04:05 AM | 51182 |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 3/21/2020 4:04:05 AM | 51182 |
| Xylenes, Total | ND | 0.099 | | mg/Kg | 1 | 3/21/2020 4:04:05 AM | 51182 |
| Surr: 4-Bromofluorobenzene | 105 | 80-120 | | %Rec | 1 | 3/21/2020 4:04:05 AM | 51182 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

**Analytical Report**
Lab Order **2003766**
Date Reported: **3/24/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Souder, Miller & Associates
**Client Sample ID:** CS2
**Project:** CDU 294
**Collection Date:** 3/14/2020 2:20:00 PM
**Lab ID:** 2003766-002 **Matrix:** SOIL **Received Date:** 3/17/2020 8:20:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/23/2020 5:30:54 PM | 51261 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** | |
| Diesel Range Organics (DRO) | ND | 9.3 | | mg/Kg | 1 | 3/20/2020 2:11:04 AM | 51188 |
| Motor Oil Range Organics (MRO) | ND | 46 | | mg/Kg | 1 | 3/20/2020 2:11:04 AM | 51188 |
| Surr: DNOP | 87.3 | 55.1-146 | | %Rec | 1 | 3/20/2020 2:11:04 AM | 51188 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 3/21/2020 4:27:31 AM | 51182 |
| Surr: BFB | 95.6 | 66.6-105 | | %Rec | 1 | 3/21/2020 4:27:31 AM | 51182 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 3/21/2020 4:27:31 AM | 51182 |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 3/21/2020 4:27:31 AM | 51182 |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 3/21/2020 4:27:31 AM | 51182 |
| Xylenes, Total | ND | 0.094 | | mg/Kg | 1 | 3/21/2020 4:27:31 AM | 51182 |
| Surr: 4-Bromofluorobenzene | 106 | 80-120 | | %Rec | 1 | 3/21/2020 4:27:31 AM | 51182 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

**Analytical Report**
Lab Order **2003766**
Date Reported: **3/24/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Souder, Miller & Associates
**Client Sample ID:** CS3
**Project:** CDU 294
**Collection Date:** 3/14/2020 2:26:00 PM
**Lab ID:** 2003766-003 **Matrix:** SOIL **Received Date:** 3/17/2020 8:20:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/23/2020 5:43:14 PM | 51261 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** | |
| Diesel Range Organics (DRO) | ND | 9.9 | | mg/Kg | 1 | 3/20/2020 2:35:02 AM | 51188 |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 3/20/2020 2:35:02 AM | 51188 |
| Surr: DNOP | 88.1 | 55.1-146 | | %Rec | 1 | 3/20/2020 2:35:02 AM | 51188 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 3/21/2020 6:01:16 AM | 51182 |
| Surr: BFB | 94.2 | 66.6-105 | | %Rec | 1 | 3/21/2020 6:01:16 AM | 51182 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/21/2020 6:01:16 AM | 51182 |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 3/21/2020 6:01:16 AM | 51182 |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 3/21/2020 6:01:16 AM | 51182 |
| Xylenes, Total | ND | 0.098 | | mg/Kg | 1 | 3/21/2020 6:01:16 AM | 51182 |
| Surr: 4-Bromofluorobenzene | 104 | 80-120 | | %Rec | 1 | 3/21/2020 6:01:16 AM | 51182 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

**Analytical Report**
Lab Order **2003766**
Date Reported: **3/24/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Souder, Miller & Associates
**Client Sample ID:** CS4
**Project:** CDU 294
**Collection Date:** 3/14/2020 2:28:00 PM
**Lab ID:** 2003766-004 **Matrix:** SOIL **Received Date:** 3/17/2020 8:20:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/23/2020 5:55:36 PM | 51261 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** | |
| Diesel Range Organics (DRO) | ND | 9.4 | | mg/Kg | 1 | 3/20/2020 2:59:01 AM | 51188 |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 3/20/2020 2:59:01 AM | 51188 |
| Surr: DNOP | 91.3 | 55.1-146 | | %Rec | 1 | 3/20/2020 2:59:01 AM | 51188 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 3/21/2020 6:24:44 AM | 51182 |
| Surr: BFB | 94.7 | 66.6-105 | | %Rec | 1 | 3/21/2020 6:24:44 AM | 51182 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/21/2020 6:24:44 AM | 51182 |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 3/21/2020 6:24:44 AM | 51182 |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 3/21/2020 6:24:44 AM | 51182 |
| Xylenes, Total | ND | 0.095 | | mg/Kg | 1 | 3/21/2020 6:24:44 AM | 51182 |
| Surr: 4-Bromofluorobenzene | 104 | 80-120 | | %Rec | 1 | 3/21/2020 6:24:44 AM | 51182 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

**Analytical Report**
Lab Order **2003766**
Date Reported: **3/24/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Souder, Miller & Associates
**Client Sample ID:** SW1
**Project:** CDU 294
**Collection Date:** 3/14/2020 2:30:00 PM
**Lab ID:** 2003766-005 **Matrix:** SOIL **Received Date:** 3/17/2020 8:20:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/23/2020 6:57:20 PM | 51270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** | |
| Diesel Range Organics (DRO) | ND | 9.2 | | mg/Kg | 1 | 3/20/2020 3:22:57 AM | 51188 |
| Motor Oil Range Organics (MRO) | ND | 46 | | mg/Kg | 1 | 3/20/2020 3:22:57 AM | 51188 |
| Surr: DNOP | 88.7 | 55.1-146 | | %Rec | 1 | 3/20/2020 3:22:57 AM | 51188 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 3/21/2020 6:48:07 AM | 51182 |
| Surr: BFB | 93.4 | 66.6-105 | | %Rec | 1 | 3/21/2020 6:48:07 AM | 51182 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/21/2020 6:48:07 AM | 51182 |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 3/21/2020 6:48:07 AM | 51182 |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 3/21/2020 6:48:07 AM | 51182 |
| Xylenes, Total | ND | 0.096 | | mg/Kg | 1 | 3/21/2020 6:48:07 AM | 51182 |
| Surr: 4-Bromofluorobenzene | 102 | 80-120 | | %Rec | 1 | 3/21/2020 6:48:07 AM | 51182 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2003766**
Date Reported: **3/24/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Souder, Miller & Associates
**Client Sample ID:** SW2
**Project:** CDU 294
**Collection Date:** 3/14/2020 2:33:00 PM
**Lab ID:** 2003766-006 **Matrix:** SOIL **Received Date:** 3/17/2020 8:20:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/23/2020 7:09:41 PM | 51270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** | |
| Diesel Range Organics (DRO) | ND | 9.5 | | mg/Kg | 1 | 3/20/2020 3:46:49 AM | 51188 |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 3/20/2020 3:46:49 AM | 51188 |
| Surr: DNOP | 90.2 | 55.1-146 | | %Rec | 1 | 3/20/2020 3:46:49 AM | 51188 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 3/21/2020 7:11:29 AM | 51182 |
| Surr: BFB | 93.1 | 66.6-105 | | %Rec | 1 | 3/21/2020 7:11:29 AM | 51182 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/21/2020 7:11:29 AM | 51182 |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 3/21/2020 7:11:29 AM | 51182 |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 3/21/2020 7:11:29 AM | 51182 |
| Xylenes, Total | ND | 0.096 | | mg/Kg | 1 | 3/21/2020 7:11:29 AM | 51182 |
| Surr: 4-Bromofluorobenzene | 102 | 80-120 | | %Rec | 1 | 3/21/2020 7:11:29 AM | 51182 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**
Lab Order **2003766**
Date Reported: **3/24/2020**

**CLIENT:** Souder, Miller & Associates
**Client Sample ID:** SW3
**Project:** CDU 294
**Collection Date:** 3/14/2020 2:36:00 PM
**Lab ID:** 2003766-007 **Matrix:** SOIL **Received Date:** 3/17/2020 8:20:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Chloride | ND | 61 | | mg/Kg | 20 | 3/23/2020 7:22:03 PM | 51270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** | |
| Diesel Range Organics (DRO) | ND | 9.2 | | mg/Kg | 1 | 3/20/2020 4:10:57 AM | 51188 |
| Motor Oil Range Organics (MRO) | ND | 46 | | mg/Kg | 1 | 3/20/2020 4:10:57 AM | 51188 |
| Surr: DNOP | 89.6 | 55.1-146 | | %Rec | 1 | 3/20/2020 4:10:57 AM | 51188 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 5.0 | | mg/Kg | 1 | 3/21/2020 7:34:53 AM | 51182 |
| Surr: BFB | 93.2 | 66.6-105 | | %Rec | 1 | 3/21/2020 7:34:53 AM | 51182 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 3/21/2020 7:34:53 AM | 51182 |
| Toluene | ND | 0.050 | | mg/Kg | 1 | 3/21/2020 7:34:53 AM | 51182 |
| Ethylbenzene | ND | 0.050 | | mg/Kg | 1 | 3/21/2020 7:34:53 AM | 51182 |
| Xylenes, Total | ND | 0.099 | | mg/Kg | 1 | 3/21/2020 7:34:53 AM | 51182 |
| Surr: 4-Bromofluorobenzene | 103 | 80-120 | | %Rec | 1 | 3/21/2020 7:34:53 AM | 51182 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

**Analytical Report**
Lab Order **2003766**
Date Reported: **3/24/2020**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Souder, Miller & Associates
**Client Sample ID:** SW4
**Project:** CDU 294
**Collection Date:** 3/14/2020 2:40:00 PM
**Lab ID:** 2003766-008 **Matrix:** SOIL **Received Date:** 3/17/2020 8:20:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** | |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/23/2020 7:34:23 PM | 51270 |
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **BRM** | |
| Diesel Range Organics (DRO) | ND | 9.6 | | mg/Kg | 1 | 3/20/2020 6:11:12 AM | 51201 |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 3/20/2020 6:11:12 AM | 51201 |
| Surr: DNOP | 94.0 | 55.1-146 | | %Rec | 1 | 3/20/2020 6:11:12 AM | 51201 |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** | |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 3/21/2020 7:58:13 AM | 51182 |
| Surr: BFB | 95.7 | 66.6-105 | | %Rec | 1 | 3/21/2020 7:58:13 AM | 51182 |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** | |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 3/21/2020 7:58:13 AM | 51182 |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 3/21/2020 7:58:13 AM | 51182 |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 3/21/2020 7:58:13 AM | 51182 |
| Xylenes, Total | ND | 0.093 | | mg/Kg | 1 | 3/21/2020 7:58:13 AM | 51182 |
| Surr: 4-Bromofluorobenzene | 105 | 80-120 | | %Rec | 1 | 3/21/2020 7:58:13 AM | 51182 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2003766**

***24-Mar-20***

**Client:** Souder, Miller & Associates

**Project:** CDU 294

| Sample ID: **MB-51261** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **51261** | RunNo: **67496** | | | | | | | |
| Prep Date: **3/23/2020** | Analysis Date: **3/23/2020** | SeqNo: **2330680** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | ND | 1.5 | | | | | | | | |

| Sample ID: **LCS-51261** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **51261** | RunNo: **67496** | | | | | | | |
| Prep Date: **3/23/2020** | Analysis Date: **3/23/2020** | SeqNo: **2330682** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 14 | 1.5 | 15.00 | 0 | 93.2 | 90 | 110 | | | |

| Sample ID: **MB-51270** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **51270** | RunNo: **67496** | | | | | | | |
| Prep Date: **3/23/2020** | Analysis Date: **3/23/2020** | SeqNo: **2330729** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | ND | 1.5 | | | | | | | | |

| Sample ID: **LCS-51270** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **51270** | RunNo: **67496** | | | | | | | |
| Prep Date: **3/23/2020** | Analysis Date: **3/23/2020** | SeqNo: **2330730** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 14 | 1.5 | 15.00 | 0 | 94.0 | 90 | 110 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2003766**

***24-Mar-20***

**Client:** Souder, Miller & Associates

**Project:** CDU 294

Sample ID: **LCS-51086** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51086** RunNo: **67313**
Prep Date: **3/13/2020** Analysis Date: **3/16/2020** SeqNo: **2320643** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: DNOP | 5.2 | | 5.000 | | 105 | 55.1 | 146 | | | |

Sample ID: **MB-51086** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **51086** RunNo: **67313**
Prep Date: **3/13/2020** Analysis Date: **3/16/2020** SeqNo: **2320644** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: DNOP | 11 | | 10.00 | | 109 | 55.1 | 146 | | | |

Sample ID: **LCS-51100** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51100** RunNo: **67313**
Prep Date: **3/13/2020** Analysis Date: **3/17/2020** SeqNo: **2321410** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: DNOP | 4.2 | | 5.000 | | 84.7 | 55.1 | 146 | | | |

Sample ID: **MB-51100** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **51100** RunNo: **67313**
Prep Date: **3/13/2020** Analysis Date: **3/17/2020** SeqNo: **2321412** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: DNOP | 9.0 | | 10.00 | | 90.4 | 55.1 | 146 | | | |

Sample ID: **LCS-51188** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51188** RunNo: **67313**
Prep Date: **3/18/2020** Analysis Date: **3/19/2020** SeqNo: **2326278** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 47 | 10 | 50.00 | 0 | 93.9 | 70 | 130 | | | |
| Surr: DNOP | 4.0 | | 5.000 | | 79.7 | 55.1 | 146 | | | |

Sample ID: **LCS-51201** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51201** RunNo: **67313**
Prep Date: **3/18/2020** Analysis Date: **3/20/2020** SeqNo: **2326279** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 47 | 10 | 50.00 | 0 | 93.3 | 70 | 130 | | | |
| Surr: DNOP | 3.9 | | 5.000 | | 77.7 | 55.1 | 146 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **2003766**
***24-Mar-20***

**Client:** Souder, Miller & Associates
**Project:** CDU 294

| Sample ID: **MB-51188** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **51188** | RunNo: **67313** |
| Prep Date: **3/18/2020** | Analysis Date: **3/19/2020** | SeqNo: **2326280** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | 8.4 | | 10.00 | | 84.5 | 55.1 | 146 | | | |

| Sample ID: **MB-51201** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **51201** | RunNo: **67313** |
| Prep Date: **3/18/2020** | Analysis Date: **3/20/2020** | SeqNo: **2326281** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | 8.6 | | 10.00 | | 86.0 | 55.1 | 146 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2003766**

***24-Mar-20***

**Client:** Souder, Miller & Associates

**Project:** CDU 294

| Sample ID: **lcs-51182** | SampType: **LCS** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **51182** | RunNo: **67472** |
| Prep Date: **3/18/2020** | Analysis Date: **3/20/2020** | SeqNo: **2328314** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 24 | 5.0 | 25.00 | 0 | 96.0 | 80 | 120 | | | |
| Surr: BFB | 1100 | | 1000 | | 111 | 66.6 | 105 | | | S |

| Sample ID: **mb-51182** | SampType: **MBLK** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **51182** | RunNo: **67472** |
| Prep Date: **3/18/2020** | Analysis Date: **3/20/2020** | SeqNo: **2328315** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | ND | 5.0 | | | | | | | | |
| Surr: BFB | 970 | | 1000 | | 96.6 | 66.6 | 105 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix |
| B | Analyte detected in the associated Method Blank |
| E | Value above quantitation range |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2003766**

***24-Mar-20***

**Client:** Souder, Miller & Associates

**Project:** CDU 294

| Sample ID: **mb-51182** | SampType: **MBLK** | TestCode: **EPA Method 8021B: Volatiles** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **51182** | RunNo: **67472** | | | | | | | |
| Prep Date: **3/18/2020** | Analysis Date: **3/20/2020** | SeqNo: **2328730** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Benzene | ND | 0.025 | | | | | | | | |
| Toluene | ND | 0.050 | | | | | | | | |
| Ethylbenzene | ND | 0.050 | | | | | | | | |
| Xylenes, Total | ND | 0.10 | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 1.0 | | 1.000 | | 105 | 80 | 120 | | | |

| Sample ID: **LCS-51182** | SampType: **LCS** | TestCode: **EPA Method 8021B: Volatiles** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **51182** | RunNo: **67472** | | | | | | | |
| Prep Date: **3/18/2020** | Analysis Date: **3/20/2020** | SeqNo: **2328731** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Benzene | 0.89 | 0.025 | 1.000 | 0 | 89.1 | 80 | 120 | | | |
| Toluene | 0.91 | 0.050 | 1.000 | 0 | 90.9 | 80 | 120 | | | |
| Ethylbenzene | 0.91 | 0.050 | 1.000 | 0 | 90.7 | 80 | 120 | | | |
| Xylenes, Total | 2.8 | 0.10 | 3.000 | 0 | 93.1 | 80 | 120 | | | |
| Surr: 4-Bromofluorobenzene | 1.1 | | 1.000 | | 109 | 80 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix | | |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

*Hall Environmental Analysis Laboratory*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

# Sample Log-In Check List

Client Name: **SMA-CARLSBAD** Work Order Number: **2003766** RcptNo: **1**

Received By: **Juan Rojas** **3/17/2020 8:20:00 AM** Juan Rojas

Completed By: **Juan Rojas** **3/17/2020 11:57:44 AM** Juan Rojas

Reviewed By: JR 3/17/20

## Chain of Custody

1. Is Chain of Custody sufficiently complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

## Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑ IO
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 3/17/20 (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

## Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 1.6 | Good | | | | |
| 2 | 4.5 | Good | | | | |
| 3 | 1.0 | Good | | | | |
| 4 | 1.8 | Good | | | | |

# Chain-of-Custody Record

Client: SMA- Carlsbad

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☑ Rush 5 day turn

Project Name: CDU 294

Project #:

Project Manager: Ashley Maxwell

Sampler: CAM

On Ice: ☑ Yes ☐ No

# of Coolers: 4

Cooler Temp(including CF): See Remarks (°C)

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

| Date | Time | Matrix | Sample Name | Container Type and # | Preservative Type | HEAL No. 2003766 | BTEX / MTBE / TMB's (8021) | TPH:8015D(GRO / DRO / MRO) | 8081 Pesticides/8082 PCB's | EDB (Method 504.1) | PAHs by 8310 or 8270SIMS | RCRA 8 Metals | Cl, F, Br, $NO_3$, $NO_2$, $PO_4$, $SO_4$ | 8260 (VOA) | 8270 (Semi-VOA) | Total Coliform (Present/Absent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/14/20 | 1416 | Soil | CS1 | 4oz | | -001 | X | X | | | | | X | | | |
| | 1420 | | CS2 | | | -002 | X | X | | | | | X | | | |
| | 1426 | | CS3 | | | -003 | X | X | | | | | X | | | |
| | 1428 | | CS4 | | | -004 | X | X | | | | | X | | | |
| | 1430 | | ~~CS5~~ SW1 | | | -005 | X | X | | | | | X | | | |
| | 1433 | | SW2 | | | -006 | X | X | | | | | X | | | |
| | 1436 | | SW3 | | | -007 | X | X | | | | | X | | | |
| | 1440 | | SW4 | | | -008 | X | X | | | | | X | | | |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| | | | | | 3/16/20 | 0850 |
| 3/16/20 | 1900 | | courier | | 3/17/20 | 8:20 |

Remarks: Direct Bill: Devon

1.4+0.2=1.6
4.3+0.2=4.5
0.8+0.2=1.0
1.6+0.2=1.8

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

**District I**
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
**District II**
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
**District III**
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
**District IV**
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

# State of New Mexico
# Energy, Minerals and Natural Resources
# Oil Conservation Division
# 1220 S. St Francis Dr.
# Santa Fe, NM 87505



## CONDITIONS

| | |
|---|---|
| Operator:<br>DEVON ENERGY PRODUCTION COMPANY, LP<br>333 West Sheridan Ave.<br>Oklahoma City, OK 73102 | OGRID:<br>6137 |
| | Action Number:<br>8158 |
| | Action Type:<br>[C-141] Release Corrective Action (C-141) |

**CONDITIONS**

| Created By | Condition | Condition Date |
|---|---|---|
| jharimon | Please note that, when the well or facility is plugged or abandoned, the final remediation and reclamation shall take place in accordance with 19.15.29.12 and 19.15.29.13 NMAC once the site is no longer being used for oil and gas operations. | 7/6/2022 |