



HRL
COMPLIANCE
SOLUTIONS

P.O. Box 1708 • Artesia, NM 88211
www.hrlcomp.com

July 2, 2020

Mr. Tom Bynum
Devon Energy
6488 Seven Rivers Highway
Artesia, New Mexico 88211
Email: tom.bynum@dvn.com

**Subject: Site Characterization, Remediation Plan, and Cost Estimate
Cotton Draw Unit #509H (February 2019)
1RP-5384
Lea County, New Mexico**

Dear Mr. Bynum:

HRL Compliance Solutions, Inc. (HRL) is pleased to submit this site characterization report, remediation plan, and remediation cost estimate for the February 2019 release at the Cotton Draw Unit #509H (Site). The release is at latitude 32.1245605 and longitude -103.7077354 in Lea County, New Mexico (Figure 1).

Site Background

On February 12, 2019, a release of five barrels (bbls.) of oil and 16 bbls of produced water was observed at the site. The release occurred when a valve on the chemical line and attached to the flow line failed. The released fluid impacted the well pad. Two bbls. of crude oil and 14 bbls. of produced water were recovered.

Because the volume released was between five bbls. and 25 bbls., this is considered a minor release according to the New Mexico Oil Conservation Division (NMOCD). On February 25, 2019, Devon reported the release to the NMOCD on a Release Notification and Corrective Action Form (Form C-141) (Attachment A). The release was assigned Remediation Permit (RP) number 1RP-5384.

Scope of Work

Devon has requested HRL to provide the following deliverables:

- Research the information as specified in the Site Characterization NMOCD Form C-141
- Prepare a map with sample points labeled
- Prepare a table summarizing the results obtained during the site characterization activities
- Prepare a site characterization report including a remediation plan per NMOCD closure requirements and related cost estimates



Mr. Bynum
Page 2

New Mexico Administrative Code (NMAC) Site Characterization Criteria

Title 19, Chapter 15, Part 29, Section 11 of the New Mexico Administrative Code (NMAC) provides requirements for release characterization once the free liquids and recoverable materials have been removed from the Site.

Depth to Groundwater

Depth to groundwater at the release was estimated by evaluating data from the New Mexico Office of the State Engineer (NMOSE) and the United States Geological Survey (USGS) (Figure 2). The nearest groundwater well was approximately 3.17 miles from the Site; the depth to water in this well was 400 feet below ground surface (bgs).

Wellhead Protection Area

There are no sources of water, including springs, wells, or other sources of fresh water, within one-half mile of the release (Figure 2).

Distance to Nearest Significant Watercourse

A significant watercourse is defined as "...a watercourse with a defined bed and bank either named or identified by a dashed blue line on a USGS 7.5-minute quadrangle map or the next lower order tributary with a defined bed and bank" (19.15.17.7 NMAC) (Figure 2). There are no significant watercourses within one-half mile of the lateral extent of the release.

Additional Site Characterization Criteria

The following is additional information related to characterization of the Site.

Site Characterization	Response/Discussion
What is the shallowest depth to groundwater beneath the area affected by the release?	Greater than 100 feet
Did the release impact groundwater or surface water?	No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or other significant watercourse?	No
Are the lateral extents of the release within 200 feet of a lakebed, sinkhole, or playa lake?	No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital institution, or church?	No
Are the lateral extents of the release within 500 feet of a spring or private, domestic fresh water well used by less than five households for domestic or stock watering purposes?	No



Mr. Bynum

Page 3

Site Characterization	Response/Discussion
Are the lateral extents of the release within 1,000 feet of any fresh water well or spring?	No
Are the lateral extents of the release within any incorporated municipal boundaries?	No
Are the lateral extents of the release within a defined municipal fresh water well field?	No
Are the lateral extents of the release within 300 feet of a wetland?	No
Are the lateral extents of the release overlying a subsurface mine?	No
Are the lateral extents of the release overlying an unstable area such as karst geology?	The Site is in an area of low potential for karst topography
Are the lateral extents of the release within the 100-year floodplain?	No
Did the release impact areas not on an exploration, development, production, or storage site?	No

Site Delineation

Prior to initiating field activities, HRL submitted a Mechanical Excavation Permit to Devon Energy and had subsurface utilities located at the Site. On March 14, 2020, HRL mobilized to the Site to evaluate the release. Soil samples were collected for analysis in the field (field screening) by one or more of the following methods:

- Chloride was approximated using an electrical conductivity (EC) meter in accordance with methods recommended by the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS)
- Non-specific volatile organic compounds (VOCs) were measured using a photoionization detector (PID) with a 10.6 electron-volt (eV) lamp
- Total petroleum hydrocarbons (TPH) was measured using a PetroFlag® field test kit in accordance with U.S. Environmental Protection Agency (EPA) Method 9074

Based on the results of the field screening, HRL returned to the Site on April 10, 2020 and collected six soil samples (SP1, SP2, SP3, SP4, SP5@0", and SP5@36") for laboratory analysis. Samples were immediately placed on ice and kept under strict chain of custody protocol prior to submission to Hall Environmental Analysis Laboratory of Albuquerque, New Mexico for analysis of (Attachment B):

- Chloride by United States Environmental Protection Agency (US EPA) Method 300.0
- Benzene, toluene, ethyl benzene, and total xylenes (BTEX) by US EPA Method 8021B
- Total petroleum hydrocarbons (TPH) – gasoline range organics (GRO), diesel range organics (DRO), and oil range organics (ORO) by US EPA Method 8015M



Mr. Bynum
Page 4

HRL utilized a Trimble GeoXT global positioning system (GPS) unit to collect latitude and longitude data for the sample locations (Figure 3). Based on evaluation of the laboratory results, the release impacted a surficial area of approximately 3,780 square-feet to a depth of approximately 30 inches bgs.

Closure Criteria

Based on the NMAC Site Characterization Criteria, HRL recommends the following NMOCD Closure Criteria to the Site:

Depth to Groundwater	Parameter	Closure Criteria in milligrams per kilogram (mg/kg)
Greater than 100 feet below ground surface	Chloride	20,000 mg/kg or natural background, whichever is greater
	Total Petroleum Hydrocarbons (TPH) [<i>Gasoline Range Organics (GRO) + Diesel Range Organics (DRO) + Oil Range Organics (ORO)</i>]	2,500 mg/kg
	Gasoline Range Organics (GRO) + Diesel Range Organics (DRO)	1,000 mg/kg
	Benzene	10 mg/kg
	Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX)	50 mg/kg

Remediation Plan

A scaled diagram depicting the area of investigation and nearby significant features, such as roads, site infrastructure, location of borings, sample points, monitoring wells (if present), and subsurface features (if data was available) has been prepared (Figure 3). HRL utilized a Trimble GeoXT global positioning system (GPS) unit to collect latitude and longitude data for the sample locations.

TPH concentrations in soil exceeded applicable NMOCD closure criteria in SP5 to depth not greater than 36 inches bgs (Table 1). To achieve the NMOCD closure criteria listed above, HRL recommends remediation of the impacted soil by excavation and off-site disposal at an NMOCD approved facility. Excavation oversight and subsequent collection of confirmatory soil samples in accordance with 19.15.29 NMAC should be conducted by a qualified environmental consulting firm to facilitate closure acceptance of the release by the NMOCD. HRL estimates that impacted soil will be excavated from an area of 3,780 square feet to a depth of 30 inches bgs, resulting in approximately 350 cubic yards of impacted soil removed from the Site for off-site disposal. Since the impacted area is on the well pad, the excavation will be backfilled with caliche or similar clean backfill and compacted or otherwise stabilized to minimize dust and erosion.

HRL estimates that the remediation can be completed within 90 days of notice to proceed and the cost to complete this remediation is provided in Attachment C.

This cost estimate is based on the following assumptions:



Mr. Bynum
Page 5

- 350 yards of impacted soil will be removed and disposed of off-site; disposal fees are included at a rate of \$31 per yard
- 29 confirmatory soil samples will be submitted for laboratory analysis of BTEX, TPH, and total chloride
- 350 yards of clean backfill will be placed back in the excavation after receipt of confirmatory soil sample results that are below applicable standards
- Excavation oversight and confirmatory soil sampling can be completed in three field days
- Oversight of backfilling can be completed or verified in one field day
- Preparation and submission of a closure report to NMOCD

Scope and Limitations

The scope of HRL's services consists of performing site characterization and preparation of this site characterization report and remediation plan. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin.

We appreciate the opportunity to work with Devon on this project. If you have any questions or concerns, please do not hesitate to contact me at (970) 243-3271 or via email at jlinn@hrlcomp.com.

Sincerely,

HRL Compliance Solutions, Inc.

Julie Linn, PG, RG
Project Manager

Figures:

Figure 1: Site Location

Figure 2: Depth to Groundwater

Figure 3: Sample Location and Results

Tables:

Table 1: Analytical Laboratory Results

Attachments:

Attachment A: NMOCD Form C-141

Attachment B: Analytical Laboratory Report

Attachment C: Devon Energy Remediation Cost Estimate



Figures

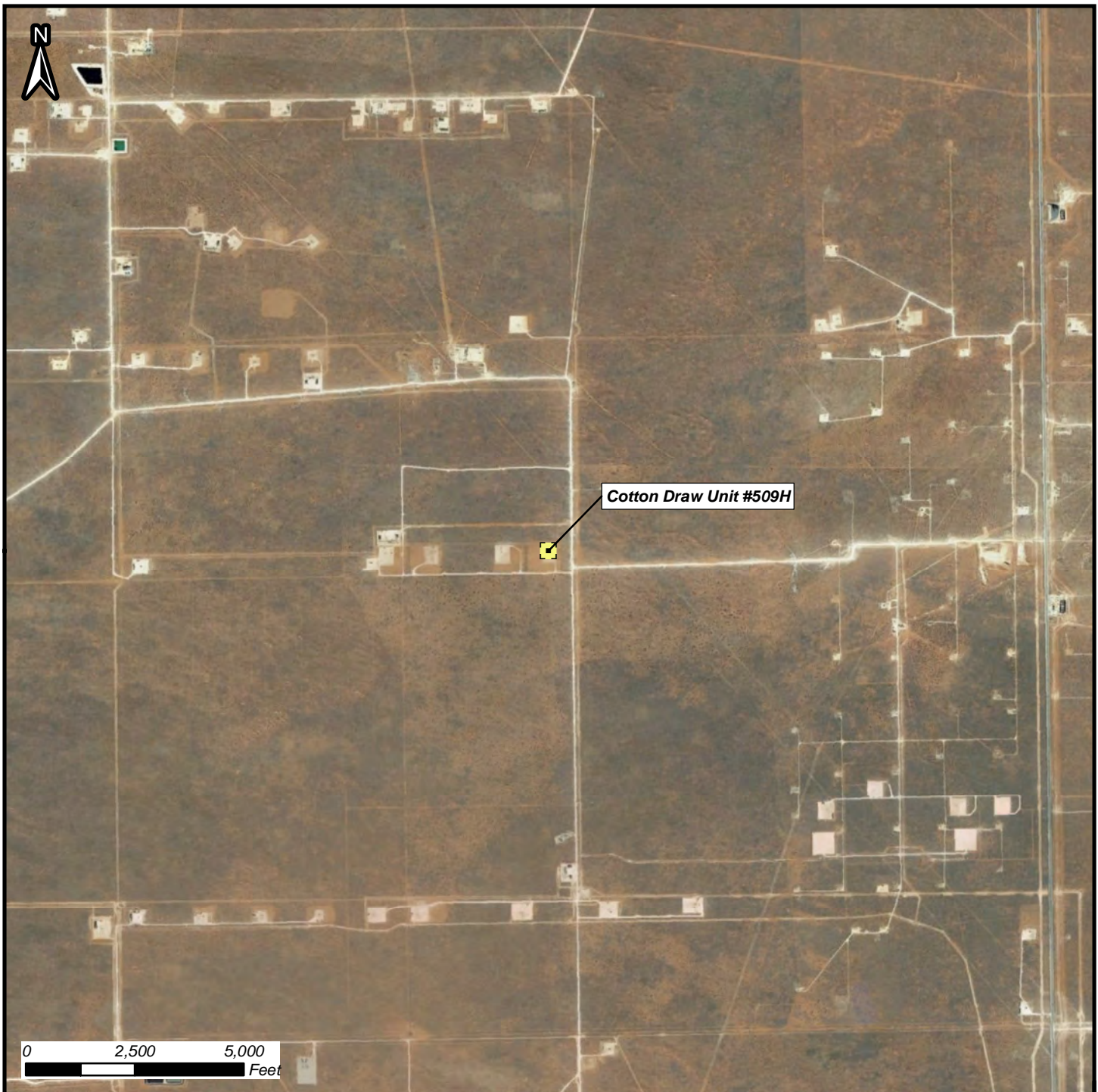


Figure 1: Site Location Map

Cotton Draw Unit #509H

February 2019 Spill

32.1245605, -103.7077354

Section 18, Township 25 South, Range 32 East

NOTES / COMMENTS:

Mapped Features

Facility Location

DISCLAIMER: This representation and the Geographic Information System (GIS) used to create it are designed as a source of reference and not intended to replace official records and/or legal surveys. HRL assumes no responsibility for any risks, dangers, or liabilities that may result from its use and makes no guarantees as to the quality or accuracy of the underlying data.



Author: A. Asay

Revision: 0

Date: 2/27/2020

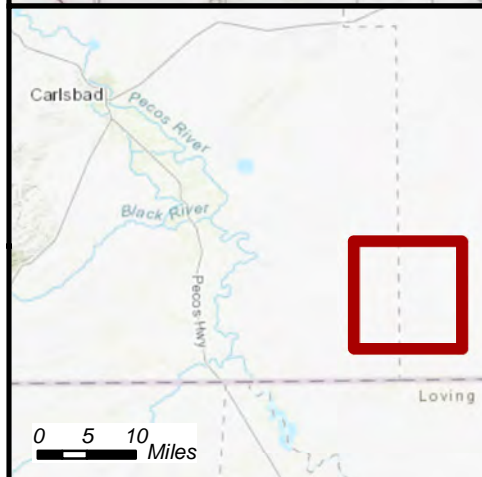
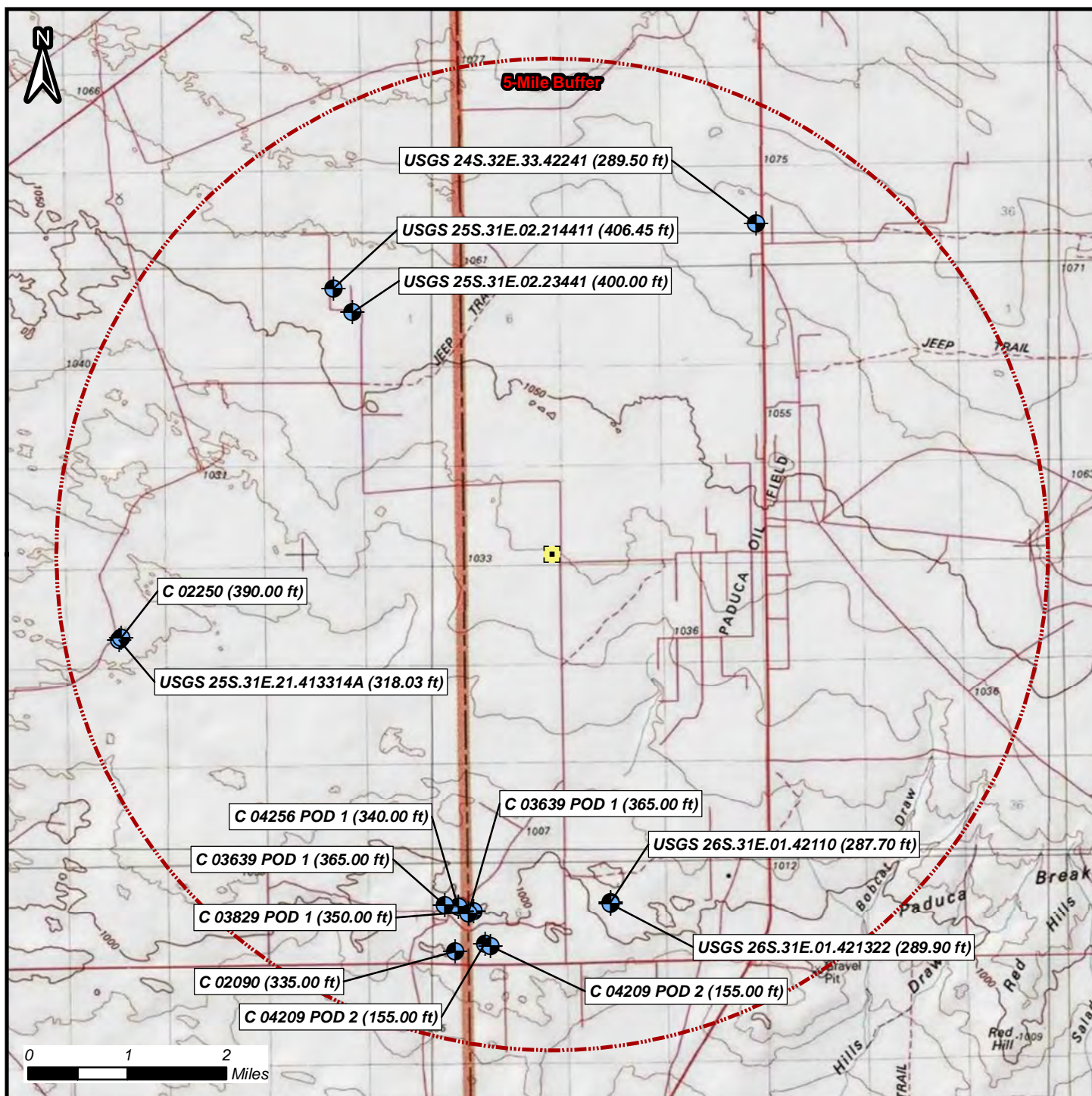


Figure 2: Depth to Groundwater Map

Cotton Draw Unit #509H

February 2019 Spill

32.124577671, -103.707698478

Section 18, Township 25 South, Range 32 East

Well Number	Water Level Below Ground Surface (ft)	Distance from Source (mi)
USGS 25S.31E.02.23441	400.00	3.17
USGS 25S.31E.02.214411	406.45	3.47
USGS 25S.31E.21.413314A	318.03	4.45
USGS 24S.32E.33.42241	289.50	3.92
USGS 26S.31E.01.42110	287.70	3.55
USGS 26S.31E.01.421322	289.90	3.57
C 04256 POD 1	340.00	3.68
C 03639 POD 1	365.00	3.70
C 03829 POD 1	350.00	3.68
C 02090	335.00	4.12
C 04209 POD 2	155.00	4.41

Mapped Features

- Point of Release
- Groundwater Well
- 5-Mile Buffer



DISCLAIMER: This representation and the Geographic Information System (GIS) used to create it are designed as a source of reference and not intended to replace official records and/or legal surveys. HRL assumes no responsibility for any risks, dangers, or liabilities that may result from its use and makes no guarantees as to the quality or accuracy of the underlying data.

Author: A. Asay

Revision: 0

Date: 5/18/2020

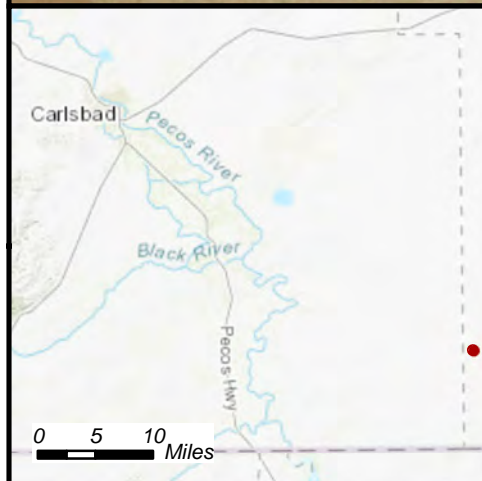
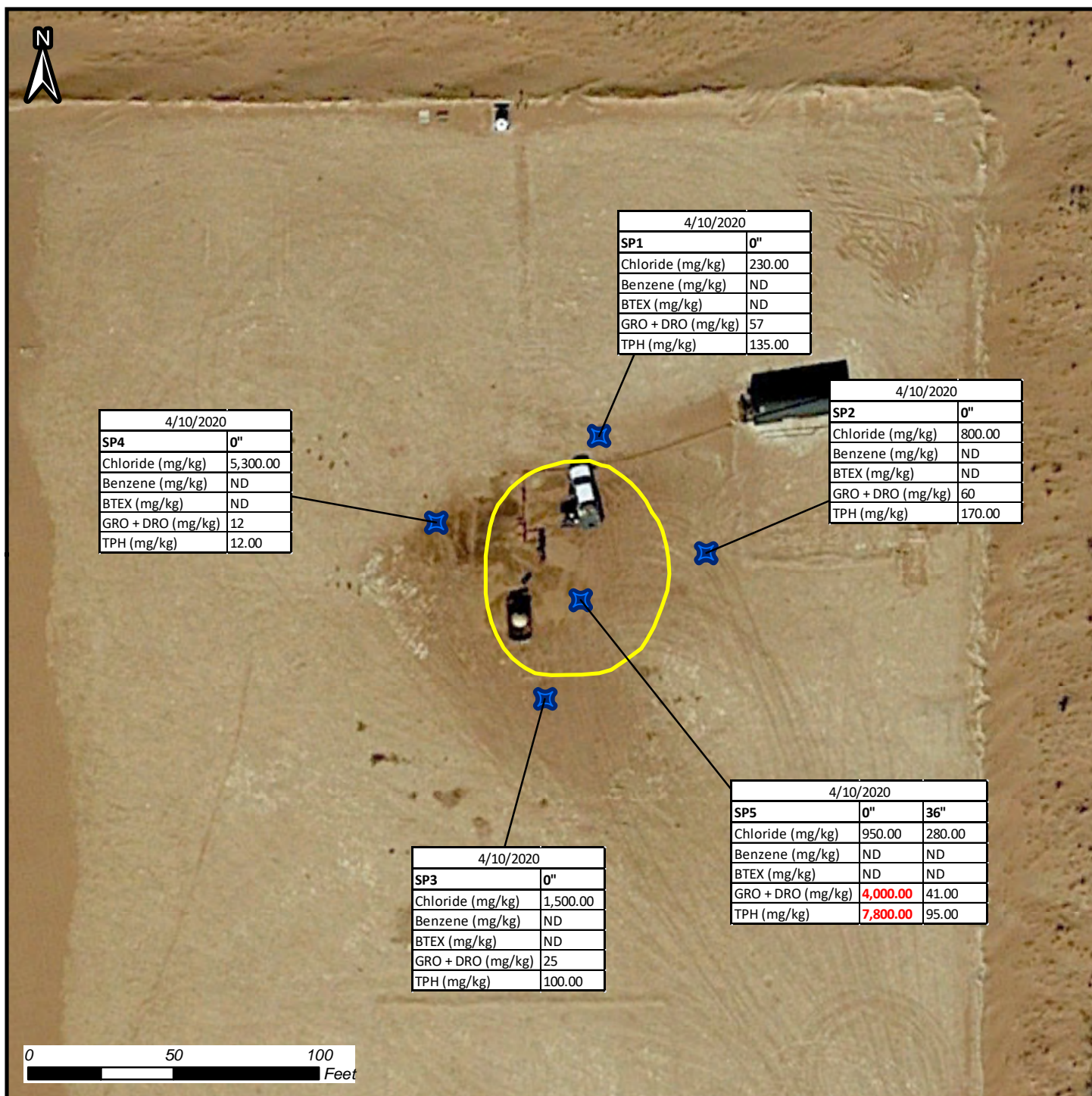


Figure 3: Sample Location and Results

Cotton Draw Unit #509H

February 2019 Spill

32.124577671, -103.707698478

Section 18, Township 25 South, Range 32 East

NOTES / COMMENTS:

The impacted area is approximately 3,767 square feet.

Results in red exceed closure criteria.

Mapped Features

Sample Location (Submitted for Lab Analysis)

Impacted Area

DISCLAIMER: This representation and the Geographic Information System (GIS) used to create it are designed as a source of reference and not intended to replace official records and/or legal surveys. HRL assumes no responsibility for any risks, dangers, or liabilities that may result from its use and makes no guarantees as to the quality or accuracy of the underlying data.



Author: A. Asay

Revision: 0

Date: 6/8/2020



Tables



Table 1
Soil Sample Results
Devon Energy
Cotton Draw Unit #509H
Lea County, New Mexico

Sample ID	Depth (inches)	Sample Date	Chloride	Benzene	BTEX	GRO + DRO	TPH
			<i>Values are in milligrams per kilogram (mg/kg)</i>				
NMOCD Closure Criteria (Groundwater greater than 100 feet) *			20,000	10	50	1,000	2,500
SP1	0	4/10/2020	230	ND	ND	57	135
SP2	0	4/10/2020	800	ND	ND	60	170
SP3	0	4/10/2020	1,500	ND	ND	25	100
SP4	0	4/10/2020	5,300	ND	ND	12	12
SP5@0"	0	4/10/2020	950	ND	ND	4,000	7,800
SP5@36"	36	4/10/2020	280	ND	ND	41	95

Notes:

NMOCD: New Mexico Oil Conservation Division

BTEX: Benzene, Toluene, Ethylbenzene, Total Xylenes

GRO: Gasoline Range Organics

DRO: Diesel Range Organics

TPH: Total Petroleum Hydrocarbons

Bold results exceed closure criteria

* Closure Criteria specified in 19.15.29.12 NMAC



Attachment A
NMOCD Form C-141

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 Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # (assigned by OCD)
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# (if applicable)

Unit Letter	Section	Township	Range	County

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☐ Private (Name: _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? <input type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

<input type="checkbox"/> The source of the release has been stopped.	
<input type="checkbox"/> The impacted area has been secured to protect human health and the environment.	
<input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.	
<input type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
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.	
Printed Name: _____	Title: _____
Signature: <u>Kendra DeHoyos</u>	Date: _____
email: _____	Telephone: _____
<u>OCD Only</u>	
Received by: _____	Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	_____ (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: *Each of the following items must be included in the report.*

- ☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☐ Data table of soil contaminant concentration data
- ☐ Depth to water determination
- ☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ☐ Topographic/Aerial maps
- ☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Page 4

Incident ID	
District RP	
Facility ID	
Application ID	

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.

Printed Name: _____ Title: _____

Signature: Tom Bynum Date: _____

email: _____ Telephone: _____

OCD Only

Received by: Cristina Eads Date: 07/20/2020

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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.

Printed Name: _____ Title: _____
Signature: _____ Date: _____
email: _____ Telephone: _____

OCD Only

Received by: Cristina Eads Date: 07/20/2020

☐ Approved ☒ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature:  Date: 09/17/2020

Incident ID	
District RP	
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: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

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: _____ Date: _____

Printed Name: _____ Title: _____



Attachment B
Analytical Laboratory Results



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

April 21, 2020

Tom Bynum

Devon Energy

6488 Seven Rivers Highway

Artesia, NM 88210

TEL: (575) 748-0176

FAX:

RE: Cotton Draw Unit 509H

OrderNo.: 2004618

Dear Tom Bynum:

Hall Environmental Analysis Laboratory received 6 sample(s) on 4/14/2020 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2004618

Date Reported: 4/21/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SP1

Project: Cotton Draw Unit 509H

Collection Date: 4/10/2020 10:02:00 AM

Lab ID: 2004618-001

Matrix: SOIL

Received Date: 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	57	9.4		mg/Kg	1	4/18/2020 3:09:56 PM
Motor Oil Range Organics (MRO)	78	47		mg/Kg	1	4/18/2020 3:09:56 PM
Surr: DNOP	87.7	55.1-146		%Rec	1	4/18/2020 3:09:56 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	230	61		mg/Kg	20	4/17/2020 2:31:35 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: DJF
Benzene	ND	0.024		mg/Kg	1	4/17/2020 8:56:25 AM
Toluene	ND	0.048		mg/Kg	1	4/17/2020 8:56:25 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2020 8:56:25 AM
Xylenes, Total	ND	0.096		mg/Kg	1	4/17/2020 8:56:25 AM
Surr: 1,2-Dichloroethane-d4	93.6	70-130		%Rec	1	4/17/2020 8:56:25 AM
Surr: 4-Bromofluorobenzene	93.8	70-130		%Rec	1	4/17/2020 8:56:25 AM
Surr: Dibromofluoromethane	102	70-130		%Rec	1	4/17/2020 8:56:25 AM
Surr: Toluene-d8	92.2	70-130		%Rec	1	4/17/2020 8:56:25 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2020 8:56:25 AM
Surr: BFB	97.5	70-130		%Rec	1	4/17/2020 8:56:25 AM

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2004618

Date Reported: 4/21/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SP2

Project: Cotton Draw Unit 509H

Collection Date: 4/10/2020 11:27:00 AM

Lab ID: 2004618-002

Matrix: SOIL

Received Date: 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	60	9.1		mg/Kg	1	4/18/2020 3:34:52 PM
Motor Oil Range Organics (MRO)	110	45		mg/Kg	1	4/18/2020 3:34:52 PM
Surr: DNOP	80.4	55.1-146		%Rec	1	4/18/2020 3:34:52 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	800	61		mg/Kg	20	4/17/2020 2:43:56 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: DJF
Benzene	ND	0.024		mg/Kg	1	4/17/2020 9:24:53 AM
Toluene	ND	0.048		mg/Kg	1	4/17/2020 9:24:53 AM
Ethylbenzene	ND	0.048		mg/Kg	1	4/17/2020 9:24:53 AM
Xylenes, Total	ND	0.095		mg/Kg	1	4/17/2020 9:24:53 AM
Surr: 1,2-Dichloroethane-d4	94.1	70-130		%Rec	1	4/17/2020 9:24:53 AM
Surr: 4-Bromofluorobenzene	91.7	70-130		%Rec	1	4/17/2020 9:24:53 AM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	4/17/2020 9:24:53 AM
Surr: Toluene-d8	93.8	70-130		%Rec	1	4/17/2020 9:24:53 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/17/2020 9:24:53 AM
Surr: BFB	96.2	70-130		%Rec	1	4/17/2020 9:24:53 AM

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2004618

Date Reported: 4/21/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SP3

Project: Cotton Draw Unit 509H

Collection Date: 4/10/2020 11:36:00 AM

Lab ID: 2004618-003

Matrix: SOIL

Received Date: 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	25	9.6		mg/Kg	1	4/18/2020 3:59:39 PM
Motor Oil Range Organics (MRO)	75	48		mg/Kg	1	4/18/2020 3:59:39 PM
Surr: DNOP	88.8	55.1-146		%Rec	1	4/18/2020 3:59:39 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1500	60		mg/Kg	20	4/17/2020 2:56:17 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: DJF
Benzene	ND	0.024		mg/Kg	1	4/17/2020 9:53:25 AM
Toluene	ND	0.049		mg/Kg	1	4/17/2020 9:53:25 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/17/2020 9:53:25 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/17/2020 9:53:25 AM
Surr: 1,2-Dichloroethane-d4	93.5	70-130		%Rec	1	4/17/2020 9:53:25 AM
Surr: 4-Bromofluorobenzene	93.9	70-130		%Rec	1	4/17/2020 9:53:25 AM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	4/17/2020 9:53:25 AM
Surr: Toluene-d8	94.7	70-130		%Rec	1	4/17/2020 9:53:25 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/17/2020 9:53:25 AM
Surr: BFB	98.7	70-130		%Rec	1	4/17/2020 9:53:25 AM

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2004618

Date Reported: 4/21/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SP4

Project: Cotton Draw Unit 509H

Collection Date: 4/10/2020 11:42:00 AM

Lab ID: 2004618-004

Matrix: SOIL

Received Date: 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	12	9.2		mg/Kg	1	4/18/2020 4:24:25 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/18/2020 4:24:25 PM
Surr: DNOP	84.5	55.1-146		%Rec	1	4/18/2020 4:24:25 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	5300	150		mg/Kg	50	4/18/2020 3:23:22 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: DJF
Benzene	ND	0.023		mg/Kg	1	4/17/2020 10:22:04 AM
Toluene	ND	0.047		mg/Kg	1	4/17/2020 10:22:04 AM
Ethylbenzene	ND	0.047		mg/Kg	1	4/17/2020 10:22:04 AM
Xylenes, Total	ND	0.094		mg/Kg	1	4/17/2020 10:22:04 AM
Surr: 1,2-Dichloroethane-d4	94.5	70-130		%Rec	1	4/17/2020 10:22:04 AM
Surr: 4-Bromofluorobenzene	90.6	70-130		%Rec	1	4/17/2020 10:22:04 AM
Surr: Dibromofluoromethane	106	70-130		%Rec	1	4/17/2020 10:22:04 AM
Surr: Toluene-d8	97.2	70-130		%Rec	1	4/17/2020 10:22:04 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/17/2020 10:22:04 AM
Surr: BFB	96.9	70-130		%Rec	1	4/17/2020 10:22:04 AM

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 Quantitative Limit	RL	Reporting Limit
	S		% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2004618

Date Reported: 4/21/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SP5 @0"

Project: Cotton Draw Unit 509H

Collection Date: 4/10/2020 10:17:00 AM

Lab ID: 2004618-005

Matrix: SOIL

Received Date: 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	4000	100		mg/Kg	10	4/18/2020 4:49:12 PM
Motor Oil Range Organics (MRO)	3800	500		mg/Kg	10	4/18/2020 4:49:12 PM
Surr: DNOP	0	55.1-146	S	%Rec	10	4/18/2020 4:49:12 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	950	60		mg/Kg	20	4/17/2020 3:45:41 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: DJF
Benzene	ND	0.12		mg/Kg	5	4/17/2020 10:50:32 AM
Toluene	ND	0.23		mg/Kg	5	4/17/2020 10:50:32 AM
Ethylbenzene	ND	0.23		mg/Kg	5	4/17/2020 10:50:32 AM
Xylenes, Total	ND	0.47		mg/Kg	5	4/17/2020 10:50:32 AM
Surr: 1,2-Dichloroethane-d4	95.2	70-130		%Rec	5	4/17/2020 10:50:32 AM
Surr: 4-Bromofluorobenzene	93.5	70-130		%Rec	5	4/17/2020 10:50:32 AM
Surr: Dibromofluoromethane	104	70-130		%Rec	5	4/17/2020 10:50:32 AM
Surr: Toluene-d8	99.4	70-130		%Rec	5	4/17/2020 10:50:32 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: DJF
Gasoline Range Organics (GRO)	ND	23		mg/Kg	5	4/17/2020 10:50:32 AM
Surr: BFB	103	70-130		%Rec	5	4/17/2020 10:50:32 AM

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2004618

Date Reported: 4/21/2020

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SP5 @36"

Project: Cotton Draw Unit 509H

Collection Date: 4/10/2020 10:29:00 AM

Lab ID: 2004618-006

Matrix: SOIL

Received Date: 4/14/2020 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: TOM
Diesel Range Organics (DRO)	41	9.3		mg/Kg	1	4/19/2020 4:48:35 PM
Motor Oil Range Organics (MRO)	54	46		mg/Kg	1	4/19/2020 4:48:35 PM
Surr: DNOP	96.4	55.1-146		%Rec	1	4/19/2020 4:48:35 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	280	61		mg/Kg	20	4/17/2020 3:58:02 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: DJF
Benzene	ND	0.023		mg/Kg	1	4/17/2020 11:19:01 AM
Toluene	ND	0.046		mg/Kg	1	4/17/2020 11:19:01 AM
Ethylbenzene	ND	0.046		mg/Kg	1	4/17/2020 11:19:01 AM
Xylenes, Total	ND	0.092		mg/Kg	1	4/17/2020 11:19:01 AM
Surr: 1,2-Dichloroethane-d4	94.4	70-130		%Rec	1	4/17/2020 11:19:01 AM
Surr: 4-Bromofluorobenzene	93.6	70-130		%Rec	1	4/17/2020 11:19:01 AM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	4/17/2020 11:19:01 AM
Surr: Toluene-d8	95.6	70-130		%Rec	1	4/17/2020 11:19:01 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: DJF
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/17/2020 11:19:01 AM
Surr: BFB	97.9	70-130		%Rec	1	4/17/2020 11:19:01 AM

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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2004618

21-Apr-20

Client: Devon Energy

Project: Cotton Draw Unit 509H

Sample ID: MB-51889		SampType: mblk		TestCode: EPA Method 300.0: Anions						
Client ID: PBS		Batch ID: 51889		RunNo: 68216						
Prep Date: 4/17/2020		Analysis Date: 4/17/2020		SeqNo: 2358857			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-51889		SampType: lcs		TestCode: EPA Method 300.0: Anions						
Client ID: LCSS		Batch ID: 51889		RunNo: 68216						
Prep Date: 4/17/2020		Analysis Date: 4/17/2020		SeqNo: 2358858			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			

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 Quantitative 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#: 2004618

21-Apr-20

Client: Devon Energy
Project: Cotton Draw Unit 509H

Sample ID: LCS-51857	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 51857		RunNo: 68198							
Prep Date: 4/16/2020	Analysis Date: 4/18/2020		SeqNo: 2358974		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.4	70	130			
Surr: DNOP	4.0		5.000		79.7	55.1	146			

Sample ID: MB-51857	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 51857		RunNo: 68198							
Prep Date: 4/16/2020	Analysis Date: 4/18/2020		SeqNo: 2358975		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	8.8		10.00		88.1	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 Quantitative 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#: 2004618

21-Apr-20

Client: Devon Energy
Project: Cotton Draw Unit 509H

Sample ID: mb-51835	SampType: MBLK	TestCode: EPA Method 8260B: Volatiles Short List								
Client ID: PBS	Batch ID: 51835	RunNo: 68208								
Prep Date: 4/15/2020	Analysis Date: 4/16/2020	SeqNo: 2358447	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: 1,2-Dichloroethane-d4	0.46		0.5000		92.6	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.6	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		101	70	130			
Surr: Toluene-d8	0.48		0.5000		96.7	70	130			

Sample ID: lcs-51835	SampType: LCS4	TestCode: EPA Method 8260B: Volatiles Short List								
Client ID: BatchQC	Batch ID: 51835	RunNo: 68208								
Prep Date: 4/15/2020	Analysis Date: 4/16/2020	SeqNo: 2358448	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	1.000	0	86.7	80	120			
Toluene	0.98	0.050	1.000	0	98.5	80	120			
Ethylbenzene	1.0	0.050	1.000	0	100	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		93.6	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: Toluene-d8	0.48		0.5000		96.8	70	130			

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 Quantitative 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#: 2004618

21-Apr-20

Client: Devon Energy
Project: Cotton Draw Unit 509H

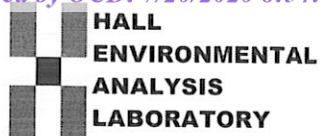
Sample ID: mb-51835	SampType: MBLK	TestCode: EPA Method 8015D Mod: Gasoline Range								
Client ID: PBS	Batch ID: 51835	RunNo: 68208								
Prep Date: 4/15/2020	Analysis Date: 4/16/2020	SeqNo: 2358490		Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		101	70	130			

Sample ID: lcs-51835	SampType: LCS	TestCode: EPA Method 8015D Mod: Gasoline Range								
Client ID: LCSS	Batch ID: 51835	RunNo: 68208								
Prep Date: 4/15/2020	Analysis Date: 4/16/2020	SeqNo: 2358491		Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.8	70	130			
Surr: BFB	500		500.0		99.5	70	130			

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 Quantitative 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
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: **DEVON ENERGY**Work Order Number: **2004618**

RcptNo: 1

Received By: **Juan Rojas**

4/14/2020 8:20:00 AM

*Juan Rojas*Completed By: **Isaiah Ortiz**

4/14/2020 10:06:45 AM

*I-Ortiz*Reviewed By: *LR**4/14/20*

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 $>0^{\circ}\text{C}$ 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 ☒
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:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: *JE 4/14/20*

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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.2	Good	Not Present			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Page

Chain-of-Custody Record									
Client: <u>Devon Energy</u>		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush		Turn-Around Time:					
Tom Bynum		Project Name: <u>Cotton Draw</u>							
Mailing Address: <u>6488 Seven Rivers Hwy</u>		Unit # <u>#509H</u>							
<u>Arctic NM 88211</u>		Project #:							
Phone #: <u>580-748-1613</u>		<u>20038250</u>							
email or Fax#: <u>Tom.bynum@devon.com</u>		Project Manager: <u>Tom Bynum</u>							
QA/QC Package:		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Level 4 (Full Validation)							
Accreditation: <input type="checkbox"/> Az Compliance		Sampler: <u>Taylor Elwell (HRL)</u>							
<input type="checkbox"/> NELAC <input type="checkbox"/> Other		On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
<input type="checkbox"/> EDD (Type)		# of Coolers: <u>1</u>							
		Cooler Temp (including CF): <u>0.1 + 0.1 = 0.2</u>							
Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.			
4-10-20	10:02	Soil	SP1	402 Glass	Ice	2004618	-001		
4-10-20	11:27	Soil	SP2	402 Glass	Ice		-007		
4-10-20	11:36	Soil	SP3	402 Glass	Ice		-003		
4-10-20	11:42	Soil	SP4	402 Glass	Ice		-004		
4-10-20	10:17	Soil	SP5 20"	402 Glass	Ice		-005		
4-10-20	10:29	Soil	SP5 236"	402 Glass	Ice		-006		
Date:	Time:	Relinquished by:		Received by:		Date		Time	
4/13/20	14:15	Taylor Elwell		[Signature]		4/13/20		1430	
Date:	Time:	Relinquished by:		Received by:		Date		Time	
4/13/20	19:00	[Signature]		[Signature]		4/14/20		8:10	

Any sub-contracted data will be clearly notated on the analytical report. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.