

**Devon Energy**  
**Cotton Draw #237**  
**Delineation Report & Work Plan**

**Section 10, Township 25S, Range 32E**  
**Lea County, New Mexico**

**30-025-41996**

**1RP-5420**

Rev. May 20, 2019



Prepared for:  
Devon Energy Production Company 6488  
Seven Rivers Hwy. Artesia, NM 88210

By:

Safety & Environmental Solutions, Inc.  
703 East Clinton Street  
Hobbs, New Mexico 88240  
(575) 397-0510

**TABLE OF CONTENTS**

<b>I. COMPANY CONTACTS .....</b>	<b>1</b>
<b>II. BACKGROUND .....</b>	<b>1</b>
<b>III. SURFACE AND GROUND WATER .....</b>	<b>1</b>
<b>IV. CHARACTERIZATION .....</b>	<b>1</b>
<b>V. WORK PERFORMED .....</b>	<b>2</b>
<b>VI. ACTION PLAN .....</b>	<b>2</b>
<b>VII. FIGURES &amp; APPENDICES .....</b>	<b>3</b>
Figure 1 – Vicinity Map .....	3
Figure 2 – Site Plan .....	3
Appendix A – C-141 .....	3
Appendix B – Groundwater .....	3
Appendix C – Analytical Results.....	3
Appendix D – Site Photos.....	9

**I. Company Contacts**

Representative	Company	Telephone	E-mail
Amanda Davis	Devon Energy	575-748-0176	<a href="mailto:Amanda.davis@dvn.com">Amanda.davis@dvn.com</a>
Bob Allen	SESI	575-397-0510	<a href="mailto:ballen@sesi-nm.com">ballen@sesi-nm.com</a>

**II. Background**

Safety and Environmental Solutions, Inc. (SESI), was engaged by Devon Energy to assess a spill area on the Cotton Draw 237 Battery.

According to the C-141: the cause of release, was due to the three phase separator that had developed a pin-hole leak, causing the release of fluid around the separation equipment (Figure 2). Approximately 180 yards of surface area on the pad area, as well as approximately 609 cubic feet inside the bermed area were impacted (1RP-5420).

**III. Surface and Ground Water**

There is no record of groundwater in the immediate vicinity of the site location. Further research of the New Mexico Office of the State Engineer, also revealed no records for Groundwater. However, research of the Lea County Chevron-Texaco topography Map indicates the depth to groundwater to be between 276' to 300' bgs. (Appendix B).

**IV. Characterization**

The target cleanup levels are determined using the NMAC 19.15.29 revisions dated July 24, 2018. The soil screening criteria presented below, and the applicable Recommended Remediation Action Levels (RRAL) are 10 parts per million (ppm) Benzene, 50 ppm combined Benzene, Toluene, Ethyl Benzene, and Total Xylenes (BTEX), and 2,500 ppm Total Petroleum Hydrocarbons (TPH). Characterization of vertical extent of chloride concentration to a level of 600 mg/kg (PPM) is also required for pasture impact. The soil in this area is characterized as a sandy Portales loam.

Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/l	Constituent	Method*	Limit**
TDS <50 feet	Chloride***	EPA 300.0 or SM4500 Cl B	600 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015B	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
51 feet-100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015B	2,500 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
>100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	20,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015B	2,500 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg

## V. Work Performed

On April 10, 2019 SESI personnel visited the location. The purpose of the visit was to assess the spill area, and conduct field soil screening activity, in order to determine the vertical, as well as horizontal extent of impact. There were six (6) auger holes designated and advanced from surface, by 1 ft. increments.

All samples were properly packaged, labeled, preserved, and transported to Hall Laboratories via Chain of Custody for analyses. The following constituencies were analyzed:

Chloride (Cl Method 300.0 Anions), Total Petroleum Hydrocarbons (TPH Method 8015), and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX Method 8021B). The table below is a recap and tabulation of the results from the Hall Laboratory analyses for ease of reference (Appendix C):

Sample ID	Chloride EPA Method 300 Anions	DRO EPA Method 8015	MRO Method 8015	GRO EPA Method 8015	BTEX EPA Method 8021
AH-1 Surface	4500	7000	2500	130	6.3
AH-1 @ 1ft	290	ND	ND	ND	ND
AH-2 Surface	1900	8200	3000	150	6.1
AH-2 @ 1ft	320	ND	ND	ND	ND
AH-3 Surface	1000	4900	1800	110	4.7
AH-3 @ 1ft	63	ND	ND	ND	ND
AH-4 Surface	5000	6900	2700	120	5.7
AH-4 @ 1ft	68	ND	ND	ND	ND
AH-5 Surface	4700	5600	2200	80	2.6
AH-5 @ 1ft	1100	ND	ND	ND	ND
AH-6 Surface	1500	8300	3000	200	12
AH-6 @ 1ft	ND	ND	ND	ND	ND

## VI. Action Plan

Based on the NMOCD soil screening levels and depth to groundwater for this area SESI on behalf of Devon Energy is proposing to hand excavate the interior of the bermed area to depths, whereby petroleum hydrocarbons are <1,000 mg/kg, and chlorides are <20,000 mg/kg. The exterior of the bermed area will be excavated with mechanized equipment to the same soil screening levels. The pasture area with petroleum hydrocarbon staining will be remediated to soil screening levels for chlorides of <600 mg/kg, and <2,500 mg/kg for Petroleum Hydrocarbons.

Upon completion of remediation activities: all surface areas off of the location area will be reseeded according BLM Guidelines. The pad area will be restored to grade with like material. All closure documentation will be drafted and submitted to the proper parties of concern.

**VII. Figures & Appendices**

Figure 1 - Vicinity Map

Figure 2 - Site Plan

Appendix A – C-141

Appendix B – Groundwater

Appendix C – Analytical Results

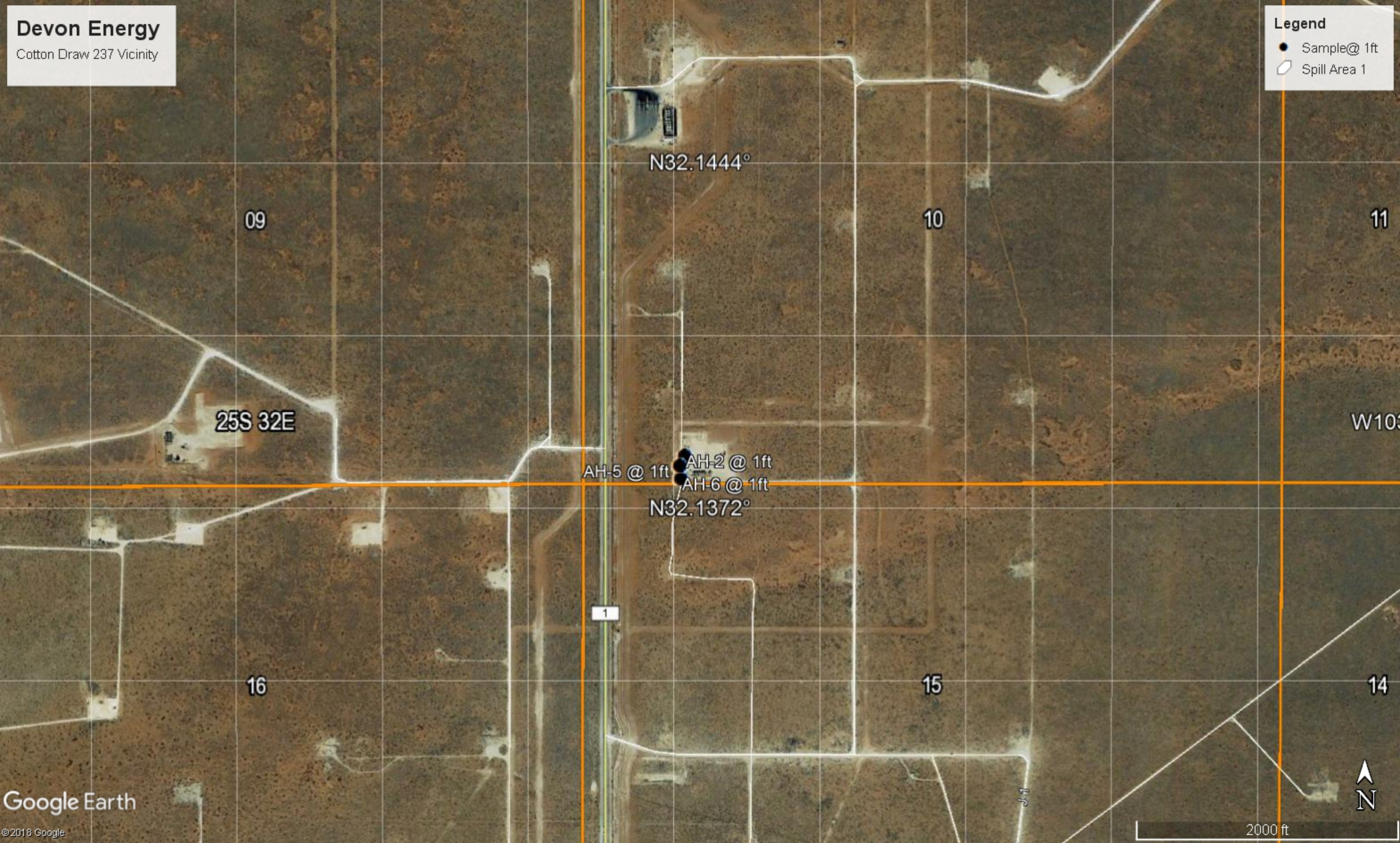
Appendix D – Photo Documentation

# **Figure 1**

## **Vicinity Map**



- Sample@ 1ft
- ▭ Spill Area 1





**Figure 2**  
**Site Plan**



# Cotton Draw #237 Spill-Sample Map

Figure 2 Site Plan

**Legend**

- Sample Points
- ▭ Spill Area 1

AH-2 @ 1ft  
AH-4 @ 1ft  
AH-3 @ 1ft AH-1 @ 1ft  
W103.666 AH-5 @ 1ft  
10  
25S 32E  
AH-6 @ 1ft





# **Appendix A**

## **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

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

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

Incident ID	NAB1909857043
District RP	1RP-5420
Facility ID	
Application ID	pAB1909856756

## Release Notification

### Responsible Party

Responsible Party Devon Energy Production Company	OGRID 6137
Contact Name Amanda T. Davis	Contact Telephone 575-748-0176
Contact email amanda.davis@dvn.com	Incident # (assigned by OCD) NAB1909857043
Contact mailing address 6488 Seven Rivers Hwy	

### Location of Release Source

Latitude 32.1382904 Longitude -103.6683884  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Cotton Draw Unit #237	Site Type Oil
Date Release Discovered 11/30/2018	API# (if applicable) 3002541996

Unit Letter	Section	Township	Range	County
M	10	25S	32E	Lea

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 checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 8.34	Volume Recovered (bbls) 0
<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  
3 phase separator developed a pin hole leak releasing fluid around separation equipment.  
Spill area 41'x41'x1/2" and 191'x2'x1/4"

Incident ID	NAB1909857043
District RP	1RP-5420
Facility ID	
Application ID	pAB1909856756

Was this a major release as defined by 19.15.29.7(A) NMAC?  <input type="checkbox"/> Yes <input checked="" 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 checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" 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 checked="" 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:  <b>Separator outside of containment</b>
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: <u>Kendra DeHoyos</u> Title: <u>EHS Associate</u> Signature: <u>Kendra DeHoyos</u> <small>Digitally signed by Kendra DeHoyos DN: cn=Kendra DeHoyos, o=ou, email=kendra.dehoyos@dvni.com, c=US Date: 2018.12.04 11:01:22 -0700'</small> Date: <u>12/4/2018</u> email: <u>kendra.dehoyos@dvni.com</u> Telephone: <u>575-748-3371</u>
<b><u>OCD Only</u></b> Received by: <u></u> Date: <u>4/8/2019</u>



Incident ID	NAB1909857043
District RP	1RP-5420
Facility ID	
Application ID	pAB1909856756

## 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? 335 (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 <b>not</b> on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input 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.

<p><b>Characterization Report Checklist:</b> <i>Each of the following items must be included in the report.</i></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.</li> <li><input checked="" type="checkbox"/> Field data</li> <li><input checked="" type="checkbox"/> Data table of soil contaminant concentration data</li> <li><input checked="" type="checkbox"/> Depth to water determination</li> <li><input checked="" type="checkbox"/> Determination of water sources and significant watercourses within 1/2-mile of the lateral extents of the release</li> <li><input checked="" type="checkbox"/> Boring or excavation logs</li> <li><input checked="" type="checkbox"/> Photographs including date and GIS information</li> <li><input checked="" type="checkbox"/> Topographic/Aerial maps</li> <li><input checked="" type="checkbox"/> Laboratory data including chain of custody</li> </ul>
---

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.

Incident ID	NAB1909857043
District RP	1RP-5420
Facility ID	
Application ID	pAB1909856756

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: Wesley Mathews Title: EHS Coordinator

Signature: *Wesley Mathews* Date: 09/04/19

Email Wesley.mathews@dvn.com Telephone: 575-513-8608

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Incident ID	NAB1909857043
District RP	1RP-5420
Facility ID	
Application ID	pAB1909856756

## 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: Wesley Mathews Title: EHS Coordinator

Signature: *Wesley Mathews* Date 09/04/19

email: Wesley.mathews@dvn.com Telephone 575-513-8608

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

- Approved     
  Approved with Attached Conditions of Approval     
  Denied     
  Deferral Approved

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# **Appendix B**

## **Groundwater**





---

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

---

(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are smallest to largest) (NAD83 UTM in meters)

No records found.

**PLSS Search:**

**Township:** 25S      **Range:** 32E

---

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

---

4/11/19 7:27 AM

WATER COLUMN/ AVERAGE  
DEPTH TO WATER

# **Appendix C**

## **Analytical Results**



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

April 19, 2019

Bob Allen  
Safety & Environmental Solutions  
PO Box 1613  
Hobbs, NM 88241  
TEL: (575) 397-0510  
FAX (575) 393-4388

RE: DEVON Cotton Dran 237

OrderNo.: 1904673

Dear Bob Allen:

Hall Environmental Analysis Laboratory received 12 sample(s) on 4/12/2019 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](http://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 white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-1 Surface

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 8:50:00 AM

**Lab ID:** 1904673-001

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	4500	150		mg/Kg	50	4/17/2019 4:39:28 PM	44358
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	7000	96		mg/Kg	10	4/16/2019 1:46:59 PM	44344
Motor Oil Range Organics (MRO)	2500	480		mg/Kg	10	4/16/2019 1:46:59 PM	44344
Surr: DNOP	0	70-130	S	%Rec	10	4/16/2019 1:46:59 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	130	4.9		mg/Kg	1	4/15/2019 6:43:31 PM	44315
Surr: BFB	1250	73.8-119	S	%Rec	1	4/15/2019 6:43:31 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	4/15/2019 6:43:31 PM	44315
Toluene	0.22	0.049		mg/Kg	1	4/15/2019 6:43:31 PM	44315
Ethylbenzene	0.83	0.049		mg/Kg	1	4/15/2019 6:43:31 PM	44315
Xylenes, Total	6.3	0.097		mg/Kg	1	4/15/2019 6:43:31 PM	44315
Surr: 4-Bromofluorobenzene	172	80-120	S	%Rec	1	4/15/2019 6:43:31 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode



# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-1Ft

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 9:00:00 AM

**Lab ID:** 1904673-002

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	290	60		mg/Kg	20	4/16/2019 5:56:23 PM	44358
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/16/2019 2:34:03 PM	44344
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/16/2019 2:34:03 PM	44344
Surr: DNOP	107	70-130		%Rec	1	4/16/2019 2:34:03 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2019 7:07:07 PM	44315
Surr: BFB	97.8	73.8-119		%Rec	1	4/15/2019 7:07:07 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	4/15/2019 7:07:07 PM	44315
Toluene	ND	0.048		mg/Kg	1	4/15/2019 7:07:07 PM	44315
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2019 7:07:07 PM	44315
Xylenes, Total	ND	0.095		mg/Kg	1	4/15/2019 7:07:07 PM	44315
Surr: 4-Bromofluorobenzene	89.4	80-120		%Rec	1	4/15/2019 7:07:07 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-2 Surface

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 9:10:00 AM

**Lab ID:** 1904673-003

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	1900	60		mg/Kg	20	4/16/2019 6:08:48 PM	44358
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	8200	99		mg/Kg	10	4/16/2019 2:58:03 PM	44344
Motor Oil Range Organics (MRO)	3000	490		mg/Kg	10	4/16/2019 2:58:03 PM	44344
Surr: DNOP	0	70-130	S	%Rec	10	4/16/2019 2:58:03 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	150	4.9		mg/Kg	1	4/15/2019 7:30:37 PM	44315
Surr: BFB	1430	73.8-119	S	%Rec	1	4/15/2019 7:30:37 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	4/15/2019 7:30:37 PM	44315
Toluene	0.14	0.049		mg/Kg	1	4/15/2019 7:30:37 PM	44315
Ethylbenzene	0.95	0.049		mg/Kg	1	4/15/2019 7:30:37 PM	44315
Xylenes, Total	6.1	0.098		mg/Kg	1	4/15/2019 7:30:37 PM	44315
Surr: 4-Bromofluorobenzene	208	80-120	S	%Rec	1	4/15/2019 7:30:37 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-2 1Ft

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 9:15:00 AM

**Lab ID:** 1904673-004

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	320	60		mg/Kg	20	4/17/2019 10:39:32 AM	44386
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/16/2019 3:46:19 PM	44344
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/16/2019 3:46:19 PM	44344
Surr: DNOP	107	70-130		%Rec	1	4/16/2019 3:46:19 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/15/2019 8:41:10 PM	44315
Surr: BFB	89.0	73.8-119		%Rec	1	4/15/2019 8:41:10 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	4/15/2019 8:41:10 PM	44315
Toluene	ND	0.048		mg/Kg	1	4/15/2019 8:41:10 PM	44315
Ethylbenzene	ND	0.048		mg/Kg	1	4/15/2019 8:41:10 PM	44315
Xylenes, Total	ND	0.096		mg/Kg	1	4/15/2019 8:41:10 PM	44315
Surr: 4-Bromofluorobenzene	87.9	80-120		%Rec	1	4/15/2019 8:41:10 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-3 Surface

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 9:30:00 AM

**Lab ID:** 1904673-005

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	1000	60		mg/Kg	20	4/17/2019 11:16:46 AM	44386
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	4900	91		mg/Kg	10	4/16/2019 4:10:32 PM	44344
Motor Oil Range Organics (MRO)	1800	460		mg/Kg	10	4/16/2019 4:10:32 PM	44344
Surr: DNOP	0	70-130	S	%Rec	10	4/16/2019 4:10:32 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	110	4.8		mg/Kg	1	4/15/2019 9:04:33 PM	44315
Surr: BFB	969	73.8-119	S	%Rec	1	4/15/2019 9:04:33 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	4/15/2019 9:04:33 PM	44315
Toluene	0.14	0.048		mg/Kg	1	4/15/2019 9:04:33 PM	44315
Ethylbenzene	0.49	0.048		mg/Kg	1	4/15/2019 9:04:33 PM	44315
Xylenes, Total	4.7	0.095		mg/Kg	1	4/15/2019 9:04:33 PM	44315
Surr: 4-Bromofluorobenzene	136	80-120	S	%Rec	1	4/15/2019 9:04:33 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-3 1Ft

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 9:40:00 AM

**Lab ID:** 1904673-006

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	63	61		mg/Kg	20	4/17/2019 11:54:02 AM	44386
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/16/2019 4:58:42 PM	44344
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/16/2019 4:58:42 PM	44344
Surr: DNOP	106	70-130		%Rec	1	4/16/2019 4:58:42 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2019 9:27:49 PM	44315
Surr: BFB	97.8	73.8-119		%Rec	1	4/15/2019 9:27:49 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	4/15/2019 9:27:49 PM	44315
Toluene	ND	0.047		mg/Kg	1	4/15/2019 9:27:49 PM	44315
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2019 9:27:49 PM	44315
Xylenes, Total	ND	0.094		mg/Kg	1	4/15/2019 9:27:49 PM	44315
Surr: 4-Bromofluorobenzene	92.8	80-120		%Rec	1	4/15/2019 9:27:49 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-4 Surface

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 9:55:00 AM

**Lab ID:** 1904673-007

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	5000	300		mg/Kg	100	4/17/2019 4:51:53 PM	44386
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	6900	92		mg/Kg	10	4/16/2019 5:23:03 PM	44344
Motor Oil Range Organics (MRO)	2700	460		mg/Kg	10	4/16/2019 5:23:03 PM	44344
Surr: DNOP	0	70-130	S	%Rec	10	4/16/2019 5:23:03 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	120	4.9		mg/Kg	1	4/15/2019 9:51:08 PM	44315
Surr: BFB	1060	73.8-119	S	%Rec	1	4/15/2019 9:51:08 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	4/15/2019 9:51:08 PM	44315
Toluene	0.091	0.049		mg/Kg	1	4/15/2019 9:51:08 PM	44315
Ethylbenzene	0.60	0.049		mg/Kg	1	4/15/2019 9:51:08 PM	44315
Xylenes, Total	5.7	0.098		mg/Kg	1	4/15/2019 9:51:08 PM	44315
Surr: 4-Bromofluorobenzene	149	80-120	S	%Rec	1	4/15/2019 9:51:08 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-4 1Ft

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 10:05:00 AM

**Lab ID:** 1904673-008

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	68	60		mg/Kg	20	4/17/2019 12:43:41 PM	44386
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	4/16/2019 6:11:40 PM	44344
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/16/2019 6:11:40 PM	44344
Surr: DNOP	151	70-130	S	%Rec	1	4/16/2019 6:11:40 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2019 10:14:29 PM	44315
Surr: BFB	98.8	73.8-119		%Rec	1	4/15/2019 10:14:29 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	4/15/2019 10:14:29 PM	44315
Toluene	ND	0.047		mg/Kg	1	4/15/2019 10:14:29 PM	44315
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2019 10:14:29 PM	44315
Xylenes, Total	ND	0.093		mg/Kg	1	4/15/2019 10:14:29 PM	44315
Surr: 4-Bromofluorobenzene	90.9	80-120		%Rec	1	4/15/2019 10:14:29 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-5 Surface

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 10:15:00 AM

**Lab ID:** 1904673-009

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	4700	150		mg/Kg	50	4/17/2019 5:04:18 PM	44386
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	5600	93		mg/Kg	10	4/16/2019 6:35:46 PM	44344
Motor Oil Range Organics (MRO)	2200	460		mg/Kg	10	4/16/2019 6:35:46 PM	44344
Surr: DNOP	0	70-130	S	%Rec	10	4/16/2019 6:35:46 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	80	4.8		mg/Kg	1	4/15/2019 10:37:52 PM	44315
Surr: BFB	805	73.8-119	S	%Rec	1	4/15/2019 10:37:52 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	4/15/2019 10:37:52 PM	44315
Toluene	0.062	0.048		mg/Kg	1	4/15/2019 10:37:52 PM	44315
Ethylbenzene	0.27	0.048		mg/Kg	1	4/15/2019 10:37:52 PM	44315
Xylenes, Total	2.6	0.096		mg/Kg	1	4/15/2019 10:37:52 PM	44315
Surr: 4-Bromofluorobenzene	124	80-120	S	%Rec	1	4/15/2019 10:37:52 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode



# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-5 1Ft

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 10:20:00 AM

**Lab ID:** 1904673-010

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	1100	60		mg/Kg	20	4/17/2019 1:08:31 PM	44386
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/16/2019 7:23:42 PM	44344
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/16/2019 7:23:42 PM	44344
Surr: DNOP	104	70-130		%Rec	1	4/16/2019 7:23:42 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2019 11:01:24 PM	44315
Surr: BFB	94.2	73.8-119		%Rec	1	4/15/2019 11:01:24 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	4/15/2019 11:01:24 PM	44315
Toluene	ND	0.047		mg/Kg	1	4/15/2019 11:01:24 PM	44315
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2019 11:01:24 PM	44315
Xylenes, Total	ND	0.093		mg/Kg	1	4/15/2019 11:01:24 PM	44315
Surr: 4-Bromofluorobenzene	89.0	80-120		%Rec	1	4/15/2019 11:01:24 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-6 Surface

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 10:30:00 AM

**Lab ID:** 1904673-011

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	1500	60		mg/Kg	20	4/17/2019 1:20:56 PM	44386
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	8300	96		mg/Kg	10	4/16/2019 7:47:33 PM	44344
Motor Oil Range Organics (MRO)	3000	480		mg/Kg	10	4/16/2019 7:47:33 PM	44344
Surr: DNOP	0	70-130	S	%Rec	10	4/16/2019 7:47:33 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	200	4.7		mg/Kg	1	4/15/2019 11:24:59 PM	44315
Surr: BFB	1700	73.8-119	S	%Rec	1	4/15/2019 11:24:59 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	4/15/2019 11:24:59 PM	44315
Toluene	0.30	0.047		mg/Kg	1	4/15/2019 11:24:59 PM	44315
Ethylbenzene	1.4	0.047		mg/Kg	1	4/15/2019 11:24:59 PM	44315
Xylenes, Total	12	0.094		mg/Kg	1	4/15/2019 11:24:59 PM	44315
Surr: 4-Bromofluorobenzene	244	80-120	S	%Rec	1	4/15/2019 11:24:59 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1904673

Date Reported: 4/19/2019

**CLIENT:** Safety & Environmental Solutions

**Client Sample ID:** AH-6 1Ft

**Project:** DEVON Cotton Dran 237

**Collection Date:** 4/10/2019 10:45:00 AM

**Lab ID:** 1904673-012

**Matrix:** SOIL

**Received Date:** 4/12/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>smb</b>
Chloride	ND	60		mg/Kg	20	4/17/2019 1:33:21 PM	44386
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	4/16/2019 8:35:11 PM	44344
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/16/2019 8:35:11 PM	44344
Surr: DNOP	113	70-130		%Rec	1	4/16/2019 8:35:11 PM	44344
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/15/2019 11:48:32 PM	44315
Surr: BFB	100	73.8-119		%Rec	1	4/15/2019 11:48:32 PM	44315
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	4/15/2019 11:48:32 PM	44315
Toluene	ND	0.047		mg/Kg	1	4/15/2019 11:48:32 PM	44315
Ethylbenzene	ND	0.047		mg/Kg	1	4/15/2019 11:48:32 PM	44315
Xylenes, Total	ND	0.093		mg/Kg	1	4/15/2019 11:48:32 PM	44315
Surr: 4-Bromofluorobenzene	92.6	80-120		%Rec	1	4/15/2019 11:48:32 PM	44315

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified at testcode

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1904673

19-Apr-19

**Client:** Safety & Environmental Solutions  
**Project:** DEVON Cotton Dran 237

Sample ID: <b>MB-44358</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>44358</b>	RunNo: <b>59169</b>								
Prep Date: <b>4/16/2019</b>	Analysis Date: <b>4/16/2019</b>	SeqNo: <b>1992911</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-44358</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>44358</b>	RunNo: <b>59169</b>								
Prep Date: <b>4/16/2019</b>	Analysis Date: <b>4/16/2019</b>	SeqNo: <b>1992912</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.3	90	110			

Sample ID: <b>MB-44386</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>44386</b>	RunNo: <b>59238</b>								
Prep Date: <b>4/17/2019</b>	Analysis Date: <b>4/17/2019</b>	SeqNo: <b>1994321</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-44386</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>44386</b>	RunNo: <b>59238</b>								
Prep Date: <b>4/17/2019</b>	Analysis Date: <b>4/17/2019</b>	SeqNo: <b>1994322</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.0	90	110			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | E Value above quantitation range  |
| H Holding times for preparation or analysis exceeded    | ND Not Detected at the Reporting Limit                                  |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit  |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified at testcode |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1904673

19-Apr-19

Client: Safety &amp; Environmental Solutions

Project: DEVON Cotton Dran 237

Sample ID: <b>MB-44344</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>44344</b>	RunNo: <b>59163</b>								
Prep Date: <b>4/15/2019</b>	Analysis Date: <b>4/16/2019</b>	SeqNo: <b>1992029</b>			Units: <b>mg/Kg</b>					
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	11		10.00		110	70	130			

Sample ID: <b>LCS-44344</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>44344</b>	RunNo: <b>59163</b>								
Prep Date: <b>4/15/2019</b>	Analysis Date: <b>4/16/2019</b>	SeqNo: <b>1992030</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.6	63.9	124			
Surr: DNOP	5.1		5.000		101	70	130			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
H Holding times for preparation or analysis exceeded  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

E Value above quantitation range  
ND Not Detected at the Reporting Limit  
RL Reporting Detection Limit  
W Sample container temperature is out of limit as specified at testcode

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1904673

19-Apr-19

Client: Safety &amp; Environmental Solutions

Project: DEVON Cotton Dran 237

Sample ID: <b>MB-44315</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>44315</b>	RunNo: <b>59156</b>								
Prep Date: <b>4/12/2019</b>	Analysis Date: <b>4/15/2019</b>	SeqNo: <b>1991227</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	890		1000		89.2	73.8	119			

Sample ID: <b>LCS-44315</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>44315</b>	RunNo: <b>59156</b>								
Prep Date: <b>4/12/2019</b>	Analysis Date: <b>4/15/2019</b>	SeqNo: <b>1991228</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.7	80.1	123			
Surr: BFB	1000		1000		100	73.8	119			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
H Holding times for preparation or analysis exceeded  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

E Value above quantitation range  
ND Not Detected at the Reporting Limit  
RL Reporting Detection Limit  
W Sample container temperature is out of limit as specified at testcode

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1904673

19-Apr-19

**Client:** Safety & Environmental Solutions

**Project:** DEVON Cotton Dran 237

Sample ID: <b>MB-44315</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>44315</b>	RunNo: <b>59156</b>								
Prep Date: <b>4/12/2019</b>	Analysis Date: <b>4/15/2019</b>	SeqNo: <b>1991269</b>	Units: <b>mg/Kg</b>							
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	0.89		1.000		88.7	80	120			

Sample ID: <b>LCS-44315</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>44315</b>	RunNo: <b>59156</b>								
Prep Date: <b>4/12/2019</b>	Analysis Date: <b>4/15/2019</b>	SeqNo: <b>1991270</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	90.4	80	120			
Toluene	0.95	0.050	1.000	0	95.4	80	120			
Ethylbenzene	0.97	0.050	1.000	0	96.6	80	120			
Xylenes, Total	2.9	0.10	3.000	0	96.8	80	120			
Surr: 4-Bromofluorobenzene	0.89		1.000		89.4	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | E Value above quantitation range  |
| H Holding times for preparation or analysis exceeded    | ND Not Detected at the Reporting Limit                                  |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit  |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified at testcode |

**Sample Log-In Check List**

Client Name: **Safety Env Solutions**

Work Order Number: **1904673**

RcptNo: 1

Received By: **Desiree Dominguez** 4/12/2019 9:00:00 AM

Completed By: **Leah Baca** 4/12/2019 9:26:13 AM

Reviewed By: *LB* 4/12/19

*DD*  
*Leah Baca*

Labeled by DAD 4/12/19  
**Chain of Custody**

1. Is Chain of Custody 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. VOA vials have zero headspace? Yes  No  No VOA Vials

10. Were any sample containers received broken? Yes  No

11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)

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? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: DAD 4/12/19

**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	1.7	Good	Yes			



# Chain-of-Custody Record

Client: Safety & Environmental Solutions

Mailing Address: 703 E. Clinton Hobbs NM 88240

Phone #: 575-397-0510

email or Fax#: \_\_\_\_\_  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation:  NELAP  Other \_\_\_\_\_  
 EDD (Type) \_\_\_\_\_

Turn-Around Time: 5 Day Rush  
 Standard  Rush  
 Project Name: Devon Cotton Draw 237  
 Project #: DEV-19-003

Project Manager: Allen, Bob  
 Sampler: Sam Jones  
 On Ice:  Yes  No  
 Sample Temperature: 1.7°C

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
04/10	0850	S	Att-1 Surface	1	Ice	1904673
	0900	S	Att-1 LF	1	NGAT	-001
	0910	S	Att-2 Surface	1		-002
	0915	S	Att-2 LF	1		-004
	0930	S	Att-3 Surface	1		-005
	0940	S	Att-3 LF	1		-006
	0955	S	Att-4 Surface	1		-007
	1005	S	Att-4 LF	1		-008
	1015	S	Att-5 Surface	1		-009
	1020	S	Att-5 LF	1		-010
	1030	S	Att-6 Surface	1		-011
	1045	S	Att-6 LF	1		-012

Date: 04/10/19 Time: 1500 Relinquished by: Sam Jones  
 Date: 4/11/19 Time: 1900 Relinquished by: [Signature]

Received by: [Signature] Date: 4/11/19 Time: 1500  
 Received by: BB Courter Date: 4/12/19 Time: 9:00

# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

BTEX + MTBE + TMB's (8021)	
BTEX + MTBE + TPH (Gas only)	X
TPH 8015B (GRO / DRO / MRO)	X
TPH (Method 418.1)	
EDB (Method 504.1)	
PAH's (8310 or 8270 SIMS)	
RCRA 8 Metals	
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	
8081 Pesticides / 8082 PCB's	
8260B (VOA)	
8270 (Semi-VOA)	X
Air Bubbles (Y or N)	X

Remarks: \_\_\_\_\_

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.

# **Appendix D**

## **Site Photos**



**Devon Energy  
Cotton Draw #237  
30-025-41996**



Impacted area inside battery



Spill Run Facing East



Spill facing South



Impacted Pasture



Impacted area facing North



Impacted area facing West