

Devon Energy Production Company

**Snapping 2 State #3H
Delineation Report & Work Plan**

**Section 02, Township 26S, Range 31E
Eddy County, New Mexico**

2RP-5122

30-015-39036

May 24, 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**

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I. Company Contacts

Representative	Company	Telephone	E-mail
Amanda T. Davis	Devon Energy	575-748-0176	Amanda.davis@dvn.com
Bob Allen	SESI	575-397-0510	ballen@sesi-nm.com

II. Background

Safety and Environmental Solutions, Inc., hereinafter referred to as (SESI) was engaged by Devon Energy Production Company to assess a spill area with the open NMOCD permit of 2RP-5122.

According to the C-141: the cause of release, was due to a bypass line on the 3 phase separator leaking (Figure 2). There was an approximate release of 114 bbls of produced water. Approximately 1, 566 square feet of surface area on the location was impacted.

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 records indicates the average depth to groundwater for the area to be 317' bgs. The Point of Diversion Summary indicates the closest well of records to be POD Number C02090 located approximately 1.7 miles East at a depth of 335' 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 belonging to the Simona-Pajarito association; sandy, deep soils and soils that are shallow to caliche from wind worked deposits.

Table 1 Closure Criteria for Soils Impacted by a Release			
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 30, 2019 SESI personnel, together with Mr. Wilson of Devon were on site to assess the spill area, as well conducting soil delineation efforts. Seven (7) Auger Holes (AH) were advanced, commencing at surface and 1' bgs. Increments in order to determine the vertical and horizontal impact of the spill. 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 EPA Method 8015 M/D	GRO EPA Method 8015D	BTEX EPA Method 8021
AH1-Surface	15000	120	110	ND	ND
AH1 @ 1ft	5500	ND	ND	ND	ND
AH2-Surface	250	100	74	ND	ND
AH2 @ 1ft	1000	22	ND	ND	ND
AH3-Surface	5000	140	82	ND	ND
AH3 @ 1ft	3800	ND	ND	ND	ND
AH4-Surface	3700	14	ND	ND	ND
AH4 @ 1ft	1100	ND	ND	ND	ND
AH5-Surface	13000	ND	ND	ND	ND
AH5 @ 1ft	3000	ND	ND	ND	ND
AH6-Surface	6700	ND	ND	ND	ND
AH6 @ 1ft	3700	ND	ND	ND	ND
AH7-Surface	5500	36	ND	ND	ND
AH7 @ 1ft	3700	ND	ND	ND	ND

VI. Action Plan

Based on the NMOCD soil screening levels and depth to groundwater for this area: Petroleum Hydrocarbons were not the constituency of concern in this spill. The Chloride levels were < 20, 000 mg/kg. Therefore, SESI is proposing to remove surface impact, and drag location for cosmetic appeal. The pad area will be restored with like material and returned to grade.

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

Devon Snapping 2 State 3H

Figure 1 Vicinity Map

Legend



26S 31E

N32.0652°

Pipeline Rd

W103.745°

W10

Figure 2 Site Plan

Legend

- Auger Hole Positions
- Spill Area 1



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

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	NAB1835359072
District RP	2RP-5122
Facility ID	
Application ID	pAB1835358538

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@divn.com	Incident # (assigned by OCD) NAB1835359072
Contact mailing address 6488 Seven Rivers Hwy	

Location of Release Source

Latitude 32.0657463 Longitude -103.7554474
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Snapping 2 State #3H	Site Type Oil
Date Release Discovered 11/21/2018	API# (if applicable) 3001539036

Unit Letter	Section	Township	Range	County
M	02	26S	31E	Eddy

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 checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 114	Volume Recovered (bbls) 10
	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 Bypass line on 3 phase separator leaked produced water on location. Spill area 99'x45'x.083" and 45'x50'x.083"

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? This is considered a major release because it is more than 25 BBLS.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Yes, immediate notification was made by Amanda Davis to Mike Bratcher, Maria Pruett, Ryan Mann and Jim Griswold. The notification was made via email on Wednesday 21, 2011 at 1:11 PM.	

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 checked="" 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: 	
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: Kendra DeHoyos	Title: EHS Associate
Signature: _____	Date: 12/4/2018
email: kendra.dehoyos@dvn.com	Telephone: 575-748-3371
<u>OCD Only</u>	
Received by: 	Date: 12/19/2018

Appendix B

Groundwater



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

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

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

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Code	Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	DepthWell	DepthWater	Water Column
C 01777	C	ED					08	26S	31E	613245	3547409*	325	300	25
C 02090	C	ED		4	4	01		26S	31E	620329	3548533*	350	335	15
C 02248	CUB	ED		1	2	3	08	26S	31E	612942	3547316*	300	292	8
C 02249	CUB	ED		1	2	3	08	26S	31E	612942	3547316*	300	292	8
C 03554 POD1	CUB	ED		2	1	4	01	26S	31E	620547	3549148	630	300	330
C 03639 POD1	CUB	ED		3	4	2	01	26S	31E	620168	3549279	700	365	335
C 04256 POD1	C	ED		4	4	2	01	26S	31E	620384	3549257	666	340	326

Average Depth to Water: **317 feet**

Minimum Depth: **292 feet**

Maximum Depth: **365 feet**

Record Count: 7

PLSS Search:

Township: 26S **Range:** 31E

*UTM location was derived from PLSS - see Help

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.


4/30/19 8:00 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER



New Mexico Office of the State Engineer

Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest)					(NAD83 UTM in meters)		
Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	C 02090	4	4	01	26S	31E		620329	3548533* 
<hr/>									
Driller License:		Driller Company:							
Driller Name:									
Drill Start Date:		Drill Finish Date:				12/31/1965		Plug Date:	
Log File Date:		PCW Rcv Date:				Source:			
Pump Type:		Pipe Discharge Size:				Estimated Yield: 5 GPM			
Casing Size: 8.00		Depth Well: 350 feet				Depth Water: 335 feet			

*UTM location was derived from PLSS - see Help

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.

6/5/19 9:57 AM

POINT OF DIVERSION SUMMARY

Devon PODS

Water Well location

Legend

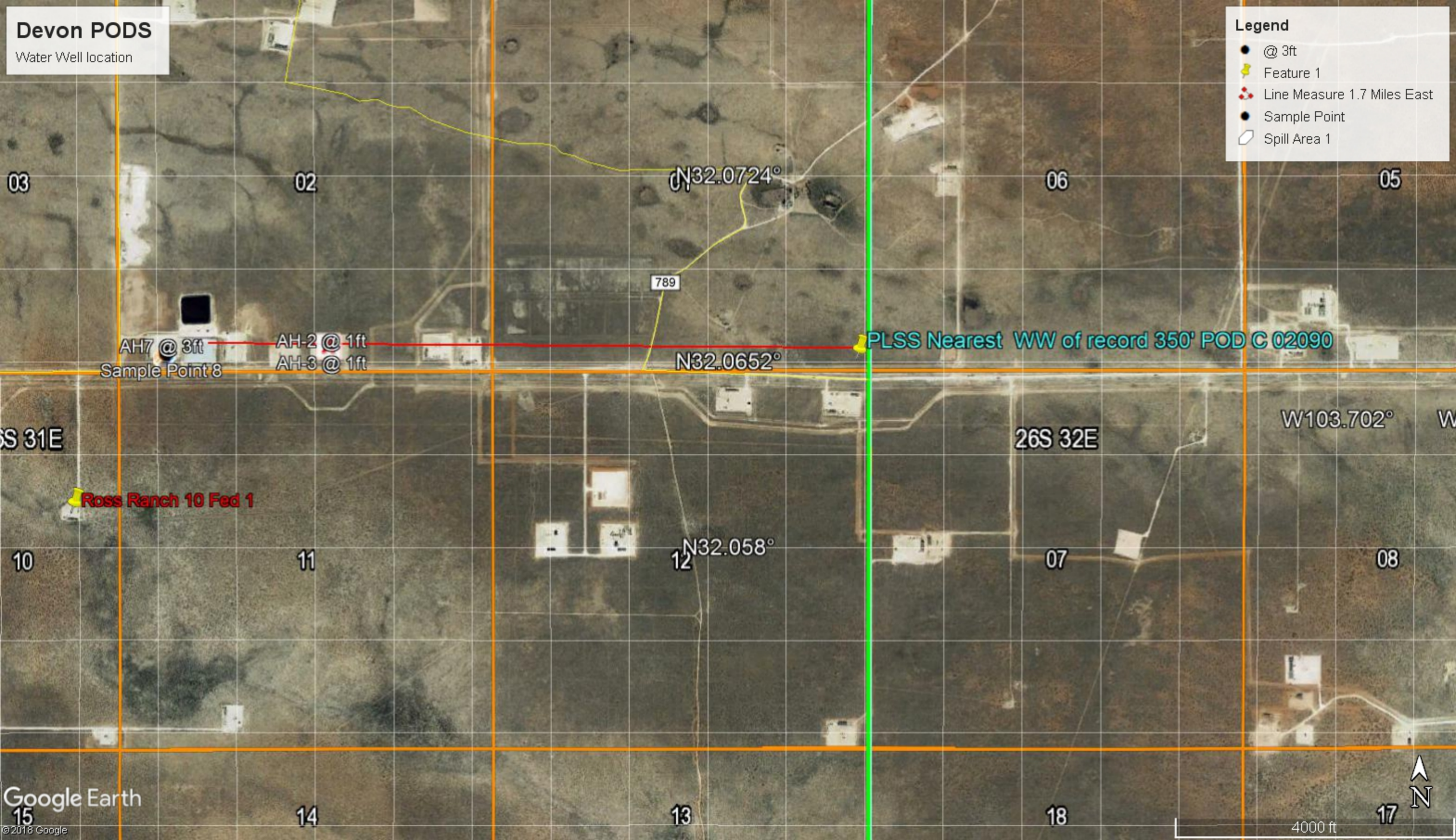
@ 3ft

Feature 1

Line Measure 1.7 Miles East

Sample Point

Spill Area 1



Appendix C

Analytical Results

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH1 Surface

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 10:15:00 AM

Lab ID: 1905164-001

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	15000	600		mg/Kg	200	5/9/2019 3:17:55 AM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	120	9.6		mg/Kg	1	5/7/2019 6:23:37 PM	44745
Motor Oil Range Organics (MRO)	110	48		mg/Kg	1	5/7/2019 6:23:37 PM	44745
Surr: DNOP	82.4	70-130		%Rec	1	5/7/2019 6:23:37 PM	44745
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/7/2019 11:34:43 PM	44730
Surr: BFB	95.7	73.8-119		%Rec	1	5/7/2019 11:34:43 PM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.025		mg/Kg	1	5/7/2019 11:34:43 PM	44730
Toluene	ND	0.050		mg/Kg	1	5/7/2019 11:34:43 PM	44730
Ethylbenzene	ND	0.050		mg/Kg	1	5/7/2019 11:34:43 PM	44730
Xylenes, Total	ND	0.10		mg/Kg	1	5/7/2019 11:34:43 PM	44730
Surr: 4-Bromofluorobenzene	92.1	80-120		%Rec	1	5/7/2019 11:34:43 PM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH1 1ft

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 10:25:00 AM

Lab ID: 1905164-002

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	5500	300		mg/Kg	100	5/9/2019 3:30:20 AM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/7/2019 6:48:07 PM	44745
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/7/2019 6:48:07 PM	44745
Surr: DNOP	78.0	70-130		%Rec	1	5/7/2019 6:48:07 PM	44745
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/8/2019 12:43:02 AM	44730
Surr: BFB	96.3	73.8-119		%Rec	1	5/8/2019 12:43:02 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.024		mg/Kg	1	5/8/2019 12:43:02 AM	44730
Toluene	ND	0.048		mg/Kg	1	5/8/2019 12:43:02 AM	44730
Ethylbenzene	ND	0.048		mg/Kg	1	5/8/2019 12:43:02 AM	44730
Xylenes, Total	ND	0.097		mg/Kg	1	5/8/2019 12:43:02 AM	44730
Surr: 4-Bromofluorobenzene	94.7	80-120		%Rec	1	5/8/2019 12:43:02 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH2 Surface

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 11:15:00 AM

Lab ID: 1905164-003

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: smb
Chloride	250	60		mg/Kg	20	5/7/2019 12:58:12 PM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	100	9.7		mg/Kg	1	5/7/2019 7:12:45 PM	44745
Motor Oil Range Organics (MRO)	74	48		mg/Kg	1	5/7/2019 7:12:45 PM	44745
Surr: DNOP	80.6	70-130		%Rec	1	5/7/2019 7:12:45 PM	44745
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/8/2019 1:51:20 AM	44730
Surr: BFB	97.0	73.8-119		%Rec	1	5/8/2019 1:51:20 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.025		mg/Kg	1	5/8/2019 1:51:20 AM	44730
Toluene	ND	0.050		mg/Kg	1	5/8/2019 1:51:20 AM	44730
Ethylbenzene	ND	0.050		mg/Kg	1	5/8/2019 1:51:20 AM	44730
Xylenes, Total	ND	0.10		mg/Kg	1	5/8/2019 1:51:20 AM	44730
Surr: 4-Bromofluorobenzene	93.4	80-120		%Rec	1	5/8/2019 1:51:20 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH2 1ft

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 11:30:00 AM

Lab ID: 1905164-004

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: smb
Chloride	1000	60		mg/Kg	20	5/7/2019 1:10:36 PM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	22	9.5		mg/Kg	1	5/7/2019 7:37:10 PM	44745
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/7/2019 7:37:10 PM	44745
Surr: DNOP	81.7	70-130		%Rec	1	5/7/2019 7:37:10 PM	44745
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/8/2019 2:14:04 AM	44730
Surr: BFB	94.3	73.8-119		%Rec	1	5/8/2019 2:14:04 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.025		mg/Kg	1	5/8/2019 2:14:04 AM	44730
Toluene	ND	0.049		mg/Kg	1	5/8/2019 2:14:04 AM	44730
Ethylbenzene	ND	0.049		mg/Kg	1	5/8/2019 2:14:04 AM	44730
Xylenes, Total	ND	0.098		mg/Kg	1	5/8/2019 2:14:04 AM	44730
Surr: 4-Bromofluorobenzene	89.4	80-120		%Rec	1	5/8/2019 2:14:04 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH3 Surface

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 12:00:00 PM

Lab ID: 1905164-005

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	5000	150		mg/Kg	50	5/9/2019 3:42:44 AM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	140	9.2		mg/Kg	1	5/7/2019 8:01:36 PM	44745
Motor Oil Range Organics (MRO)	82	46		mg/Kg	1	5/7/2019 8:01:36 PM	44745
Surr: DNOP	88.3	70-130		%Rec	1	5/7/2019 8:01:36 PM	44745
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/8/2019 2:36:45 AM	44730
Surr: BFB	98.3	73.8-119		%Rec	1	5/8/2019 2:36:45 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.025		mg/Kg	1	5/8/2019 2:36:45 AM	44730
Toluene	ND	0.049		mg/Kg	1	5/8/2019 2:36:45 AM	44730
Ethylbenzene	ND	0.049		mg/Kg	1	5/8/2019 2:36:45 AM	44730
Xylenes, Total	ND	0.098		mg/Kg	1	5/8/2019 2:36:45 AM	44730
Surr: 4-Bromofluorobenzene	93.8	80-120		%Rec	1	5/8/2019 2:36:45 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH3 1ft

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 12:15:00 PM

Lab ID: 1905164-006

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	3800	150		mg/Kg	50	5/9/2019 3:55:08 AM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/8/2019 8:02:37 PM	44745
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/8/2019 8:02:37 PM	44745
Surr: DNOP	81.7	70-130		%Rec	1	5/8/2019 8:02:37 PM	44745
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/8/2019 4:30:27 AM	44730
Surr: BFB	95.5	73.8-119		%Rec	1	5/8/2019 4:30:27 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.025		mg/Kg	1	5/8/2019 4:30:27 AM	44730
Toluene	ND	0.049		mg/Kg	1	5/8/2019 4:30:27 AM	44730
Ethylbenzene	ND	0.049		mg/Kg	1	5/8/2019 4:30:27 AM	44730
Xylenes, Total	ND	0.098		mg/Kg	1	5/8/2019 4:30:27 AM	44730
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	5/8/2019 4:30:27 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH4 Surface

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 12:45:00 PM

Lab ID: 1905164-007

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	3700	150		mg/Kg	50	5/9/2019 4:07:33 AM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	14	9.8		mg/Kg	1	5/7/2019 8:50:34 PM	44745
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/7/2019 8:50:34 PM	44745
Surr: DNOP	83.6	70-130		%Rec	1	5/7/2019 8:50:34 PM	44745
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/8/2019 4:53:17 AM	44730
Surr: BFB	95.5	73.8-119		%Rec	1	5/8/2019 4:53:17 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.024		mg/Kg	1	5/8/2019 4:53:17 AM	44730
Toluene	ND	0.049		mg/Kg	1	5/8/2019 4:53:17 AM	44730
Ethylbenzene	ND	0.049		mg/Kg	1	5/8/2019 4:53:17 AM	44730
Xylenes, Total	ND	0.097		mg/Kg	1	5/8/2019 4:53:17 AM	44730
Surr: 4-Bromofluorobenzene	91.0	80-120		%Rec	1	5/8/2019 4:53:17 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions**Client Sample ID:** AH4 1ft**Project:** Devon Snapping 2 State 3H**Collection Date:** 4/30/2019 12:55:00 PM**Lab ID:** 1905164-008**Matrix:** SOIL**Received Date:** 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: smb
Chloride	1100	60		mg/Kg	20	5/7/2019 2:00:15 PM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/7/2019 9:14:49 PM	44745
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/7/2019 9:14:49 PM	44745
Surr: DNOP	84.9	70-130		%Rec	1	5/7/2019 9:14:49 PM	44745
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/8/2019 5:16:07 AM	44730
Surr: BFB	91.7	73.8-119		%Rec	1	5/8/2019 5:16:07 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.025		mg/Kg	1	5/8/2019 5:16:07 AM	44730
Toluene	ND	0.050		mg/Kg	1	5/8/2019 5:16:07 AM	44730
Ethylbenzene	ND	0.050		mg/Kg	1	5/8/2019 5:16:07 AM	44730
Xylenes, Total	ND	0.099		mg/Kg	1	5/8/2019 5:16:07 AM	44730
Surr: 4-Bromofluorobenzene	87.8	80-120		%Rec	1	5/8/2019 5:16:07 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH5 Surface

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 1:10:00 PM

Lab ID: 1905164-009

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	13000	600		mg/Kg	200	5/9/2019 4:19:57 AM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/7/2019 10:27:31 PM	44748
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/7/2019 10:27:31 PM	44748
Surr: DNOP	108	70-130		%Rec	1	5/7/2019 10:27:31 PM	44748
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/8/2019 5:38:43 AM	44730
Surr: BFB	92.8	73.8-119		%Rec	1	5/8/2019 5:38:43 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.024		mg/Kg	1	5/8/2019 5:38:43 AM	44730
Toluene	ND	0.048		mg/Kg	1	5/8/2019 5:38:43 AM	44730
Ethylbenzene	ND	0.048		mg/Kg	1	5/8/2019 5:38:43 AM	44730
Xylenes, Total	ND	0.096		mg/Kg	1	5/8/2019 5:38:43 AM	44730
Surr: 4-Bromofluorobenzene	86.4	80-120		%Rec	1	5/8/2019 5:38:43 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH5 1ft

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 1:35:00 PM

Lab ID: 1905164-010

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	3000	150		mg/Kg	50	5/9/2019 4:32:21 AM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	5/7/2019 11:40:00 PM	44748
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/7/2019 11:40:00 PM	44748
Surr: DNOP	87.9	70-130		%Rec	1	5/7/2019 11:40:00 PM	44748
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/8/2019 6:01:34 AM	44730
Surr: BFB	94.4	73.8-119		%Rec	1	5/8/2019 6:01:34 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.025		mg/Kg	1	5/8/2019 6:01:34 AM	44730
Toluene	ND	0.050		mg/Kg	1	5/8/2019 6:01:34 AM	44730
Ethylbenzene	ND	0.050		mg/Kg	1	5/8/2019 6:01:34 AM	44730
Xylenes, Total	ND	0.10		mg/Kg	1	5/8/2019 6:01:34 AM	44730
Surr: 4-Bromofluorobenzene	89.0	80-120		%Rec	1	5/8/2019 6:01:34 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH6 Surface

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 2:20:00 PM

Lab ID: 1905164-011

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	6700	300		mg/Kg	100	5/9/2019 9:07:31 AM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/8/2019 8:51:34 PM	44748
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/8/2019 8:51:34 PM	44748
Surr: DNOP	74.2	70-130		%Rec	1	5/8/2019 8:51:34 PM	44748
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/8/2019 6:24:22 AM	44730
Surr: BFB	92.5	73.8-119		%Rec	1	5/8/2019 6:24:22 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.024		mg/Kg	1	5/8/2019 6:24:22 AM	44730
Toluene	ND	0.049		mg/Kg	1	5/8/2019 6:24:22 AM	44730
Ethylbenzene	ND	0.049		mg/Kg	1	5/8/2019 6:24:22 AM	44730
Xylenes, Total	ND	0.098		mg/Kg	1	5/8/2019 6:24:22 AM	44730
Surr: 4-Bromofluorobenzene	88.2	80-120		%Rec	1	5/8/2019 6:24:22 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH6 1ft

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 2:35:00 PM

Lab ID: 1905164-012

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	3700	150		mg/Kg	50	5/9/2019 9:19:55 AM	44755
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/8/2019 12:52:08 AM	44748
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/8/2019 12:52:08 AM	44748
Surr: DNOP	94.9	70-130		%Rec	1	5/8/2019 12:52:08 AM	44748
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/8/2019 6:47:16 AM	44730
Surr: BFB	97.0	73.8-119		%Rec	1	5/8/2019 6:47:16 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.024		mg/Kg	1	5/8/2019 6:47:16 AM	44730
Toluene	ND	0.048		mg/Kg	1	5/8/2019 6:47:16 AM	44730
Ethylbenzene	ND	0.048		mg/Kg	1	5/8/2019 6:47:16 AM	44730
Xylenes, Total	ND	0.096		mg/Kg	1	5/8/2019 6:47:16 AM	44730
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	5/8/2019 6:47:16 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH7 Surface

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 3:10:00 PM

Lab ID: 1905164-013

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	5500	300		mg/Kg	100	5/9/2019 9:32:20 AM	44760
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	36	9.7		mg/Kg	1	5/8/2019 1:16:09 AM	44748
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/8/2019 1:16:09 AM	44748
Surr: DNOP	79.1	70-130		%Rec	1	5/8/2019 1:16:09 AM	44748
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/8/2019 7:10:07 AM	44730
Surr: BFB	93.7	73.8-119		%Rec	1	5/8/2019 7:10:07 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.024		mg/Kg	1	5/8/2019 7:10:07 AM	44730
Toluene	ND	0.049		mg/Kg	1	5/8/2019 7:10:07 AM	44730
Ethylbenzene	ND	0.049		mg/Kg	1	5/8/2019 7:10:07 AM	44730
Xylenes, Total	ND	0.097		mg/Kg	1	5/8/2019 7:10:07 AM	44730
Surr: 4-Bromofluorobenzene	89.2	80-120		%Rec	1	5/8/2019 7:10:07 AM	44730

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		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1905164**

Date Reported:

CLIENT: Safety & Environmental Solutions

Client Sample ID: AH7 1ft

Project: Devon Snapping 2 State 3H

Collection Date: 4/30/2019 3:20:00 PM

Lab ID: 1905164-014

Matrix: SOIL

Received Date: 5/3/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	3700	150		mg/Kg	50	5/9/2019 9:44:45 AM	44760
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	5/8/2019 1:40:11 AM	44748
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/8/2019 1:40:11 AM	44748
Surr: DNOP	86.6	70-130		%Rec	1	5/8/2019 1:40:11 AM	44748
EPA METHOD 8015D: GASOLINE RANGE							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/8/2019 7:32:52 AM	44730
Surr: BFB	96.2	73.8-119		%Rec	1	5/8/2019 7:32:52 AM	44730
EPA METHOD 8021B: VOLATILES							Analyst: RAA
Benzene	ND	0.024		mg/Kg	1	5/8/2019 7:32:52 AM	44730
Toluene	ND	0.049		mg/Kg	1	5/8/2019 7:32:52 AM	44730
Ethylbenzene	ND	0.049		mg/Kg	1	5/8/2019 7:32:52 AM	44730
Xylenes, Total	ND	0.097		mg/Kg	1	5/8/2019 7:32:52 AM	44730
Surr: 4-Bromofluorobenzene	91.2	80-120		%Rec	1	5/8/2019 7:32:52 AM	44730

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		

Appendix D

Site Photos

Devon Energy
Snapping 2 State #3H
04-30-19

