

APPROVED

By Olivia Yu at 7:45 am, Jul 17, 2018

**Devon Energy Production Co LP
Falcon 32 State 1 Battery
Work Plan**

NMOCD approves of the
delineation completed and
proposed remediation for
1RP-4947.

**Unit Letter F, Section 32, T23S, R32E
Lea County, New Mexico**

**30-025-33001
1RP-4947**

April 17, 2018



Prepared for:

**Devon Energy Production Co., LP
6488 Seven Rivers Hwy
Artesia, New Mexico 88211**

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
Mike Shoemaker	Devon Energy Prod.	575-746-5566	Mike.Shoemaker@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 to perform a site assessment on the Falcon 32 State 1 Battery, concerning a 31 bbls. release of oil and produced water. This site is situated in Lea County, Section 32, Township 23S, and Range 32E.

According to the C-141: Approximately thirty one (31) BBLS of produced water and six (6) BBLS of oil was released into dirt containment. Pressure was lost on the inlet separator and liquid flowed into the vent line causing the open top vent tank to overflow into the dirt SPCC containment. The wells going to the battery were shut in to prevent any further release. A vacuum truck was dispatched and recovered approximately thirty (30) BBLS produced water and five (5) BBLS oil. This is a CTB located on the Falcon 32 State 1 Battery which is a P&A well. Safety & Environmental Solutions was contacted for remediation.

III. Surface and Ground Water

The New Mexico Office of the State Engineer records indicates the average depth to groundwater for the area to be 584' bgs.

IV. Characterization

The target cleanup levels are determined using the *Guidelines for Remediation of Leaks, Spills and Releases* published by the NMOCD (August 13, 1993). Based on the ranking criteria presented below, 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 5,000 ppm Total Petroleum Hydrocarbons (TPH). Characterization of vertical extent of chloride concentration to a level of 250 mg/kg (PPM) is also required.

Depth to Ground Water:			
(Vertical distance from contaminants to seasonal high water elevation of groundwater)	Less than 50 feet	20 points	
	50 feet to 99 feet	10 points	
	>100 feet	0 points	X
Wellhead Protection Area:			
(Less than 200 feet from a private domestic water source; or less than 1000 feet from all other water sources)	Yes	20 points	
	No	0 points	X
Distance to Surface Water:			
(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet	20 points	
	200 feet to 1000 feet	10 points	
	>1000 feet	0 points	X
RANKING SCORE (TOTAL POINTS)			0

V. Work Performed

On March 29, 2018, SESI personnel was onsite at the Devon Falcon 32 State 1 Battery for the site assessment and delineation. It was determined that the spill was contained inside the berm, and no mechanical equipment can be used. The site area was assessed to determine where the sample points were to be installed. Four auger holes were installed and field tested for Chlorides. The release area and sample points were mapped using the Juno 3B and site photos of the release area were taken. All soil samples were properly packaged, preserved and transported to Hall Environmental Laboratories of Albuquerque, NM by chain of custody, and analyzed for TPH(total petroleum hydrocarbons)(Method 8015M), BTEX, and Chlorides (Method 300). The results are recapped in the following table:

Soil Sample Results: Hall Environmental Laboratories 4-10-2018								
SAMPLE ID	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX	TPH GRO	TPH DRO	Chlorides
Sample #1	ND	ND	ND	ND	ND	ND	470	89
Sample #2	ND	ND	ND	ND	ND	ND	17	140
Sample #3	ND	ND	ND	ND	ND	13	400	120
Sample #4	ND	ND	ND	ND	ND	ND	64	76

VI. Action Plan

The area of the impacted soil will be hand dug to a depth of twelve (12) inches or no deeper than eighteen (18) inches. Confirmation samples will be taken. Due to the requirement that no mechanized equipment be allowed inside the berm, we request that any remaining contamination be deferred. The excavation will be backfilled with uncontaminated soil and returned to natural grade and all contaminated soil will be transported to an NMOCD approved facility. Upon completion of this work plan, all necessary documentation and reports will be completed and distributed to the appropriate regulatory agencies.

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

Falcon 32 State 1 Battery
31bbls produced water/6bbls oil_1.15.18



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

WGS_1984_Web_Mercator_Auxiliary_Sphere
Prepared by: Sheila Fisher
Map is current as of: 22-Jan-2018



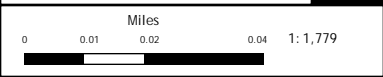


Figure 2

Site Plan

Falcon 32 State 1 Battery

Sample Points Map 3-29-18

Falcon 32 State 1 Battery

Legend

- Falcon 32 State 1 Battery
- Feature 1
- Sample
- Sample Point 1
- Sample Point 4

Sample Point 1

Sample Point 4

Sample point 3

Sample Point 2

Google Earth

40 ft

N

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

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Devon Energy Production Company	Contact	Wes Ryan, Production Foreman
Address	6488 Seven Rivers Hwy Artesia, NM 88210	Telephone No.	575-390-5436
Facility Name	Falcon 32 State 1 Battery	Facility Type	Oil
Surface Owner	State	Mineral Owner	State
		API No.	30-025-33001

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	32	23S	32E					Lea

Latitude_32.26221_ Longitude_-103.70023_ NAD83

NATURE OF RELEASE

Type of Release	Produced Water/Oil	Volume of Release	31bbls produced water/6bbls oil	Volume Recovered	30bbls produced water/5bbls oil
Source of Release	Open top vent tank	Date and Hour of Occurrence	January 15, 2018 @ 1:05 PM MST	Date and Hour of Discovery	January 15, 2018 @ 1:05 PM MST
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Olivia Yu, OCD Tammy Honea, SLO		
By Whom?	Mike Shoemaker, EHS Professional	Date and Hour	January 16, 2018 @ 6:44 AM MST		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	N/A		
If a Watercourse was Impacted, Describe Fully.*	N/A				

RECEIVED

By Olivia Yu at 9:15 am, Jan 30, 2018


Describe Cause of Problem and Remedial Action Taken.*

Lost pressure on the inlet separator and liquid flowed into vent line causing the open top vent tank to overflow into the dirt SPCC containment. The wells going to the battery were shut in to prevent any further release.

Describe Area Affected and Cleanup Action Taken.*

Approximately 31bbls produced water and 6bbls oil were released into dirt containment. A vacuum truck was dispatched and recovered approximately 30bbls produced water and 5bbls oil. This is a CTB located on the Falcon 32 State 1 pad which is a P&A well. A remediation contractor will be contacted to assist with delineation and remediation efforts.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: <i>Sheila Fisher</i>		OIL CONSERVATION DIVISION	
Printed Name: Sheila Fisher		Approved by Environmental Specialist: 	
Title: Field Admin Support		Approval Date: 1/30/2018	Expiration Date:
E-mail Address: Sheila.Fisher@dv.com		Conditions of Approval:	Attached <input checked="" type="checkbox"/>
Date: 1/22/18 Phone: 575.748.1829		see attached directive	

* Attach Additional Sheets If Necessary

1RP-4947

nOY1803033936

pOY1803035007

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 1/29/2018 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 1RP-4947 has been assigned. **Please refer to this case number in all future correspondence.**

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

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

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 1 office in Hobbs on or before 3/1/2018. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

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

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

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

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

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

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

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

Jim Griswold

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

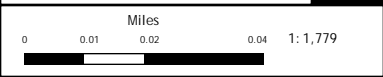
Falcon 32 State 1 Battery
31bbls produced water/6bbls oil_1.15.18



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WGS_1984_Web_Mercator_Auxiliary_Sphere
Prepared by: Sheila Fisher
Map is current as of: 22-Jan-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	Code	POD Sub- basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	DepthWell	DepthWater	Water Column
C_02216		CUB	LE	2	2	4	21	23S	32E	625035	3573261*	585	400	185
C_02349		CUB	ED		2	3	03	23S	32E	625678	3578004*	525		
C_03529 POD1		C	LE	2	4	3	29	23S	32E	622651	3571212	550		
C_03749 POD1		CUB	LE	3	4	4	07	23S	32E	616974	3575662	865	639	226
C_03851 POD1		CUB	LE	3	3	4	20	23S	32E	622880	3572660	1392	713	679

Average Depth to Water: **584 feet**

Minimum Depth: **400 feet**

Maximum Depth: **713 feet**

Record Count: 5

PLSS Search:

Township: 23S **Range:** 32E

*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.

3/14/18 10:45 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

April 10, 2018

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

RE: Devon Falcon 32001

OrderNo.: 1804001

Dear Bob Allen:

Hall Environmental Analysis Laboratory received 4 sample(s) on 3/31/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

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

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1804001**

Date Reported: **4/10/2018**

CLIENT: Safety & Environmental Solutions

Client Sample ID: Sample #1

Project: Devon Falcon 32001

Collection Date: 3/29/2018

Lab ID: 1804001-001

Matrix: SOIL

Received Date: 3/31/2018 12:45:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	89	30		mg/Kg	20	4/9/2018 1:40:09 PM	37490
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/4/2018 2:04:54 PM	37372
Surr: BFB	121	70-130		%Rec	1	4/4/2018 2:04:54 PM	37372
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	470	98		mg/Kg	10	4/4/2018 4:07:28 PM	37380
Motor Oil Range Organics (MRO)	560	490		mg/Kg	10	4/4/2018 4:07:28 PM	37380
Surr: DNOP	0	70-130	S	%Rec	10	4/4/2018 4:07:28 PM	37380
EPA METHOD 8260B: VOLATILES SHORT LIST							Analyst: AG
Methyl tert-butyl ether (MTBE)	ND	0.049		mg/Kg	1	4/4/2018 2:04:54 PM	37372
Benzene	ND	0.024		mg/Kg	1	4/4/2018 2:04:54 PM	37372
Toluene	ND	0.049		mg/Kg	1	4/4/2018 2:04:54 PM	37372
Ethylbenzene	ND	0.049		mg/Kg	1	4/4/2018 2:04:54 PM	37372
Xylenes, Total	ND	0.097		mg/Kg	1	4/4/2018 2:04:54 PM	37372
Surr: 4-Bromofluorobenzene	123	70-130		%Rec	1	4/4/2018 2:04:54 PM	37372
Surr: Toluene-d8	84.2	70-130		%Rec	1	4/4/2018 2:04:54 PM	37372

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 Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1804001**Date Reported: **4/10/2018****CLIENT:** Safety & Environmental Solutions**Client Sample ID:** Sample #2**Project:** Devon Falcon 32001**Collection Date:** 3/29/2018**Lab ID:** 1804001-002**Matrix:** SOIL**Received Date:** 3/31/2018 12:45:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	ND	30		mg/Kg	20	4/9/2018 1:52:33 PM	37490
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/4/2018 3:14:17 PM	37372
Surr: BFB	113	70-130		%Rec	1	4/4/2018 3:14:17 PM	37372
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	17	7.6		mg/Kg	1	4/3/2018 10:50:38 PM	37380
Motor Oil Range Organics (MRO)	ND	38		mg/Kg	1	4/3/2018 10:50:38 PM	37380
Surr: DNOP	94.0	70-130		%Rec	1	4/3/2018 10:50:38 PM	37380
EPA METHOD 8260B: VOLATILES SHORT LIST							Analyst: AG
Methyl tert-butyl ether (MTBE)	ND	0.050		mg/Kg	1	4/4/2018 3:14:17 PM	37372
Benzene	ND	0.025		mg/Kg	1	4/4/2018 3:14:17 PM	37372
Toluene	ND	0.050		mg/Kg	1	4/4/2018 3:14:17 PM	37372
Ethylbenzene	ND	0.050		mg/Kg	1	4/4/2018 3:14:17 PM	37372
Xylenes, Total	ND	0.10		mg/Kg	1	4/4/2018 3:14:17 PM	37372
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	4/4/2018 3:14:17 PM	37372
Surr: Toluene-d8	77.7	70-130		%Rec	1	4/4/2018 3:14:17 PM	37372

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 Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1804001**

Date Reported: **4/10/2018**

CLIENT: Safety & Environmental Solutions

Client Sample ID: Sample #3

Project: Devon Falcon 32001

Collection Date: 3/29/2018

Lab ID: 1804001-003

Matrix: SOIL

Received Date: 3/31/2018 12:45:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	120	30		mg/Kg	20	4/9/2018 2:29:47 PM	37490
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG
Gasoline Range Organics (GRO)	13	4.9		mg/Kg	1	4/4/2018 4:23:40 PM	37372
Surr: BFB	117	70-130		%Rec	1	4/4/2018 4:23:40 PM	37372
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	400	81		mg/Kg	10	4/4/2018 4:29:33 PM	37380
Motor Oil Range Organics (MRO)	430	410		mg/Kg	10	4/4/2018 4:29:33 PM	37380
Surr: DNOP	0	70-130	S	%Rec	10	4/4/2018 4:29:33 PM	37380
EPA METHOD 8260B: VOLATILES SHORT LIST							Analyst: AG
Methyl tert-butyl ether (MTBE)	ND	0.049		mg/Kg	1	4/4/2018 4:23:40 PM	37372
Benzene	ND	0.024		mg/Kg	1	4/4/2018 4:23:40 PM	37372
Toluene	ND	0.049		mg/Kg	1	4/4/2018 4:23:40 PM	37372
Ethylbenzene	ND	0.049		mg/Kg	1	4/4/2018 4:23:40 PM	37372
Xylenes, Total	ND	0.097		mg/Kg	1	4/4/2018 4:23:40 PM	37372
Surr: 4-Bromofluorobenzene	118	70-130		%Rec	1	4/4/2018 4:23:40 PM	37372
Surr: Toluene-d8	82.4	70-130		%Rec	1	4/4/2018 4:23:40 PM	37372

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 Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1804001**

Date Reported: **4/10/2018**

CLIENT: Safety & Environmental Solutions

Client Sample ID: Sample #4

Project: Devon Falcon 32001

Collection Date: 3/29/2018

Lab ID: 1804001-004

Matrix: SOIL

Received Date: 3/31/2018 12:45:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	76	30		mg/Kg	20	4/9/2018 2:42:12 PM	37490
EPA METHOD 8015D MOD: GASOLINE RANGE							Analyst: AG
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/4/2018 5:10:00 PM	37372
Surr: BFB	112	70-130		%Rec	1	4/4/2018 5:10:00 PM	37372
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	64	10		mg/Kg	1	4/3/2018 11:34:48 PM	37380
Motor Oil Range Organics (MRO)	64	50		mg/Kg	1	4/3/2018 11:34:48 PM	37380
Surr: DNOP	99.6	70-130		%Rec	1	4/3/2018 11:34:48 PM	37380
EPA METHOD 8260B: VOLATILES SHORT LIST							Analyst: AG
Methyl tert-butyl ether (MTBE)	ND	0.046		mg/Kg	1	4/4/2018 5:10:00 PM	37372
Benzene	ND	0.023		mg/Kg	1	4/4/2018 5:10:00 PM	37372
Toluene	ND	0.046		mg/Kg	1	4/4/2018 5:10:00 PM	37372
Ethylbenzene	ND	0.046		mg/Kg	1	4/4/2018 5:10:00 PM	37372
Xylenes, Total	ND	0.091		mg/Kg	1	4/4/2018 5:10:00 PM	37372
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	1	4/4/2018 5:10:00 PM	37372
Surr: Toluene-d8	83.0	70-130		%Rec	1	4/4/2018 5:10:00 PM	37372

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 Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804001

10-Apr-18

Client: Safety & Environmental Solutions

Project: Devon Falcon 32001

Sample ID	MB-37490		SampType:	mblk		TestCode:	EPA Method 300.0: Anions				
Client ID:	PBS		Batch ID:	37490		RunNo:	50408				
Prep Date:	4/9/2018		Analysis Date:	4/9/2018		SeqNo:	1634764		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	ND	1.5									

Sample ID	LCS-37490		SampType: lcs		TestCode: EPA Method 300.0: Anions					
Client ID:	LCSS		Batch ID: 37490		RunNo: 50408					
Prep Date:	4/9/2018		Analysis Date: 4/9/2018		SeqNo: 1634765		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.0	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804001

10-Apr-18

Client: Safety & Environmental Solutions

Project: Devon Falcon 32001

Sample ID	LCS-37380		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 37380		RunNo: 50268					
Prep Date:	4/2/2018		Analysis Date: 4/3/2018		SeqNo: 1628463		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	98.1	70	130			
Surr: DNOP	4.2		5.000		84.7	70	130			

Sample ID	MB-37380	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID:	PBS	Batch ID: 37380		RunNo: 50268						
Prep Date:	4/2/2018	Analysis Date: 4/3/2018		SeqNo: 1628464		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		98.6	70	130			

Sample ID	LCS-37405		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 37405		RunNo: 50301					
Prep Date:	4/3/2018		Analysis Date: 4/4/2018		SeqNo: 1630258		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.1		5.000		82.1	70	130			

Sample ID	MB-37405		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 37405		RunNo: 50301					
Prep Date:	4/3/2018		Analysis Date: 4/4/2018		SeqNo: 1630259		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.2		10.00		92.5	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804001

10-Apr-18

Client: Safety & Environmental Solutions

Project: Devon Falcon 32001

Sample ID	Ics-37372		SampType: LCS4		TestCode: EPA Method 8260B: Volatiles Short List					
Client ID:	BatchQC		Batch ID: 37372		RunNo: 50274					
Prep Date:	4/2/2018		Analysis Date: 4/3/2018		SeqNo: 1629196		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	89.4	80	120			
Toluene	0.91	0.050	1.000	0	90.6	80	120			
Ethylbenzene	0.99	0.050	1.000	0	99.4	80	120			
Xylenes, Total	3.0	0.10	3.000	0	99.8	80	120			
Surr: 4-Bromofluorobenzene	0.52		0.5000		103	70	130			
Surr: Toluene-d8	0.42		0.5000		83.1	70	130			

Sample ID	Ics-37399		SampType: LCS4		TestCode: EPA Method 8260B: Volatiles Short List					
Client ID:	BatchQC		Batch ID: 37399		RunNo: 50305					
Prep Date:	4/3/2018		Analysis Date: 4/4/2018		SeqNo: 1630018		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.9	70	130			
Surr: Toluene-d8	0.43		0.5000		86.0	70	130			

Sample ID	mb-37399		SampType: MBLK		TestCode: EPA Method 8260B: Volatiles Short List					
Client ID:	PBS		Batch ID: 37399		RunNo: 50305					
Prep Date:	4/3/2018		Analysis Date: 4/4/2018		SeqNo: 1630050		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.57		0.5000		114	70	130			
Surr: Toluene-d8	0.44		0.5000		87.5	70	130			

Sample ID	1804001-002ams		SampType: MS4		TestCode: EPA Method 8260B: Volatiles Short List					
Client ID:	Sample #2		Batch ID: 37372		RunNo: 50305					
Prep Date:	4/2/2018		Analysis Date: 4/4/2018		SeqNo: 1630620		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.89	0.048	0.9653	0	92.3	80	120			
Benzene	0.88	0.024	0.9653	0	90.8	80	120			
Toluene	0.94	0.048	0.9653	0.006082	96.6	80	120			
Ethylbenzene	1.0	0.048	0.9653	0	104	80	120			
Xylenes, Total	3.1	0.097	2.896	0.02727	105	80	120			
Surr: 4-Bromofluorobenzene	0.50		0.4826		103	70	130			
Surr: Toluene-d8	0.41		0.4826		85.3	70	130			

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 Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804001

10-Apr-18

Client: Safety & Environmental Solutions

Project: Devon Falcon 32001

Sample ID	1804001-002amsd	SampType:	MSD4	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	Sample #2	Batch ID:	37372	RunNo:	50305					
Prep Date:	4/2/2018	Analysis Date:	4/4/2018	SeqNo:	1630621	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.92	0.049	0.9823	0	93.6	80	120	3.18	0	
Benzene	0.88	0.025	0.9823	0	89.5	80	120	0.326	0	
Toluene	0.91	0.049	0.9823	0.006082	92.2	80	120	2.85	0	
Ethylbenzene	1.0	0.049	0.9823	0	105	80	120	2.22	0	
Xylenes, Total	3.1	0.098	2.947	0.02727	105	80	120	1.75	0	
Surr: 4-Bromofluorobenzene	0.49		0.4912		100	70	130	0	0	
Surr: Toluene-d8	0.41		0.4912		83.3	70	130	0	0	

Sample ID	mb-37372	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	PBS	Batch ID:	37372	RunNo:	50305					
Prep Date:	4/2/2018	Analysis Date:	4/4/2018	SeqNo:	1630651	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.050								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.57		0.5000		113	70	130			
Surr: Toluene-d8	0.42		0.5000		83.5	70	130			

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804001

10-Apr-18

Client: Safety & Environmental Solutions

Project: Devon Falcon 32001

Sample ID	Ics-37372		SampType: LCS			TestCode: EPA Method 8015D Mod: Gasoline Range				
Client ID:	LCSS		Batch ID: 37372			RunNo: 50274				
Prep Date:	4/2/2018		Analysis Date: 4/3/2018			SeqNo: 1629197		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	107	70	130			
Surr: BFB	500		500.0		100	70	130			

Sample ID	Ics-37399		SampType: LCS			TestCode: EPA Method 8015D Mod: Gasoline Range				
Client ID:	LCSS		Batch ID: 37399			RunNo: 50305				
Prep Date:	4/3/2018		Analysis Date: 4/4/2018			SeqNo: 1630013		Units: %Rec		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	510		500.0		103	70	130			

Sample ID	mb-37399		SampType: MBLK			TestCode: EPA Method 8015D Mod: Gasoline Range				
Client ID:	PBS		Batch ID: 37399			RunNo: 50305				
Prep Date:	4/3/2018		Analysis Date: 4/4/2018			SeqNo: 1630047		Units: %Rec		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	570		500.0		114	70	130			

Sample ID	1804001-001ams		SampType: MS			TestCode: EPA Method 8015D Mod: Gasoline Range				
Client ID:	Sample #1		Batch ID: 37372			RunNo: 50305				
Prep Date:	4/2/2018		Analysis Date: 4/4/2018			SeqNo: 1630540		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	31	4.8	24.04	2.996	115	64.7	142			
Surr: BFB	520		480.8		109	70	130			

Sample ID	1804001-001amsd		SampType: MSD			TestCode: EPA Method 8015D Mod: Gasoline Range				
Client ID:	Sample #1		Batch ID: 37372			RunNo: 50305				
Prep Date:	4/2/2018		Analysis Date: 4/4/2018			SeqNo: 1630541		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	33	4.9	24.39	2.996	124	64.7	142	7.98	20	
Surr: BFB	550		487.8		112	70	130	0	0	

Sample ID	mb-37372		SampType: MBLK			TestCode: EPA Method 8015D Mod: Gasoline Range				
Client ID:	PBS		Batch ID: 37372			RunNo: 50305				
Prep Date:	4/2/2018		Analysis Date: 4/4/2018			SeqNo: 1630579		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	560		500.0		112	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quantitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified



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

Sample Log-In Check List

Client Name: Safety Env Solutions

Work Order Number: 1804001

RcptNo: 1

Received By: Dennis Suazo

3/31/2018 12:45:00 PM

Dennis Suazo

Completed By: Isaiah Ortiz

4/2/2018 7:27:23 AM

Isaiah Ortiz

Reviewed By: *See 04/02/18*

LB: ENM

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 $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. 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?
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐
of preserved bottles checked for pH: *(<2 or >12 unless noted)*
Adjusted? *ENM 4/2/18*
Checked by: *ENM 4/2/18*

Special Handling (if applicable)

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

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.6	Good	Yes			

Appendix D

Site Photographs

Devon Falcon 32 State 1 Battery

Photos-3-28-2018







