NMOCD

<u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 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

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

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

**Release Notification and Corrective Action** 

MAY 1 4 2018 Form C-141 Revised April 3, 2017

						OPERA'	ГOR		☐ Initia	al Report	$\boxtimes$	Final Report
		lcorp Energy	y Compai	ny	- (	Contact Jer	mifer Deal					
Address 9a	CR 5793				,	Telephone 1	No. (505) 324-	5128				
Facility Nar	Facility Name Scott 2A					Facility Typ	e Gas Well					
Surface Owner Federal Mineral Owner					wner I	Private			API No	30-045-	21994	
				LOCA	TION	OF RE	LEASE					
Unit Letter	Section	Township	Range	Feet from the		South Line	Feet from the	East/V	West Line	County		
I	31	32N	10W	1650	South		980	East		San Juan (	County	
	I		Latitu	de_36.9390869_	Longi	tude107.	9182434	NAD8	3			
				NAT	URE	OF REL	EASE					
		ced Water/Hy					Release 5bbls			Recovered n		
Source of Re	lease Hole	in bottom of	Condensa	te tank			Hour of Occurrence	ce		Hour of Dis	covery	
W I 1	-4- NI-4' (	2:0				Unknown	When		3/6/2018	at 9:00am		
Was Immedia	ate Notice (		Yes	No Not Re	equired	If YES, To	w nom?					
By Whom?						Date and I	lour					
Was a Water	course Read		V V	1 No		If YES, Vo	olume Impacting t	the Wate	ercourse.			
			Yes 🗵									
If a Watercou	ırse was Im	pacted, Descr	ibe Fully.	k								
Describe Are	a Affected	and Cleanup A	Action Tal	call was placed a						annovimatal)	, 650 av	hide of clean
soil was trans Walls and the sandstone and approved an	sported from e base. The d the TPH s alternative	n Mesa and pl south wall ca sample results	aced in the me back a DRO and nethod on the	e excavation site.  It 116tph and the s  MRO considered the southeast wall	Analyticsoutheast to be in	cal results we wall came b mobile, the	ere below the regulack at 356tph. Du NMOCD granted	latory s le to the Hilcorp	tandards or soil being Energy a v	n the North, very hard co variance on the	West, a onsolidate he sout	and East ated h wall and
				cted area using a ted on 3/22/2018 by				soil. Wa	iting to hea	ar back on co	ontracto	or's schedule
I hereby certi regulations al public health should their corthe environ	ify that the ill operators or the environment. In a	information gi are required t ronment. The have failed to a	iven above o report and acceptand adequately OCD accep	e is true and comp nd/or file certain r ce of a C-141 report investigate and r otance of a C-141	lete to the elease no ort by the emediate	te best of my otifications as NMOCD m contaminati	knowledge and u nd perform correct arked as "Final R on that pose a three the operator of	etive acti eport" d eat to gr responsi	ons for rele oes not rele ound water bility for co	eases which ieve the open r, surface wa ompliance w	may er rator of iter, hui with any	ndanger Fliability man health
	Λ	1 000					OIL CON	SERV	ATION	DIVISIO	N/	/
Signature:	Clenn	fu Deal							//	-		
Printed Name	e: Jennifer	Deal				Approved by	Environmental S	pecialist		5/		
Title: Enviro						Approval Da	e: 5/14//	8	Expiration	Date:		
E-mail Addre						Conditions of	, ,,			Attached		
Date: 5/11/2	2018		Phone	e: (505) 324-5128								

\* Attach Additional Sheets If Necessary

#NVF1807954320

#### **Jennifer Deal**

From:

Fields, Vanessa, EMNRD < Vanessa. Fields@state.nm.us>

Sent:

Monday, April 30, 2018 7:23 AM Kurt Hoekstra; Smith, Cory, EMNRD

To: Cc:

Jennifer Deal; Chad Perkins

Subject:

RE: Request for alternative remediation method

Good morning Kurt,

The OCD grants approval of HilCorp's variance request on the south east wall to spray potassium permanganate.

Please include this email in your final C-141.

Thank you,

Vanessa Fields
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 119
Cell: (505) 419-0463
vanessa.fields@state.nm.us

From: Kurt Hoekstra < khoekstra@hilcorp.com>

Sent: Friday, April 27, 2018 3:17 PM

To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>

Cc: Jennifer Deal < jdeal@hilcorp.com>; Chad Perkins < cperkins@hilcorp.com>

Subject: Request for alternative remediation method

Hi Vanessa, The south east wall at the Scott # 2A came back above the 100 ppm TPH standard for this site at 96 ppm DRO and 260 ppm MRO the rest of the excavation has lab results below standards. Hilcorp Energy proposes to spray the south east wall with potassium permanganate. Due to the consolidated very hard sandstone, and all DRO and MRO constituents, that are considered immobile Hilcorp Energy believes this method of remediation would be effective and there would be no threat to human health and the environment. Can we use this method and then close this excavation?

Thank You.

Kurt Hoekstra Field Environmental Specialist 505-486-9543 khoekstra@hilcorp.com

#### **Jennifer Deal**

From:

Fields, Vanessa, EMNRD < Vanessa. Fields@state.nm.us>

Sent:

Wednesday, April 25, 2018 11:22 AM Kurt Hoekstra; Smith, Cory, EMNRD

To: Cc:

Jennifer Deal

Subject:

RE: Variance Scott # 2A

Good morning Kurt,

Per our conversation this morning the OCD grants a variance request on the south wall.

Thank you,

Vanessa Fields
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 119
Cell: (505) 419-0463

vanessa.fields@state.nm.us

From: Kurt Hoekstra <khoekstra@hilcorp.com> Sent: Wednesday, April 25, 2018 8:19 AM

To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>

Cc: Jennifer Deal < jdeal@hilcorp.com>

Subject: Variance Scott # 2A

Hi Vanessa, per our conversation this morning Hilcorp would like to request a variance for the 100 ppm THP closure for the south wall of the excavation at the Scott # 2A wellsite. The preliminary lab results are TPH DRO, 46 ppm, MRO 70 ppm, all other constituents were non detect. Hilcorp is requesting this variance based on the soil being a very hard consolidated sandstone and the TPH sample results DRO and MRO considered to be immobile and only 16 ppm above the 100 ppm for this site. Thank you for your consideration of this matter.

Thanks.

Kurt Hoekstra Field Environmental Specialist 505-486-9543 khoekstra@hilcorp.com

#### **Jennifer Deal**

From: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>

**Sent:** Monday, April 30, 2018 7:29 AM **To:** Kurt Hoekstra; Smith, Cory, EMNRD

Cc: Jennifer Deal; Chad Perkins

Subject: RE: Request for alternative remediation method

Kurt,

HilCorp may backfill the areas of the excavation that are below the regulatory standards. The OCD does not need to be present during the potassium application. Please provide a picture of the application in your final C-141.

Thank you,

Vanessa Fields
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 119
Cell: (505) 419-0463

vanessa.fields@state.nm.us

From: Kurt Hoekstra < khoekstra@hilcorp.com>

Sent: Monday, April 30, 2018 7:26 AM

To: Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>; Smith, Cory, EMNRD <Cory.Smith@state.nm.us>

Cc: Jennifer Deal < jdeal@hilcorp.com>; Chad Perkins < cperkins@hilcorp.com>

Subject: RE: Request for alternative remediation method

Thank you Vanessa, do you want to be present when it is applied? After the potassium permanganate is applied, and we already have sample results below standards for the rest of the excavation, may we begin backfilling?

Thank you.

From: Fields, Vanessa, EMNRD [mailto:Vanessa.Fields@state.nm.us]

Sent: Monday, April 30, 2018 7:23 AM

To: Kurt Hoekstra < khoekstra@hilcorp.com >; Smith, Cory, EMNRD < Cory.Smith@state.nm.us >

Cc: Jennifer Deal < ideal@hilcorp.com >; Chad Perkins < cperkins@hilcorp.com >

Subject: RE: Request for alternative remediation method

Good morning Kurt,

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Please include this email in your final C-141.

#### Thank you,

Vanessa Fields
Environmental Specialist
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1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 119
Cell: (505) 419-0463

From: Kurt Hoekstra <khoekstra@hilcorp.com>

Sent: Friday, April 27, 2018 3:17 PM

vanessa.fields@state.nm.us

To: Fields, Vanessa, EMNRD < Vanessa. Fields@state.nm.us >; Smith, Cory, EMNRD < Cory. Smith@state.nm.us >

Cc: Jennifer Deal < ideal@hilcorp.com >; Chad Perkins < cperkins@hilcorp.com >

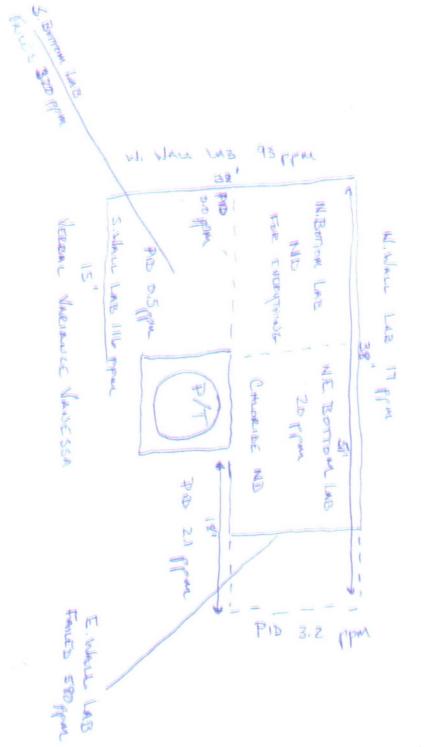
Subject: Request for alternative remediation method

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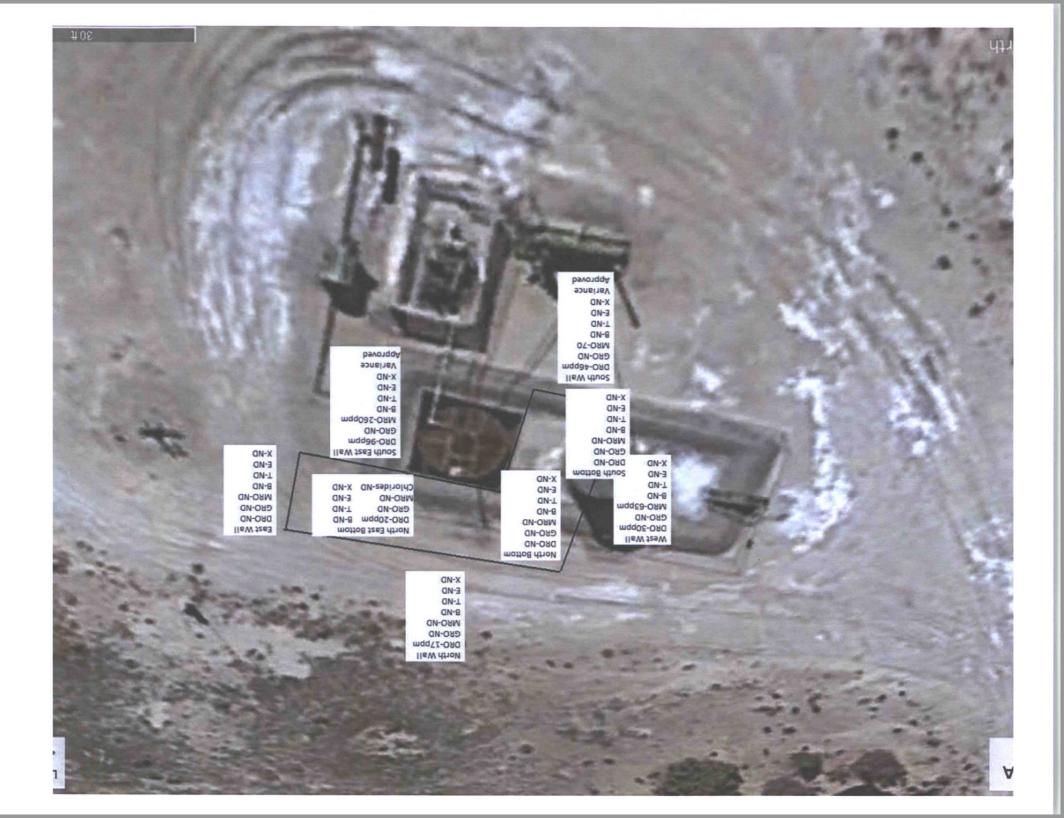
#### Thank You.

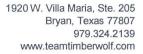
Kurt Hoekstra Field Environmental Specialist 505-486-9543 khoekstra@hilcorp.com

Z



12: 90 1: 25 12:45 11:25 171-20 N. BOTTOM FT. WILLE S.E. MALL In January 222 ppm I.W. Corser 3.2 Pour 2-11 ppm 0 ppm







April 5, 2018

Ms. Jennifer Deal Hilcorp Energy Company 9A Road 5793 Farmington, New Mexico 87401

Re:

Site Assessment and Remedial Action Plan

Scott 2A Release

San Juan County, New Mexico

Timberwolf Project Number: HEC-180017

Dear Ms. Deal:

At the request of Hilcorp Energy Company (Hilcorp), Timberwolf Environmental, LLC (Timberwolf) presents this report to document the collection and analysis of soil samples following a liquid condensate release from the Scott 2A (Site). The Site is located approximately 1.8 miles west of Cedar Hill, San Juan County, New Mexico (Figures 1-3).

A tank failure due to corrosion, resulted in an estimated 5 barrels (bbls) release of oil. The contents of the tank were emptied, and the tank was removed from service. Released fluids were contained by the facility's berm. Majority of released fluids evaporated or were absorbed by underlying soil.

Initial remedial efforts included removing the tank and excavating the impacted soil with a backhoe. Sandstone was encountered within the upper foot and the excavation was terminated at approximately 2.5 feet (ft) below ground surface (bgs).

The Scott 2A consist of a well head, meters and separation equipment, an oil storage tank, and a below grade open top water tank (i.e., pit tank).

#### **Environmental Setting**

The Site is situated at the base of a northern-sloping ridge. Watershed at the Site forms headwaters of intermittent tributaries, which drain into the Animas River approximately 1.1 miles south-southeast of the Site.

Vegetation at the Site is sparse and consists primarily of native grasses and cedar trees. Area topography is comprised of steep hills.

According to the U.S. Department of Agriculture – Natural Resources Conservation Service, the soil units at the Site consists of the Badlands complex, with steep to very steep terrain. Typical surface horizons for this soil series consists of highly erodible clayer shales and sandy siltstones with interbedded layers of sandstone. Additionally, the surface consists of intermittent drainage washes containing fine sandy loam. Subsurface soil textures underlying the surface horizon of each soil series are comprised of sandstones and bedrock.

## Regulatory Criteria

The New Mexico Oil Conservation Division (NMOCD) established remediation action levels for soils impacted by oilfield products or wastes, which are documented in the *Guidelines for Remediation of Leaks and Releases*. The closure criteria utilize a ranking system that scores the potential to contaminate based upon a site's distance to water resources. The ranking system is summarized in Table 1 below.

Table 1. NMOCD Ranking System

Category	Distance to Resource (Feet)	Score
	< 50	20
Depth to groundwater	50 to 99	10
	> 100	0
Material III and material	< 200	20
Water wellhead protection	> 200	0
	< 200	20
Surface water protection	200 to 1,000	10
	> 1,000	0

NMOCD - New Mexico Oil Conservation Division

Sites receive a score from each category. The three (3) scores are summed to reach a total ranking score that correspond to site-specific remedial action levels.

Based on prior drilling activities in this portion of the San Juan Basin, the upper groundwater-bearing unit is expected to be greater than 100 ft bgs, which results in a score of zero (0). No perennial surface water bodies were identified within 1,000 ft of the Site. However, an intermittent stream is situated 170 ft north of the Site, which results in a score of ten (10). No water wellheads are located within 200 ft of the Site, which results in a score of zero (0).

Therefore, the total ranking score at the Site is zero (10). Based on the NMOCD criteria, the site-specific remedial action levels are presented in Table 2.

Table 2. NMOCD Remediation Action Levels by Total Ranking Score

Constituent	Total Ranking Score					
Constituent	> 19	10-19	0-9			
	Correspo	onding Remediation Action Leve	l (mg/kg)			
Benzene	10	10	10			
Total BTEX	50	50	50			
TPH	100	1,000	5,000			
Chlorides	250	500	1,000			

BTEX - benzene, toluene, ethylbenzene and xylenes

TPH – total petroleum hydrocarbons

mg/kg – milligrams per kilogram

Bold - scores utilized for the Site

NMOCD - New Mexico Oil and Conservation Division



## Collection and Analysis of Soil Samples

On 03/22/18, Timberwolf contracted with Geomat Inc. of Farmington, New Mexico for drilling services. When Timberwolf arrived at the Site, the oil storage tank had been removed and an excavation approximately 10 ft X 14 ft was located northeast of the former tank location. The excavation extended from the base of the tank to the western edge of the pit tank. The depth of the excavation at the deepest point was 2.5 ft bgs. Excavated soil was stockpiled on Site, awaiting disposal.

Timberwolf collected samples from seven (7) borings (i.e., SB1 – SB7) using a rotary drilling rig. Borings were drilled using augers; discrete samples were collected every 2.5 ft using a split spoon and geotechnical hammer. The total depths of each boring ranged from 7 to 11 ft bgs; auger refusal was encountered at 11 ft in SB4. Note: To facilitate drilling SB4 and SB5, the excavation was backfilled.

Soil borings were logged and screened for volatile organic compounds (VOCs) with a photoionization detector (PID). Soil boring logs describing soil morphology are attached; PID readings are recorded on soil boring logs. Soils encountered at the Site consisted primarily of sandstone.

Timberwolf additionally investigated sediment within the pit tank. Elevated PID readings were observed along the western edge of the pit tank (i.e., between the western pit wall and the water tank). Soil (i.e., sediment) exhibiting elevated PID readings was removed from the pit tank and stockpiled for disposal.

Two samples were collected using hand sampling tools (HA1 and HA2) from the pit tank. A total of thirteen (13) samples were submitted for laboratory analysis. Sample locations are shown in Figure 4. The location and purpose of each boring are presented in Table 3 below.

Table 3. Location and Purpose of Soil Borings
Scott 2A Release

Soil Boring	Location - Purpose
SB4	Collected near the point of release to determine the vertical extent of impacted soil
SB1 and SB5	Collected adjacent to the point of the release to evaluate the degree and vertical extent of impacted soil. Note: SB5 was situated within the previously excavated area
SB2, SB3, SB6, and SB7	Collected from the perimeter of the release area, for horizontal delineation
HA1 and HA2	Collected within the pit tank at the edge of removed sediment to ensure all impacted sediment was removed

Soil samples were selected for laboratory analysis based on PID readings and morphological characteristics. Selected samples were placed in laboratory-provided sample containers, stored on ice, and transported by courier under proper chain-of-custody protocol to Hall Environmental Analysis Laboratories in Albuquerque, New Mexico.

The laboratory report and chain-of-custody documents are attached; laboratory methods are documented in the laboratory report. Results are summarized in Table 4.



Table 4. Analytical Results of Soil Samples Scott 2A Release

	Sample		Volatile Orga	anic Compou	unds (mg/Kg	)	GRO	DRO	MRO (mg/Kg)  160 140 < 51 < 44 < 49 < 47 < 48 < 48 < 45 < 47 < 48 < 37 < 39	ТРН
Sample ID	Date	В	Т	Е	X	Total BTEX	(mg/Kg)	(mg/Kg)		(mg/Kg)
SB1 2.5'	03/22/18	< 0.24	1.6	3.8	52	57.4	1,000	890	160	2,050
SB1 5'	03/22/18	< 0.12	0.54	2.1	29	31.64	580	620	140	1,340
SB1 7.5'	03/22/18	< 0.023	< 0.047	< 0.047	< 0.093	< 0.093	< 4.7	< 10	< 51	< 51
SB2 5'	03/22/18						< 4.9	< 8.8	< 44	< 44
SB3 5'	03/22/18						< 5.0	< 9.9	< 49	< 49
SB4 5'	03/22/18						< 4.8	< 9.4	< 47	< 47
SB4 7.5'	03/22/18						< 4.8	< 9.7	< 48	< 48
SB4 11'	03/22/18	< 0.024	< 0.049	< 0.049	< 0.097	< 0.097	< 4.9	< 9.6	< 48	< 48
SB5 5'	03/22/18	< 0.024	< 0.047	< 0.047	< 0.094	< 0.094	< 4.7	< 9.1	< 45	< 45
SB6 5'	03/22/18	< 0.025	< 0.049	< 0.049	< 0.099	< 0.099	< 4.9	< 9.4	< 47	< 47
SB7 5'	03/22/18	< 0.025	< 0.050	< 0.050	< 0.10	< 0.050	< 5.0	< 9.7	< 48	< 48
HA1	03/22/18	< 0.023	< 0.047	< 0.047	< 0.093	< 0.093	< 4.7	< 7.5	< 37	< 37
HA2	03/22/18	< 0.024	< 0.048	0.071	0.92	0.92	18	< 7.7	< 39	< 57
Regulator	y Criteria	10				50				1,000

mg/kg - milligrams per kilogram

BTEX - benzene, toluene, ethylbenzene, and xylenes

GRO – gasoline range organics DRO - diesel range organics

TPH - total petroleum hydrocarbon (TPH = GRO+DRO+MRO)

-- - no applicable regulatory criteria

#### **Findings and Conclusions**

Based on the analytical results of soil samples and NMOCD remedial action levels, the following is concluded:

- Petroleum hydrocarbons exceeded regulatory criteria in one boring (i.e. SB1)
  - O Total BTEX exceeded the remedial action level in one (1) sample (i.e., SB1 2.5')
  - TPH exceeded the remedial action level in two (2) samples (i.e., SB1 2.5' and SB1 5')

MRO - motor oil range organics

- Vertical delineation was achieved; SB1 7.5' was below NMOCD remedial action level for all constituents
- Horizontal delineation was achieved; SB2 5', SB3 5', SB4 5', SB6 5', SB7 5' HA1, and HA2 were below NMOCD remediation action level
- Based on the delineation effort, the volume of impacted soil is estimated at 60 cubic yards (yd³) Note: Assumes the base of contamination is 6 ft bgs and an average excavation depth of 5 ft bgs



## **Remedial Options and Cost Estimates**

To bring Site soils into regulatory compliance, the following remedial options and associated cost estimates are presented for consideration (i.e. on-site biopile (treatment cell) and dig and haul). Note: Cost presented does not include travel or per diem.

The COCs at this Site are total BTEX, and TPH; most of the TPH was observed in the gasoline range (i.e.,  $C_6$ - $C_{12}$ ) or diesel range (i.e.,  $C_{12}$ - $C_{28}$ ). These COCs are readily degradable with bioremediation and volatilization. To expedite hydrocarbon degradation, Timberwolf recommends incorporating calcium nitrate fertilizer and turning soil every 7 to 10 days. The Site has a level grade, gravel packed surface, and sufficient acreage to treat the impacted soil.

Alternatively, impacted soil may be remedied by excavating and trucking to a commercial disposal facility. Itemized costs for each remedial option are presented in Table 5.

Table 5. Evaluation of Remedial Options

On-Site Treatment		1000000			
Item	U	nit Cost	Unit	Quantity	Cost
Biopile - Estimated Timeframe =	6 – 8 we	eks			
Excavation and Backfill	\$	1,500.00	Day	2	\$ 3,000.00
Fertilizer	\$	40.00	40 lb Bag	1	\$ 40.00
Oversight	\$	1,200.00	Day	2	\$ 2,400.00
Biopile mixing	\$	750.00	Per Event	4	\$ 3,000.00
Confirmation Sampling	\$	1,500.00	Day	1	\$ 1,500.00
Closure Report	\$	1,500.00	Per Report	1	\$ 1,500.00
			Biopile Co	st Estimate	\$ 11,440.00
Off-Site Disposal					
Item	U	nit Cost	Unit	Quantity	Cost
Dig and Haul - Estimated Timefra	me = 3 c	lays			
Excavation, Loading, Backfilling	\$	1,500.00	Day	2	\$ 3,000.00
Trucking	\$	95.00	Hour	11	\$ 1,045.00
Oversight	\$	1,200.00	Day	2	\$ 2,400.00
Disposal	\$	20.00	Yard	60	\$ 1,200.00
Backfill Material	\$	6.40	Ton	81	\$ 520.00
Closure Report	\$	1,500.00	Per Report	1	\$ 1,500.00
			Dig and Haul Co	st Estimate	\$ 9,665.00



Timberwolf appreciates the opportunity to work for you and Hilcorp. If you have any questions regarding this report, please contact us at (979) 324-2139.

Jim Foster President

Sincerely,

Timberwolf Environmental, LLC

Morgan Vizi

**Project Scientist** 

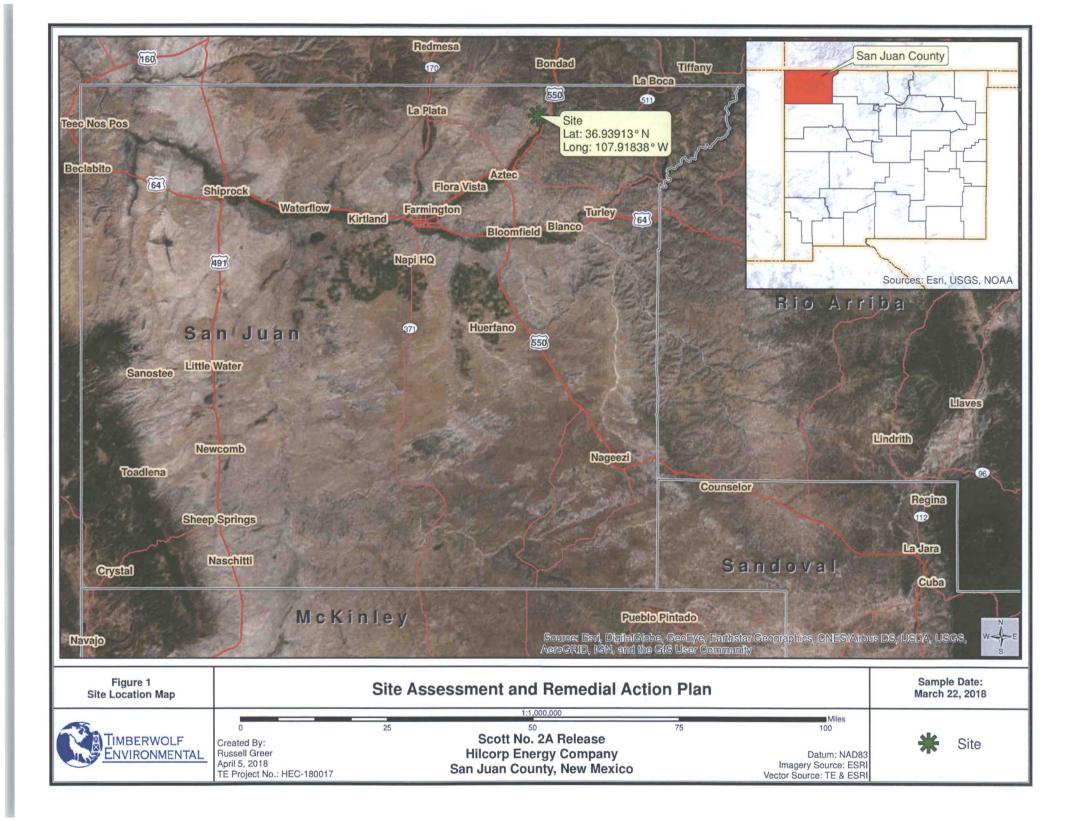
Attachments: Figures

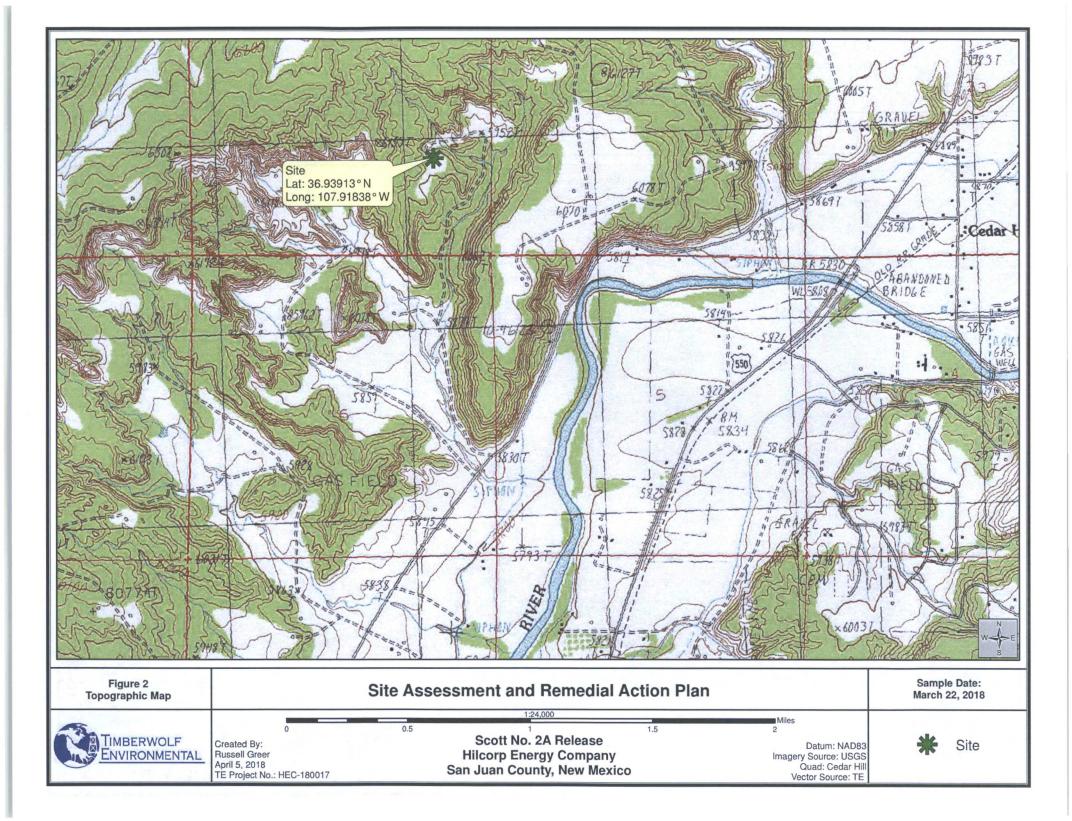
Soil Boring Logs

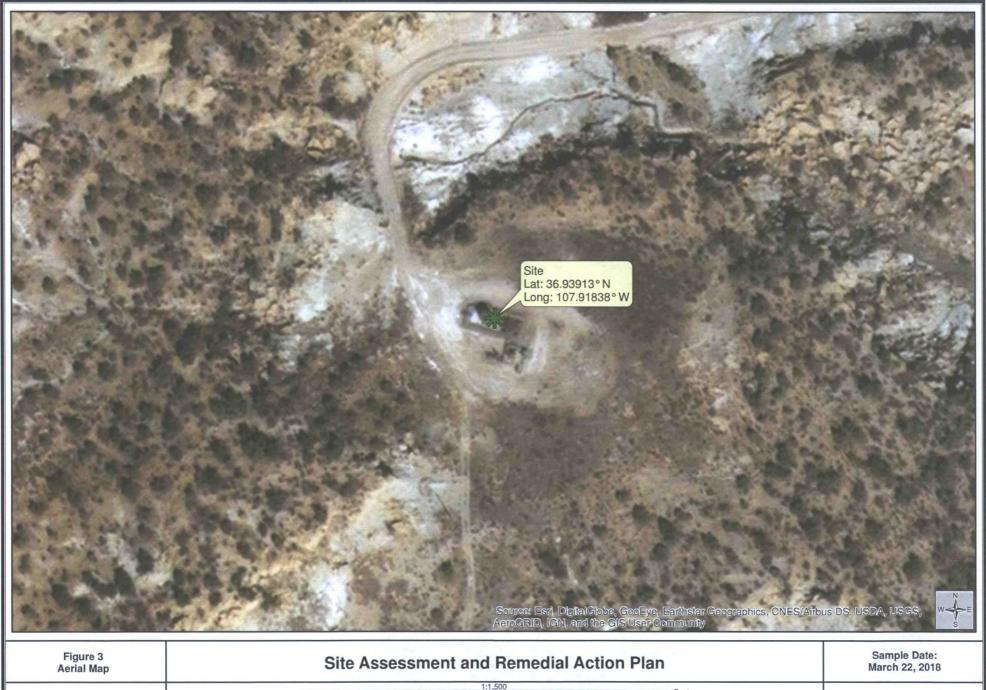
Laboratory Report and Chain-of-Custody Document



**Figures** 









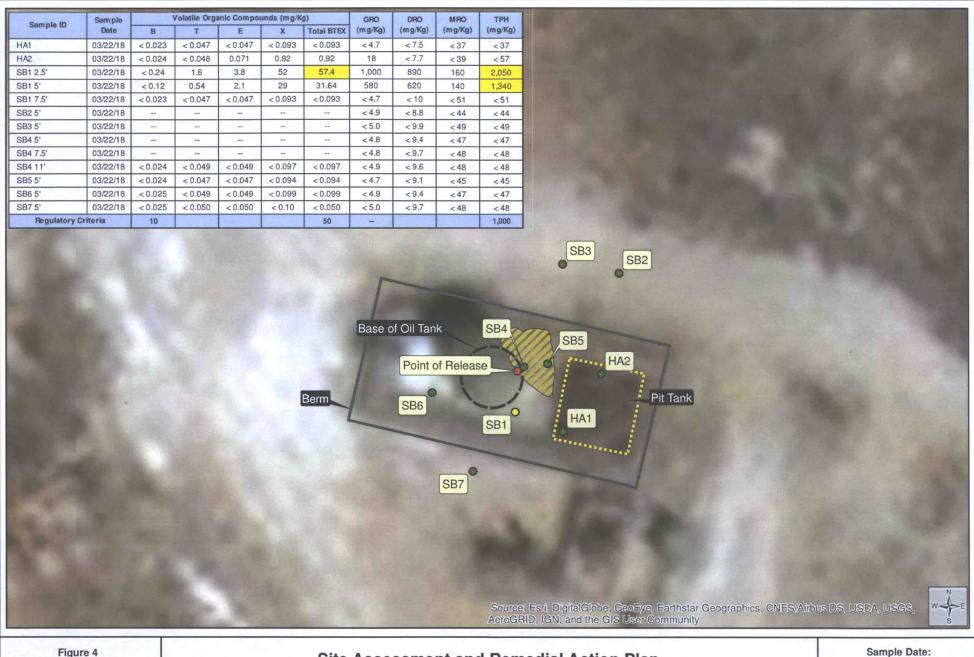
300 400 5

Scott No. 2A Release Hilcorp Energy Company San Juan County, New Mexico

Datum: NAD83 Imagery Source: ESRI Vector Source: TE



Site





Sample Location Map

# Site Assessment and Remedial Action Plan

Scott No. 2A Release
Hilcorp Energy Company
San Juan County, New Mexico

#### Sample Date: March 22, 2018

- Soil Sample (clean)
- Soil Sample (elevated)
- Point of Release

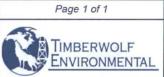


Datum: NAD83 Imagery Source: ESRI Vector Source: TE

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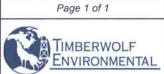


Soil Boring Log



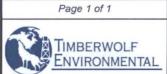
Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 39.93909, -107.91841	Total Depth (ft): 11'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

Depth (feet)	nscs	PID Reading (ppm)	Soil Sample	Soil Description	Well	Completi
				BROWN SANDSTONE		
- 5 —	BR	53.4 121.3		BROWN SANDSTONE		
		1		GREY SANDSTONE		
10	BR BR	0.7		GREY TO BROWN SANDSTONE		
				TD = 11'		
15						
20 —						
tes:				BR- bedrock		



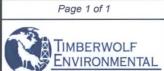
Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93917, -107.91833	Total Depth (ft): 10'
Ground Surface Elevation (ft, msl): 6012'	First Water Encountered (ft): N/A

Solid Description   Well Comp.	_						
FILL  O.8  BROWN SANDSTONE  BR  O.8  BROWNISH GREY SANDSTONE  TD = 10'  TD = 10'  TD = 10'	Depth (feet)	nscs	PID Reading (ppm)	Soil	Soil Description	Well	Completi
5 — BR 1.3  BROWNISH GREY SANDSTONE  10 — BR 1.8  GREY SANDSTONE  TD = 10'	= =						
D			0.8		BROWN SANDSTONE		
BR 1.8 GREY SANDSTONE  TD = 10'  TD = 10'		BR	1.3				
TD = 10'	E	BR	0.8		BROWNISH GREY SANDSTONE		
TD = 10'	⊢ –		1.8		GREY SANDSTONE		
Notes: Well Completion: none, groundwater not encountered  BR- bedrock	Notes:				BR- bedrock		



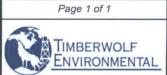
Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93918, -107.91833	Total Depth (ft): 7.5'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

Depth (feet)	nscs	PID Reading (ppm)	Soil Sample	Soil Description	Well	Completio
		1.3		FILL BROWN SANDSTONE		
5 —	BR	1.8				
	BR	2.5		BROWN SANDSTONE WITH SAND SEAMS  TD = 7.5'		
10 -						
20 —						
Notes: Well Comple	tion: none	aroundwater	not encoun	BR- bedrock		



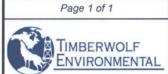
Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93911, -107.91833	Total Depth (ft): 11'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

t th	Ø	PID Reading (ppm)	Soil Sample			
Depth (feet)	nscs	PID Rea (ppr	Soil	Soil Description	Well	Completi
				FILL		
5		6.4		BROWN SANDSTONE		
	BR	9.1				
10	BR	1.6		GREY SANDSTONE		
15 —				TD = 11' due to refusal		
20 -						



Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93912, -107.91833	Total Depth (ft): 10'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

Depth (feet)	nscs	PID Reading (ppm)	Soil Sample	Soil Description	Well	Completic
				BROWN SANDSTONE		
		6.4				
5	BR	9.1		×		
10 —	BR	1.6		GREY SANDSTONE  TD = 10'		
15						
20 —						



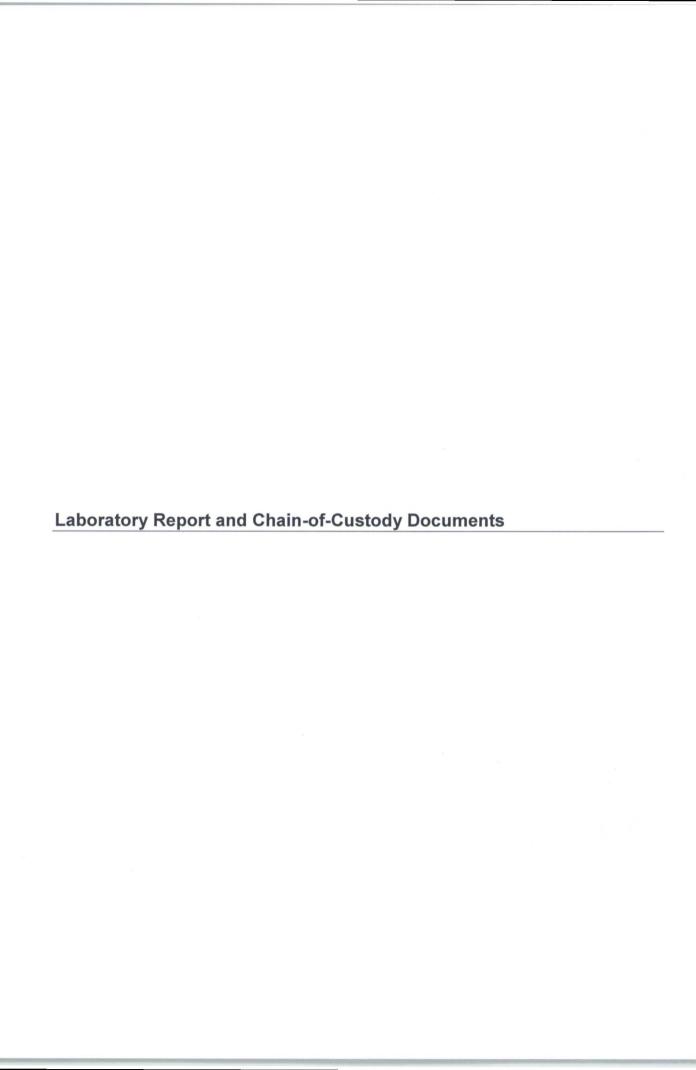
Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93909, -107.91861	Total Depth (ft): 7.5'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

Soil Description   Well Completion   Well Comp	Ground Su	nace Elev	ration (it, in	181). 6013	First vvaler Encountered (it). N/A			
FILL  1.5  BROWN SANDSTONE  1.1  TD = 7.5'	Depth (feet)	nscs	PID Reading (ppm)	Soil	Soil Description	Well	Compl	etior
1.1 TD = 7.5'					FILL			
1.1 TD = 7.5'			1.5	1)(12)	BROWN SANDSTONE			
TD = 7.5'	5 — — 5 —	BR	1.5					
			1.1		TD = 7.5'			
								·
- 15 — — — — — — — — — — — — — — — — — —								
	= =							
Notes:  Nell Completion: none, groundwater not encountered  BR- bedrock	Notes:	lian, c			BR- bedrock			



Client: Hilcorp Energy Company	Completion Date: 03/22/18
Project Name: Scott 2A Release	Logged By: Jim Foster
Site Location: San Juan County, NM	Drilled By: Geomat of Farmington, NM
Project Number: HEC-180017	Drilling Method & Boring Diameter: Hollow Stem Auger
Boring Coordinates: 36.93893, -107.91833	Total Depth (ft): 7.5'
Ground Surface Elevation (ft, msl): 6013'	First Water Encountered (ft): N/A

Depth (feet)	nscs	PID Reading (ppm)	Soil Sample	Soil Description	Well	Compl	etio
		0.7		BROWN SANDSTONE			
5 —	BR	1.5					
		1.4		TD = 7.5'			
10							
15 —							
20 —							
tes:	ion: none	groundwater	not encour	BR- bedrock			





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

Hall Environmental Analysis Laboratory

March 27, 2018

Jim Foster Timberwolf Environmental 1920 W Villa Maria Ste 205 Bryan, TX 77807

TEL: (979) 324-2139

FAX

RE: J153 22

OrderNo.: 1803C97

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/23/2018 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 <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> 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,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

## **Analytical Report**

Lab Order 1803C97

Date Reported: 3/27/2018

## Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Lab ID: 1803C97-001

Project: J153 22

Client Sample ID: HA1

Collection Date: 3/22/2018 12:50:00 PM

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS	3			Analyst	том
Diesel Range Organics (DRO)	ND	7.5	mg/Kg	1	3/26/2018 6:05:24 PM	37223
Motor Oil Range Organics (MRO)	ND	37	mg/Kg	1	3/26/2018 6:05:24 PM	37223
Surr: DNOP	84.3	70-130	%Rec	1	3/26/2018 6:05:24 PM	37223
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	3/26/2018 6:07:34 PM	37211
Surr: BFB	106	15-316	%Rec	1	3/26/2018 6:07:34 PM	37211
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.023	mg/Kg	1	3/26/2018 6:07:34 PM	37211
Toluene	ND	0.047	mg/Kg	1	3/26/2018 6:07:34 PM	37211
Ethylbenzene	ND	0.047	mg/Kg	1	3/26/2018 6:07:34 PM	37211
Xylenes, Total	ND	0.093	mg/Kg	1	3/26/2018 6:07:34 PM	37211
Surr: 4-Bromofluorobenzene	88.0	80-120	%Rec	1	3/26/2018 6:07:34 PM	37211

Matrix: SOIL

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

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 5 J
- Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

## **Analytical Report**

## Lab Order 1803C97

Date Reported: 3/27/2018

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Client Sample ID: HA2

Project: J153 22

Collection Date: 3/22/2018 2:50:00 PM

Lab ID: 1803C97-002

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS	8			Analyst	: TOM
Diesel Range Organics (DRO)	ND	7.7	mg/Kg	1	3/26/2018 6:27:24 PM	37223
Motor Oil Range Organics (MRO)	ND	39	mg/Kg	1	3/26/2018 6:27:24 PM	37223
Surr: DNOP	87.5	70-130	%Rec	1	3/26/2018 6:27:24 PM	37223
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	: NSB
Gasoline Range Organics (GRO)	18	4.8	mg/Kg	1	3/26/2018 6:30:45 PM	37211
Surr: BFB	212	15-316	%Rec	1	3/26/2018 6:30:45 PM	37211
EPA METHOD 8021B: VOLATILES					Analyst	: NSB
Benzene	ND	0.024	mg/Kg	1	3/26/2018 6:30:45 PM	37211
Toluene	ND	0.048	mg/Kg	1	3/26/2018 6:30:45 PM	37211
Ethylbenzene	0.071	0.048	mg/Kg	1	3/26/2018 6:30:45 PM	37211
Xylenes, Total	0.92	0.096	mg/Kg	1	3/26/2018 6:30:45 PM	37211
Surr: 4-Bromofluorobenzene	93.3	80-120	%Rec	1	3/26/2018 6:30:45 PM	37211

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

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 5 J
- P Sample pH Not In Range
- Reporting Detection Limit
- Sample container temperature is out of limit as specified

# **QC SUMMARY REPORT**

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1803C97

27-Mar-18

Client:

Timberwolf Environmental

Project:

J153 22

Sample ID LCS-37223	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics
Client ID: LCSS	Batch ID: 37223	RunNo: 50058
Prep Date: 3/25/2018	Analysis Date: 3/26/2018	SeqNo: 1621123 Units: mg/Kg
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	47 10 50.00	0 93.5 70 130
Surr: DNOP	3.6 5.000	72.0 70 130
Sample ID MB-37223	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics
Client ID: PBS	Batch ID: 37223	RunNo: 50058
Prep Date: 3/25/2018	Analysis Date: 3/26/2018	SeqNo: 1621124 Units: mg/Kg
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	ND 10	
Motor Oil Range Organics (MRO)	ND 50	
Surr: DNOP	8.8 10.00	87.9 70 130
Sample ID LCS-37224	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics
Client ID: LCSS	Batch ID: 37224	RunNo: 50058
Prep Date: 3/25/2018	Analysis Date: 3/26/2018	SeqNo: 1622045 Units: %Rec
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Surr: DNOP	3.6 5.000	71.4 70 130
Sample ID MB-37224	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics
Client ID: PBS	Batch ID: 37224	RunNo: 50058
Prep Date: 3/25/2018	Analysis Date: 3/26/2018	SeqNo: <b>1622046</b> Units: <b>%Rec</b>
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Surr: DNOP	9.0 10.00	89.6 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 Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Page 3 of 5

- 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#:

1803C97

27-Mar-18

Client:

Timberwolf Environmental

1100

Surr: BFB

Project: J153 22		
Sample ID MB-37211	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range
Client ID: PBS	Batch ID: 37211	RunNo: 50067
Prep Date: 3/23/2018	Analysis Date: 3/26/2018	SeqNo: 1621677 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	980 1000	97.7 15 316
Sample ID LCS-37211	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range
Client ID: LCSS	Batch ID: 37211	RunNo: 50067
Prep Date: 3/23/2018	Analysis Date: 3/26/2018	SeqNo: 1621678 Units: mg/Kg
Analyte	Result PQL SPK value SPK	Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Gasoline Range Organics (GRO)	26 5.0 25.00	0 103 75.9 131

112

15

316

1000

0					r					
Q	u	a	I	ı	I	l	e	r	S	;

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

Holding times for preparation or analysis exceeded

Not Detected at the Reporting Limit ND

Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix

В Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 4 of 5

P Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

# **QC SUMMARY REPORT**

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1803C97

27-Mar-18

Client:

Timberwolf Environmental

**Project:** 

J153 22

Sample ID MB-37211	SampT	ype: ME	BLK	Tes	TestCode: EPA Method 8021B: Volatiles									
Client ID: PBS	Batch ID: 37211 RunNo:					50067								
Prep Date: 3/23/2018	Analysis D	ate: 3/	26/2018	S	SeqNo: 1	621699	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual				
Benzene	ND	0.025												
Toluene	ND	0.050												
Ethylbenzene	ND	0.050												
Xylenes, Total	ND	0.10												
Surr: 4-Bromofluorobenzene	0.93		1.000		93.4	80	120							

Sample ID LCS-37211	SampType: LCS TestCode: EPA Method 8						8021B: Volat	tiles		
Client ID: LCSS	Batch ID: 37211 RunNo: 50067									
Prep Date: 3/23/2018	Analysis D	ysis Date: 3/26/2018		SeqNo: 1621700			Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit %RPD		RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	99.4	77.3	128			
Toluene	0.99	0.050	1.000	0	99.3	79.2	125			
Ethylbenzene	0.97	0.050	1.000	0	97.5	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	99.9	81.6	129			
Surr: 4-Bromofluorobenzene	0.93		1.000		92.7	80	120			

#### Qualifiers:

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

Page 5 of 5



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: TIMBERWOLF ENVIRON Work Order Numb	per: 1803C97	RcptNo: 1
Received By: Anne Thorne 3/23/2018 7:00:00 A	M ann Ar	
Completed By: Michelle Garcia 3/23/2018 9:32:40 A	M Minus	Druie
Reviewed By: AMO 3 03 18	Lakeled By	005
Chain of Custody		
1. Is Chain of Custody complete?	Yes ✓ No 🗆	Not Present
2. How was the sample delivered?	Courier	1
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	No VOA Vials
10. Were any sample containers received broken?	Yes No 🗹	# of preserved
11. Does paperwork match bottle labels?	Yes ☑ No 🗆	bottles checked for pH:
(Note discrepancies on chain of custody)		(<2 or >12 unless noted) Adjusted?
12. Are matrices correctly identified on Chain of Custody?  13. Is it clear what analyses were requested?	Yes ✓ No ☐	Adjusted?
14. Were all holding times able to be met?	Yes V No 🗆	Checked by:
(If no, notify customer for authorization.)		
Special Handling (if applicable)		
15. Was client notified of all discrepancies with this order?	Yes No No	NA 🗹
Person Notified: Date:	PRINTED STORES AND	
By Whom: Via:	eMail Phone Fax	☐ In Person
Regarding:		ACTION AND REAL PROPERTY OF THE PROPERTY OF TH
Client Instructions:	ENERGY DE LE MAN MAN MAN ANN ANN ANN ANN ANN ANN ANN	BRIDGE CATALIBUTE SALVANIA SESSIONE
16. Additional remarks:	1	
17. Cooler Information	•	
Cooler No Temp °C Condition Seal Intact Seal No	Seal Date Signed By	
1 1.0 Good Yes		· ·

Chain-of-Custody Record	Turn-Around Time:  Standard □ Rush  Project Name:						ы		E	NIX	TE	20	BII	ME	BIT	FAI	
Client: Timberwolf Env					HALL ENVIRONMENTAL ANALYSIS LABORATORY www.hallenvironmental.com												
Mailing Address:					4901 Hawkins NE - Albuquerque, NM 87109												
	Project #:				Tel. 505-345-3975 Fax 505-345-4107												
Phone #: 979 - 324 - 2139	18	0017			-	159	9 9 7		-		Req	-			10/10/20		
email or Fax#: O	Project Mana			(8021)	(Ķ	(Ĉ				04)					1		
QA/QC Package:  ☐ Standard ☐ Level 4 (Full Validation)	Jim Foster				+ TPH (Gas only)	30 / MF		SIMS)		PO4,SC	PCB's	,	:				
Accreditation  □ NELAP  □ Other	Sampler: Jim Foot			+ TMB's	+ TPH	RO / DI	504.1)			O <sub>3</sub> ,NO <sub>2</sub>	s / 8082		(A)				or N)
□ EDD (Type)	Sample Tem	oerature;	1868	+ MTBE	MTBE	9 (9	od 5	10 01	etals	Z,	cide	F	i-VC	1			>
Date Time Matrix Sample Request ID	Container Type and #	Preservative Type	#EAL No	BTEX + M	BTEX + M	JPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1) EDB (Method 504.1)	PAH's (8310 or	RCRA 8 Metals	Anions (F,CI,NO3,NO2,PO4,SO4)	8081 Pesticides	8260B (VOA)	8270 (Semi-VOA)	Brize			Air Bubbles (Y or N)
3/22/1250 Soil HAI	(1) 4oz	Cool	- 001			J					,			1			$\top$
3/22/18/450 V HAZ	+	V	- 007			1								1			
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					$\dashv$	+	+	-								+	+
					$\dashv$	+								$\vdash$		+	+
						1											$\perp$
					_	$\dashv$	_	-					_	$\sqcup$			+
					_	_	_	-			_		_		<u> </u>	$\dashv$	_
Date: Time: Relinquished by:	Received by:	· Wast	Date Time 3/12/18 1738	Ren	narks	:			<u> </u>				1		. 1		
Date: Time: Relinquished by:    1940   Math Wall   If necessary, samples submitted to Hall Environmental may be submitted.	Received by:	Coredited laboratori	Date Time  23/23/18  0700  es. This serves as notice of this	possil	oility. A	ny sub	-contract	ed data	will be	e clear	rly notz	ated o	n the	analytic	cal repo	ort.	



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

March 27, 2018

Jim Foster Timberwolf Environmental 1920 W Villa Maria Ste 205 Bryan, TX 77807

TEL: (979) 324-2139

**FAX** 

RE: J153-22

OrderNo.: 1803C91

Dear Jim Foster:

Hall Environmental Analysis Laboratory received 12 sample(s) on 3/23/2018 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 <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> 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,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

### Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Project: J153-22

Lab ID: 1803C91-001

Client Sample ID: SB1 2.5

Collection Date: 3/22/2018 9:27:00 AM

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	SE ORGANICS	;				Analyst:	том
Diesel Range Organics (DRO)	890	9.7		mg/Kg	1	3/26/2018 11:13:43 PM	37224
Motor Oil Range Organics (MRO)	160	49		mg/Kg	1	3/26/2018 11:13:43 PM	37224
Surr: DNOP	94.5	70-130		%Rec	1	3/26/2018 11:13:43 PM	37224
EPA METHOD 8015D: GASOLINE RAN	GE					Analyst:	NSB
Gasoline Range Organics (GRO)	1000	48		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Surr: BFB	790	15-316	S	%Rec	10	3/26/2018 10:42:48 AM	37211
EPA METHOD 8021B: VOLATILES						Analyst:	NSB
Benzene	ND	0.24		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Toluene	1.6	0.48		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Ethylbenzene	3.8	0.48		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Xylenes, Total	52	0.97		mg/Kg	10	3/26/2018 10:42:48 AM	37211
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	10	3/26/2018 10:42:48 AM	37211

Matrix: SOIL

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

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 14
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Client Sample ID: SB1 5.0'

Project: J153-22

Collection Date: 3/22/2018 9:30:00 AM

Lab ID: 1803C91-002

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS	3				Analyst:	том
Diesel Range Organics (DRO)	620	8.7		mg/Kg	1	3/26/2018 11:35:46 PM	37224
Motor Oil Range Organics (MRO)	140	44		mg/Kg	1	3/26/2018 11:35:46 PM	37224
Surr: DNOP	94.7	70-130		%Rec	1	3/26/2018 11:35:46 PM	37224
EPA METHOD 8015D: GASOLINE RAI	NGE					Analyst:	NSB
Gasoline Range Organics (GRO)	580	23		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Surr: BFB	956	15-316	S	%Rec	5	3/26/2018 12:17:17 PM	37211
EPA METHOD 8021B: VOLATILES						Analyst:	NSB
Benzene	ND	0.12		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Toluene	0.54	0.23		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Ethylbenzene	2.1	0.23		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Xylenes, Total	29	0.47		mg/Kg	5	3/26/2018 12:17:17 PM	37211
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	5	3/26/2018 12:17:17 PM	37211

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

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 14
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Timberwolf Environmental

Client Sample ID: SB1 7.5

Project: J153-22

Collection Date: 3/22/2018 9:38:00 AM

Lab ID: 1803C91-003

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS				Analyst	: TOM
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	3/26/2018 11:57:36 PM	37224
Motor Oil Range Organics (MRO)	ND	51	mg/Kg	1	3/26/2018 11:57:36 PM	37224
Surr: DNOP	87.1	70-130	%Rec	1	3/26/2018 11:57:36 PM	37224
EPA METHOD 8015D: GASOLINE RANG	GE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	3/26/2018 1:04:15 PM	37211
Surr: BFB	92.9	15-316	%Rec	1	3/26/2018 1:04:15 PM	37211
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.023	mg/Kg	1	3/26/2018 1:04:15 PM	37211
Toluene	ND	0.047	mg/Kg	1	3/26/2018 1:04:15 PM	37211
Ethylbenzene	ND	0.047	mg/Kg	1	3/26/2018 1:04:15 PM	37211
Xylenes, Total	ND	0.093	mg/Kg	1	3/26/2018 1:04:15 PM	37211
Surr: 4-Bromofluorobenzene	86.9	80-120	%Rec	1	3/26/2018 1:04:15 PM	37211

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

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 3 of 14 J
- P Sample pH Not In Range
- Reporting Detection Limit
- Sample container temperature is out of limit as specified

### Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Client Sample ID: SB2 5'

Project: J153-22

Collection Date: 3/22/2018 10:10:00 AM

Lab ID: 1803C91-004

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RA	NGE ORGANICS				Analys	t: TOM
Diesel Range Organics (DRO)	ND	8.8	mg/Kg	1	3/27/2018 12:19:39 AM	1 37224
Motor Oil Range Organics (MRO)	ND	44	mg/Kg	1	3/27/2018 12:19:39 AM	37224
Surr: DNOP	85.4	70-130	%Rec	1	3/27/2018 12:19:39 AM	1 37224
EPA METHOD 8015D: GASOLINE RA	NGE				Analys	t: NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	3/26/2018 1:27:37 PM	37211
Surr: BFB	92.9	15-316	%Rec	1	3/26/2018 1:27:37 PM	37211

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

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 4 of 14 J
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Client Sample ID: SB3 5'

Project: J153-22

Collection Date: 3/22/2018 10:55:00 AM

Lab ID: 1803C91-005

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RA	NGE ORGANICS				Analys	t: TOM
Diesel Range Organics (DRO)	ND	9.9	mg/Kg	1	3/27/2018 12:41:25 AM	1 37224
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	3/27/2018 12:41:25 AM	1 37224
Surr: DNOP	89.9	70-130	%Rec	1	3/27/2018 12:41:25 AM	1 37224
EPA METHOD 8015D: GASOLINE RA	ANGE				Analys	t: NSB
Gasoline Range Organics (GRO)	ND	5.0	mg/Kg	1	3/26/2018 1:50:49 PM	37211
Surr: BFB	91.7	15-316	%Rec	1	3/26/2018 1:50:49 PM	37211

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

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 5 of 14
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Client Sample ID: SB4 5'

Project: J153-22

Collection Date: 3/22/2018 12:00:00 PM

Lab ID: 1803C91-006

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RA	NGE ORGANICS				Analyst	: TOM
Diesel Range Organics (DRO)	ND	9.4	mg/Kg	1	3/27/2018 1:03:18 AM	37224
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	3/27/2018 1:03:18 AM	37224
Surr: DNOP	89.2	70-130	%Rec	1	3/27/2018 1:03:18 AM	37224
EPA METHOD 8015D: GASOLINE RA	ANGE				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	3/26/2018 2:14:01 PM	37211
Surr: BFB	90.7	15-316	%Rec	1	3/26/2018 2:14:01 PM	37211

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

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 6 of 14
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Client Sample ID: SB4 7.5'

Project: J153-22

Collection Date: 3/22/2018 12:05:00 PM

Lab ID: 1803C91-007

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RAI	NGE ORGANICS				Analyst	: TOM
Diesel Range Organics (DRO)	ND	9.7	mg/Kg	1	3/27/2018 1:25:14 AM	37224
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	3/27/2018 1:25:14 AM	37224
Surr: DNOP	87.4	70-130	%Rec	1	3/27/2018 1:25:14 AM	37224
EPA METHOD 8015D: GASOLINE RA	NGE				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	3/26/2018 2:37:17 PM	37211
Surr: BFB	92.3	15-316	%Rec	1	3/26/2018 2:37:17 PM	37211

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

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 7 of 14
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# Analytical Report Lab Order 1803C91

### Hall Environmental Analysis Laboratory, Inc.

Date Reported: 3/27/2018

**CLIENT:** Timberwolf Environmental

Client Sample ID: SB4 11'

Project: J153-22

Collection Date: 3/22/2018 12:30:00 PM

Lab ID: 1803C91-009

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS	3			Analys	t: TOM
Diesel Range Organics (DRO)	ND	9.6	mg/Kg	1	3/27/2018 1:47:06 AM	37224
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	3/27/2018 1:47:06 AM	37224
Surr: DNOP	88.2	70-130	%Rec	1	3/27/2018 1:47:06 AM	37224
EPA METHOD 8015D: GASOLINE RAN	GE				Analys	t: NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	3/26/2018 4:34:12 PM	37211
Surr: BFB	92.1	15-316	%Rec	1	3/26/2018 4:34:12 PM	37211
EPA METHOD 8021B: VOLATILES					Analys	t: NSB
Benzene	ND	0.024	mg/Kg	1	3/26/2018 4:34:12 PM	37211
Toluene	ND	0.049	mg/Kg	1	3/26/2018 4:34:12 PM	37211
Ethylbenzene	ND	0.049	mg/Kg	1	3/26/2018 4:34:12 PM	37211
Xylenes, Total	ND	0.097	mg/Kg	1	3/26/2018 4:34:12 PM	37211
Surr: 4-Bromofluorobenzene	85.6	80-120	%Rec	1	3/26/2018 4:34:12 PM	37211

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

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 8 of 14
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Client Sample ID: SB5 5'

Project: J153-22

**Collection Date:** 3/22/2018 1:00:00 PM

**Lab ID:** 1803C91-010

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	;			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.1	mg/Kg	1	3/27/2018 2:09:03 AM	37224
Motor Oil Range Organics (MRO)	ND	45	mg/Kg	1	3/27/2018 2:09:03 AM	37224
Surr: DNOP	91.6	70-130	%Rec	1	3/27/2018 2:09:03 AM	37224
EPA METHOD 8015D: GASOLINE RANG	GE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	3/26/2018 4:57:42 PM	37211
Surr: BFB	93.3	15-316	%Rec	1	3/26/2018 4:57:42 PM	37211
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	3/26/2018 4:57:42 PM	37211
Toluene	ND	0.047	mg/Kg	1	3/26/2018 4:57:42 PM	37211
Ethylbenzene	ND	0.047	mg/Kg	1	3/26/2018 4:57:42 PM	37211
Xylenes, Total	ND	0.094	mg/Kg	1	3/26/2018 4:57:42 PM	37211
Surr: 4-Bromofluorobenzene	87.4	80-120	%Rec	1	3/26/2018 4:57:42 PM	37211

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

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 9 of 14
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Client Sample ID: SB6 5'

Project: J153-22

Collection Date: 3/22/2018 1:35:00 PM

**Lab ID:** 1803C91-011

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RAN	IGE ORGANICS	8			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.4	mg/Kg	1	3/27/2018 2:31:00 AM	37224
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	3/27/2018 2:31:00 AM	37224
Surr: DNOP	92.2	70-130	%Rec	1	3/27/2018 2:31:00 AM	37224
EPA METHOD 8015D: GASOLINE RA	NGE				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	3/26/2018 5:21:04 PM	37211
Surr: BFB	94.1	15-316	%Rec	1	3/26/2018 5:21:04 PM	37211
EPA METHOD 8021B: VOLATILES					Analyst	: NSB
Benzene	ND	0.025	mg/Kg	1	3/26/2018 5:21:04 PM	37211
Toluene	ND	0.049	mg/Kg	1	3/26/2018 5:21:04 PM	37211
Ethylbenzene	ND	0.049	mg/Kg	1	3/26/2018 5:21:04 PM	37211
Xylenes, Total	ND	0.099	mg/Kg	1	3/26/2018 5:21:04 PM	37211
Surr: 4-Bromofluorobenzene	88.6	80-120	%Rec	1	3/26/2018 5:21:04 PM	37211

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

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 10 of 14
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1803C91

Date Reported: 3/27/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Timberwolf Environmental

Client Sample ID: SB7 5'

Project: J153-22

Collection Date: 3/22/2018 2:15:00 PM

**Lab ID:** 1803C91-012

Matrix: SOIL

Received Date: 3/23/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RAM	IGE ORGANICS	5			Analys	t: TOM
Diesel Range Organics (DRO)	ND	9.7	mg/Kg	1	3/27/2018 2:52:47 AM	37224
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	3/27/2018 2:52:47 AM	37224
Surr: DNOP	84.5	70-130	%Rec	1	3/27/2018 2:52:47 AM	37224
EPA METHOD 8015D: GASOLINE RA	NGE				Analys	t: NSB
Gasoline Range Organics (GRO)	ND	5.0	mg/Kg	1	3/26/2018 5:44:19 PM	37211
Surr: BFB	92.3	15-316	%Rec	1	3/26/2018 5:44:19 PM	37211
EPA METHOD 8021B: VOLATILES					Analys	t: NSB
Benzene	ND	0.025	mg/Kg	1	3/26/2018 5:44:19 PM	37211
Toluene	ND	0.050	mg/Kg	1	3/26/2018 5:44:19 PM	37211
Ethylbenzene	ND	0.050	mg/Kg	1	3/26/2018 5:44:19 PM	37211
Xylenes, Total	ND	0.10	mg/Kg	1	3/26/2018 5:44:19 PM	37211
Surr: 4-Bromofluorobenzene	87.3	80-120	%Rec	1	3/26/2018 5:44:19 PM	37211

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

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
  - S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 11 of 14
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1803C91

27-Mar-18

Client:

Timberwolf Environmental

Project:

J153-22

Sample ID LCS-37224	SampT	ype: LC	S	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	Batch	ID: 37	224	F	RunNo: 5	0058				
Prep Date: 3/25/2018	Analysis D	ate: 3/	26/2018	8	SeqNo: 1	622045	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	98.4	70	130			
Surr: DNOP	3.6		5.000		71.4	70	130			
Sample ID MB-37224	SampT	уре: МЕ	BLK	Tes	tCode: El	PA Method	8015M/D: Die	esel Range	e Organics	
•		ype: <b>ME</b>			tCode: El		8015M/D: Di	esel Rang	e Organics	
Client ID: PBS		ID: <b>37</b>	224	F		0058	8015M/D: Did	·	e Organics	
Client ID: PBS Prep Date: 3/25/2018	Batch	ID: <b>37</b>	224 26/2018	F	RunNo: 50	0058		·	e Organics RPDLimit	Qual
Client ID: PBS Prep Date: 3/25/2018 Analyte	Batch Analysis D	ID: <b>37</b> :	224 26/2018	F	RunNo: 50 GeqNo: 10	0058 622046	Units: mg/K	(g	J	Qual
Client ID: PBS	Batch Analysis D Result	ate: <b>3/</b> PQL	224 26/2018	F	RunNo: 50 GeqNo: 10	0058 622046	Units: mg/K	(g	J	Qual

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Page 12 of 14

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1803C91

27-Mar-18

Client:

Timberwolf Environmental

Project:

J153-22

Sample ID MB-37211	SampT	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBS	Batch	Batch ID: 37211			RunNo: 50067						
Prep Date: 3/23/2018	Analysis D	ate: 3/	26/2018	S	SeqNo: 1621677		21677 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	980		1000		97.7	15	316				
Sample ID LCS-37211	SampT	ype: LC	s	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch	n ID: 37	211	RunNo: 50067							

Sample ID LCS-37211	SampT	SampType: LCS			tCode: E	PA Method	8015D: Gaso	line Rang	е	
Client ID: LCSS	Batch	ID: 37	211	R	RunNo: 5	0067				
Prep Date: 3/23/2018	Analysis D	ate: 3/	26/2018	S	SeqNo: 1	621678	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	<b>RPDLimit</b>	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	103	75.9	131			
Surr: BFB	1100		1000		112	15	316			

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Page 13 of 14

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1

1803C91

27-Mar-18

Client:

Timberwolf Environmental

Project:

J153-22

Sample ID MB-37211	Samp	Туре: МЕ	BLK	Tes	tCode: E	PA Method	8021B: Volat	tiles		
Client ID: PBS	Batc	h ID: 37	211	F	RunNo: 5	50067				
Prep Date: 3/23/2018	Analysis [	Date: 3/	26/2018	5	SeqNo: 1	621699	Units: mg/K	(g		
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	0.93		1.000		93.4	80	120			
Sample ID LCS-37211	Samp	Гуре: LC	s	Tes	tCode: E	PA Method	8021B: Volat	iles		
Client ID: LCSS	Batc	h ID: 37	211	F	RunNo: 5	0067				
Prep Date: 3/23/2018	Analysis D	Date: 3/	26/2018	5	SeqNo: 1	621700	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	99.4	77.3	128			
Toluene	0.99	0.050	1.000	0	99.3	79.2	125			
Ethylbenzene	0.97	0.050	1.000	0	97.5	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	99.9	81.6	129			
Surr: 4-Bromofluorobenzene	0.93		1.000		92.7	80	120			
Sample ID 1803C91-001AMS	Sampl	Гуре: МЅ	3	Tes	tCode: E	PA Method	8021B: Volat	iles		
Client ID: SB1 2.5	Batcl	h ID: <b>37</b> :	211	F	RunNo: 5	0067				
Prop Data: 2/22/2019	Analysis F	Data: 31	26/2049		Coable: 4	624702	Unito: mall	~		

Sample ID 1803C9	1-001AMS S	ampiype: N	ns .	res	tCode: E	PA Method	8021B: Voia	tiles		
Client ID: SB1 2.5	;	Batch ID: 3	7211	F	RunNo: 5	0067				
Prep Date: 3/23/2	018 Analy	rsis Date:	3/26/2018	5	SeqNo: 1	621702	Units: mg/l	⟨g		
Analyte	Res	ult PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.	94 0.24	0.9653	0	97.1	68.5	133			
Toluene		2.4 0.48	0.9653	1.645	77.9	75	130			
Ethylbenzene		1.6 0.48	0.9653	3.840	75.6	79.4	128			S
Xylenes, Total		51 0.9	7 2.896	52.12	-27.3	77.3	131			S
Surr: 4-Bromofluorobe	nzene	10	9.653		108	80	120			

Sample ID 1803C91-001AM	ISD SampT	ype: MS	SD	Tes	tCode: E	PA Method	8021B: Vola	tiles		
Client ID: SB1 2.5	Batch	ID: 37	211	F	RunNo: 5	0067				
Prep Date: 3/23/2018	Analysis D	ate: 3/2	26/2018	8	SeqNo: 1	621703	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.24	0.9615	0	95.4	68.5	133	2.15	20	
Toluene	2.9	0.48	0.9615	1.645	131	75	130	19.2	20	S
Ethylbenzene	5.8	0.48	0.9615	3.840	200	79.4	128	23.1	20	RS
Xylenes, Total	69	0.96	2.885	52.12	578	77.3	131	29.1	20	RS
Surr: 4-Bromofluorobenzene	11		9.615		113	80	120	0	0	

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 14 of 14

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: TIMBERWOLF ENVIRON Work C	Order Number: 1803C91	RcptNo: 1	
Received By: Anne Thorne 3/23/2018	8 7:00:00 AM	am Il-	
Completed By: Michelle Garcia 3/23/2011	8 9:11:40 AM	Michelle Corres	
Reviewed By: Ino 3 23 15	s cane	Am Show Minute Garin Ld By DDS	
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 ₩ # of preserved	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes 🗹	No D bottles checked for pH:	unless noted)
2 Are matrices correctly identified on Chain of Custody?	Yes 🗹	No Adjusted?	
3. Is it clear what analyses were requested?	Yes 🗹	No 🗌	
4. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes 🗹	No Checked by:	
Special Handling (if applicable)			
15. Was client notified of all discrepancies with this order?	Yes	No □ NA 🗹	
Person Notified:  By Whorn:  Regarding:  Client Instructions:	Date:	Phone Fax In Person	٠.٠
16. Additional remarks:			
17. Cooler Information  Cooler No. Temp °C   Condition   Seal Intact	Seal No   Seal Date	Signed By	
1 1.0 Good Yes		,	
	-		

C	hain-	of-Cu	stody Record	Turn-Around Time:										=		<b></b>	-		ME	BIT		
Client:	Timb	rwslf	Environne El		andard				NOTE OF	E											TAL DR'	
				Projec	t Name							www	ı.hal	lenv	ironr	nent	al.co	om				
Mailing	Address:			1	115	53-22			49	01 H	lawki								109			
				Projec		7 7		1			5-34							410				
Phone :	#: 9	793	324-2139		180	2017		15		J.	, it is				/sis				37			
email o	r Fax#:			Projec	t Mana	_		<u>-</u>	nly)	30)					04)				- 1			T
QA/QC I	Package:				Tu	n Foster		(8021)	TPH (Gas only)	/ M			(S)		) <sub>4</sub> ,S(	PCB's	:*:					
☐ Stan			☐ Level 4 (Full Validation)	-		JF		3's (	9	RO			SIMS)		2,PC	2 P						
Accredi  □ NEL		□ Othe	r	Samp		ar Na Araba	TMB's	TP	0/0	8.1)	4.1)	8270		NO,	808						2	
□ EDD					On los Sample Temperature 70			3E +	₩ ₩	(GR	d 41	d 50	or 8	20	8	des		VOA				Y or
Date	Time	Matrix	Sample Request ID	Con		Preservative Type		BTEX + MTBE	BTEX + MTBE	TPH 8015B	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or	RCRA 8 Met	Anions (F,CI,NO <sub>3</sub> ,NO <sub>2</sub> ,PO <sub>4</sub> ,SO <sub>4</sub> )	8081 Pesticides / 8082	8260B (VOA)	8270 (Semi-VOA)	BTEV		11/11/19	Air Bubbles (Y or N)
1/22/18	0927	3011	SB1 25	(1)4	12	Cool	001			/				*					1			
	0930	1	SBI 5,0'			1	002			1									V	•		T
	0938		SBi 7.5				0103			/				)					V			T
	1010		5B2 5'				004			1												
	1055		SB3 5'				005			/												T
	1200		584 5'				006			/												
	1205		584 75				700			/				1								
	1230		584210'				008															1
	1230		SB4 11'				009			/			i.						V			
	1300		585 51				010			/			*						1/			
	1335	-	586 5'		1		011		1	1/									1			
4	140	V	587 5'		4	<b>V</b>	012			1					,				V			
Date:	Time:	Relinquishe	ed by:	Receive	ed by:	1. M -	Date Time	Rer	nark	s:												
72/18 Date: 72/18	173) Time:	Relinguish	ed by:	Received by:			Date Time 03/23/18 07/20						3									



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

May 01, 2018

Jennifer Deal Hilcorp Energy PO Box PO Box 4700 Farmington, NM 84701

TEL: FAX

RE: Scott 2A

OrderNo.: 1804D56

#### Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 3 sample(s) on 4/27/2018 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 <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> 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,

Andy Freeman

Laboratory Manager

Only

4901 Hawkins NE

Albuquerque, NM 87109

#### Lab Order 1804D56

Date Reported: 5/1/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

Client Sample ID: S Bottom

Project: Scott 2A Collection Date: 4/26/2018 9:15:00 AM

Lab ID: 1804D56-001

Matrix: SOIL

Received Date: 4/27/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	4/27/2018 9:28:51 AM	37831
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	4/27/2018 9:28:51 AM	37831
Surr: DNOP	98.0	70-130	%Rec	1	4/27/2018 9:28:51 AM	37831
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.5	mg/Kg	1	4/27/2018 9:35:24 AM	G50883
Surr: BFB	88.8	15-316	%Rec	1	4/27/2018 9:35:24 AM	G50883
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Methyl tert-butyl ether (MTBE)	ND	0.090	mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Benzene	ND	0.022	mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Toluene	ND	0.045	mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Ethylbenzene	ND	0.045	mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Xylenes, Total	ND	0.090	mg/Kg	1	4/27/2018 9:35:24 AM	B50883
Surr: 4-Bromofluorobenzene	100	80-120	%Rec	1	4/27/2018 9:35:24 AM	B50883

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

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 8 J
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

### Lab Order 1804D56

Date Reported: 5/1/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

Client Sample ID: SE Wall

Project: Scott 2A

**Collection Date:** 4/26/2018 9:18:00 AM

Lab ID: 1804D56-002

Matrix: SOIL

Received Date: 4/27/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	SE ORGANICS				Analyst	TOM
Diesel Range Organics (DRO)	96	9.5	mg/Kg	1	4/27/2018 10:34:43 AM	37831
Motor Oil Range Organics (MRO)	260	47	mg/Kg	1	4/27/2018 10:34:43 AM	37831
Surr: DNOP	98.0	70-130	%Rec	1	4/27/2018 10:34:43 AM	37831
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst:	NSB
Gasoline Range Organics (GRO)	ND	3.7	mg/Kg	1	4/27/2018 9:58:47 AM	G50883
Surr: BFB	90.5	15-316	%Rec	1	4/27/2018 9:58:47 AM	G50883
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Methyl tert-butyl ether (MTBE)	ND	0.073	mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Benzene	ND	0.018	mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Toluene	ND	0.037	mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Ethylbenzene	ND	0.037	mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Xylenes, Total	ND	0.073	mg/Kg	1	4/27/2018 9:58:47 AM	B50883
Surr: 4-Bromofluorobenzene	100	80-120	%Rec	1	4/27/2018 9:58:47 AM	B50883

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

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 8
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1804D56

Date Reported: 5/1/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

Client Sample ID: E Wall

Project: Scott 2A

Collection Date: 4/26/2018 9:20:00 AM

Lab ID: 1804D56-003

Matrix: SOIL

Received Date: 4/27/2018 7:00:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS				Analyst	TOM
Diesel Range Organics (DRO)	ND	9.9	mg/Kg	1	4/27/2018 10:12:45 AM	37831
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	4/27/2018 10:12:45 AM	37831
Surr: DNOP	97.8	70-130	%Rec	1	4/27/2018 10:12:45 AM	37831
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	3.9	mg/Kg	1	4/27/2018 10:22:09 AM	G50883
Surr: BFB	89.6	15-316	%Rec	1	4/27/2018 10:22:09 AM	G50883
<b>EPA METHOD 8021B: VOLATILES</b>					Analyst	NSB
Methyl tert-butyl ether (MTBE)	ND	0.078	mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Benzene	ND	0.019	mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Toluene	ND	0.039	mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Ethylbenzene	ND	0.039	mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Xylenes, Total	ND	0.078	mg/Kg	1	4/27/2018 10:22:09 AM	B50883
Surr: 4-Bromofluorobenzene	99.6	80-120	%Rec	1	4/27/2018 10:22:09 AM	B50883

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

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- Value above quantitation range E
- Analyte detected below quantitation limits Page 3 of 8 J
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1804D56

01-May-18

Client:

Hilcorp Energy

Project:

Scott 2A

Project: Scott 2A										
Sample ID LCS-37831	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015M/D: D	iesel Rang	e Organics	
Client ID: LCSS	Batch	ID: 37	831	F	RunNo: 5	0882				
Prep Date: 4/27/2018	Analysis D	ate: 4/	/27/2018	5	SeqNo: 1	651344	Units: mg/l	Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.9	70	130			
Surr: DNOP	4.6		5.000		92.0	70	130			
Sample ID MB-37831	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8015M/D: Di	iesel Rang	Organics	0
Client ID: PBS	Batch	ID: 37	831	F	RunNo: 5	0882				
Prep Date: 4/27/2018	Analysis D	ate: 4/	27/2018	8	SeqNo: 1	651345	Units: mg/l	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	9.5		10.00		95.4	70	130			
Sample ID 1804D56-001AMS	SampT	уре: М	3	Tes	tCode: El	PA Method	8015M/D: Di	esel Range	Organics	
Client ID: S Bottom	Batch	ID: <b>37</b>	831	F	RunNo: 5	0882				
Prep Date: 4/27/2018	Analysis D	ate: 4/	27/2018	S	SeqNo: 1	651777	Units: mg/l	<b>K</b> g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	9.7	48.59	4.114	85.8	55.8	125			
Surr: DNOP	4.8		4.859		98.9	70	130			
Sample ID 1804D56-001AMS	D SampT	/pe: <b>M</b> \$	SD	Tes	tCode: El	PA Method	8015M/D: Di	esel Range	Organics	
Client ID: S Bottom	Batch	ID: <b>37</b>	831	F	RunNo: 5	0882				
Prep Date: 4/27/2018	Analysis D	ate: 4/	27/2018	S	SeqNo: 1	651778	Units: mg/l	<b>K</b> g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.25	4.114	92.5	55.8	125	9.92	20	
Surr: DNOP	4.9		5.025		97.4	70	130	0	0	

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 4 of 8

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D56

01-May-18

Client: Project: Hilcorp Energy

Scott 2A

Sample ID RB Client ID: PRS SampType: MBLK

TestCode: EPA Method 8015D: Gasoline Range

Batch ID: **G50883** 

RunNo: 50883

%REC

Prep Date:

Analysis Date: 4/27/2018

SeqNo: 1652246

Units: mg/Kg

%RPD

Analyte

Result PQL ND 5.0

HighLimit

**RPDLimit** 

Qual

Gasoline Range Organics (GRO) Surr: BFB

880

1000

1000

1000

SPK value SPK Ref Val

88 4

15 316

Sample ID 2.5UG GRO LCS

SampType: LCS

TestCode: EPA Method 8015D: Gasoline Range

Client ID: LCSS Batch ID: G50883

RunNo: 50883

Prep Date:

Analysis Date: 4/27/2018

SeqNo: 1652247

Units: mg/Kg

Analyte

Result POL

SPK value SPK Ref Val %REC

LowLimit HighLimit 104 75.9

15

LowLimit

%RPD **RPDLimit** 

Qual

Gasoline Range Organics (GRO) Surr: BFB

26 5.0 1000

25.00 0 1000

100 15

131 316

Sample ID MB-37823

SampType: MBLK

TestCode: EPA Method 8015D: Gasoline Range

PBS Client ID:

4/26/2018

Batch ID: 37823

PQL

RunNo: 50883 SeqNo: 1652266

Units: %Rec

%RPD

%RPD

Analyte Surr: BFB

Prep Date:

4/26/2018

Analysis Date: 4/27/2018

SPK value SPK Ref Val %REC

Lowl imit

HighLimit 316 **RPDLimit** 

Qual

Sample ID LCS-37823

Sample ID 1804D56-001AMS

SampType: LCS

TestCode: EPA Method 8015D: Gasoline Range

Client ID: LCSS Batch ID: 37823

RunNo: 50883

92.9

316

Prep Date: Analyte

Analysis Date: 4/27/2018

Result

930

SegNo: 1652267

LowLimit

15

Units: %Rec

HighLimit

**RPDLimit** Qual

Surr: BFB

1000

Result

SampType: MS

TestCode: EPA Method 8015D: Gasoline Range

%REC

99.6

Client ID: S Bottom

Batch ID: G50883 Analysis Date: 4/30/2018

POL

RunNo: 50929

SeqNo: 1653361

Analyte

Prep Date:

SPK value SPK Ref Val POL

%REC

0

LowLimit

Units: mg/Kg HighLimit 128

316

RPDI imit

Qual

Gasoline Range Organics (GRO) Surr: BFB

890

22.40 896.1

SPK value SPK Ref Val

E

J

SPK value SPK Ref Val

0 104 99.8 77.8 15 %RPD

Sample ID 1804D56-001AMSD

23

Result

SampType: MSD Batch ID: G50883

PQL

4.5

4.5

TestCode: EPA Method 8015D: Gasoline Range

%REC

102

103

Value above quantitation range

Client ID: Prep Date:

Analyte

Analysis Date: 4/30/2018

Result

23

920

22 40

896.1

RunNo: 50929 SeqNo: 1653362

LowLimit

77.8

15

Units: mg/Kg

HighLimit

128

316

%RPD

1.71

0

**RPDLimit** Qual

20

0

Surr: BFB

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix

S Bottom

Analyte detected in the associated Method Blank

Analyte detected below quantitation limits

Page 5 of 8

Not Detected at the Reporting Limit

Holding times for preparation or analysis exceeded

Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

Qualifiers:

D

**PQL** Practical Quanitative Limit

Gasoline Range Organics (GRO)

% Recovery outside of range due to dilution or matrix

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1804D56

01-May-18

Client:

Hilcorp Energy

Project:

Scott 2A

Sample	ID	MB-37842
--------	----	----------

SampType: MBLK

TestCode: EPA Method 8015D: Gasoline Range

Client ID:

Batch ID: 37842

RunNo: 50929

%REC

Prep Date:

4/27/2018

Analysis Date: 4/30/2018

SeqNo: 1653372

Units: %Rec HighLimit

Analyte

Result

SPK value SPK Ref Val

316

Qual

Surr: BFB

880

15

TestCode: EPA Method 8015D: Gasoline Range

%RPD **RPDLimit** 

%RPD

Sample ID LCS-37842

SampType: LCS

Batch ID: 37842

RunNo: 50929

Client ID: LCSS Prep Date: 4/27/2018

Analysis Date: 4/30/2018

SeqNo: 1653373 %REC

Units: %Rec HighLimit

**RPDLimit** 

Qual

Analyte Surr: BFB Result 1100 SPK value SPK Ref Val 1000

106

15

LowLimit

316

### **Oualifiers:**

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded H
- Not Detected at the Reporting Limit
- POL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Page 6 of 8

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1804D56

01-May-18

Cl	ient:	

Hilcorp Energy

Result ND	PQL 0.10 0.025 0.050 0.050 0.10  ype: LC ID: B5 ate: 4/ 0.10 0.025 0.050 0.050	1.000 SS 0883 27/2018	SPK Ref Val	RunNo: 5 SeqNo: 1 %REC  103 tCode: El RunNo: 5 SeqNo: 1	0883 652293 LowLimit 80 PA Method	8021B: Volati Units: mg/K HighLimit  120  8021B: Volati Units: mg/K HighLimit 121 128 125 127	%RPD	RPDLimit	Qual
Result ND ND ND ND 1.0  SampTy Batch Analysis Da  Result 0.91 0.95 0.97 0.96	PQL 0.10 0.025 0.050 0.10 PQL 0.10 PQL 0.10 0.025 0.050 0.050 0.050 0.050 0.050	1.000 1.000 25 0883 27/2018 SPK value 1.000 1.000	SPK Ref Val  Tes  SPK Ref Val  0 0 0	103 tCode: El RunNo: 5 GeqNo: 1 %REC 91.0 95.1 96.8	80 PA Method 0883 652294 LowLimit 70.1 77.3 79.2	HighLimit  120  8021B: Volat  Units: mg/K  HighLimit  121  128  125	%RPD		
Result ND ND ND ND 1.0 SampTy Batch Analysis Da Result 0.91 0.95 0.97 0.96	PQL 0.10 0.025 0.050 0.050 0.10  ype: LC ID: B5 ate: 4/ 0.10 0.025 0.050 0.050	1.000 25 0883 27/2018 SPK value 1.000 1.000	Tes F SPK Ref Val 0 0 0	103 tCode: E RunNo: 5 SeqNo: 1 %REC 91.0 95.1 96.8	80 PA Method 0883 652294 LowLimit 70.1 77.3 79.2	HighLimit  120  8021B: Volat  Units: mg/K  HighLimit  121  128  125	%RPD		
ND ND ND 1.0  SampTy Batch Analysis Da Result 0.91 0.95 0.97 0.96	0.10 0.025 0.050 0.050 0.10 ype: LC ID: B5 ate: 4/ PQL 0.10 0.025 0.050 0.050	1.000 SS 0883 27/2018 SPK value 1.000 1.000	Tes F S SPK Ref Val 0 0 0	103 tCode: El RunNo: <b>5</b> GeqNo: <b>1</b> %REC 91.0 95.1 96.8	80 PA Method 0883 652294 LowLimit 70.1 77.3 79.2	120  8021B: Volat  Units: mg/K  HighLimit  121  128  125	tiles		
ND ND ND 1.0  SampTy Batch Analysis Da Result 0.91 0.95 0.97 0.96	0.025 0.050 0.050 0.10 ype: LC ID: B5 ate: 4/ PQL 0.10 0.025 0.050	27/2018 SPK value 1.000 1.000 1.000	SPK Ref Val  0 0 0	**RunNo: <b>5</b> **SeqNo: <b>1</b> **REC **91.0 **95.1 **96.8	PA Method 0883 652294 LowLimit 70.1 77.3 79.2	8021B: Volat  Units: mg/K  HighLimit  121  128  125	(g	RPDLimit	Qual
ND ND 1.0  SampTy Batch Analysis Da  Result 0.91 0.95 0.97 0.96	0.050 0.050 0.10 ype: LC ID: B5 ate: 4/ 0.10 0.025 0.050 0.050	27/2018 SPK value 1.000 1.000 1.000	SPK Ref Val  0 0 0	**RunNo: <b>5</b> **SeqNo: <b>1</b> **REC **91.0 **95.1 **96.8	PA Method 0883 652294 LowLimit 70.1 77.3 79.2	8021B: Volat  Units: mg/K  HighLimit  121  128  125	(g	RPDLimit	Qual
ND ND 1.0  SampTy Batch Analysis Da Result 0.91 0.95 0.97 0.96	0.050 0.10 ype: LC ID: B5 ate: 4/ 0.10 0.025 0.050 0.050	27/2018 SPK value 1.000 1.000 1.000	SPK Ref Val  0 0 0	**RunNo: <b>5</b> **SeqNo: <b>1</b> **REC **91.0 **95.1 **96.8	PA Method 0883 652294 LowLimit 70.1 77.3 79.2	8021B: Volat  Units: mg/K  HighLimit  121  128  125	(g	RPDLimit	Qual
SampTy Batch Analysis Da Result 0.91 0.95 0.97 0.96	0.10  ype: LC  ID: B5  ate: 4/  PQL  0.10  0.025  0.050  0.050	27/2018 SPK value 1.000 1.000 1.000	SPK Ref Val  0 0 0	**RunNo: <b>5</b> **SeqNo: <b>1</b> **REC **91.0 **95.1 **96.8	PA Method 0883 652294 LowLimit 70.1 77.3 79.2	8021B: Volat  Units: mg/K  HighLimit  121  128  125	(g	RPDLimit	Qual
Analysis Da Result 0.91 0.95 0.97 0.96	ype: LC ID: B5 ate: 4/ PQL 0.10 0.025 0.050	27/2018 SPK value 1.000 1.000 1.000	SPK Ref Val  0 0 0	**RunNo: <b>5</b> **SeqNo: <b>1</b> **REC **91.0 **95.1 **96.8	PA Method 0883 652294 LowLimit 70.1 77.3 79.2	8021B: Volat  Units: mg/K  HighLimit  121  128  125	(g	RPDLimit	Qual
SampTy Batch Analysis Da Result 0.91 0.95 0.97 0.96	ID: <b>B5</b> ate: <b>4/</b> PQL 0.10 0.025 0.050 0.050	27/2018 SPK value 1.000 1.000 1.000	SPK Ref Val  0 0 0	**RunNo: <b>5</b> **SeqNo: <b>1</b> **REC **91.0 **95.1 **96.8	PA Method 0883 652294 LowLimit 70.1 77.3 79.2	8021B: Volat  Units: mg/K  HighLimit  121  128  125	(g	RPDLimit	Qual
Batch Analysis Da Result 0.91 0.95 0.97 0.96	ID: <b>B5</b> ate: <b>4/</b> PQL 0.10 0.025 0.050 0.050	27/2018 SPK value 1.000 1.000 1.000	SPK Ref Val  0 0 0	RunNo: <b>5</b> SeqNo: <b>1</b> **REC  91.0  95.1  96.8	0883 652294 LowLimit 70.1 77.3 79.2	Units: mg/K HighLimit 121 128 125	(g	RPDLimit	Qual
Result  0.91  0.95  0.97  0.96	PQL 0.10 0.025 0.050 0.050	SPK value 1.000 1.000 1.000	SPK Ref Val  0 0 0	%REC 91.0 95.1 96.8	652294 LowLimit 70.1 77.3 79.2	HighLimit 121 128 125		RPDLimit	Qual
0.91 0.95 0.97 0.96	0.10 0.025 0.050 0.050	SPK value 1.000 1.000 1.000	SPK Ref Val 0 0 0	%REC 91.0 95.1 96.8	70.1 77.3 79.2	HighLimit 121 128 125		RPDLimit	Qual
0.91 0.95 0.97 0.96	0.10 0.025 0.050 0.050	1.000 1.000 1.000	0 0 0	91.0 95.1 96.8	70.1 77.3 79.2	121 128 125	%RPD	RPDLimit	Qual
0.95 0.97 0.96	0.025 0.050 0.050	1.000 1.000	0	95.1 96.8	77.3 79.2	128 125			
0.97 0.96	0.050 0.050	1.000	0	96.8	79.2	125			
0.96	0.050								
		1.000	0	06 4	80.7	127			
3.0			-	90.4	00.7	121			
5.0	0.10	3.000	0	98.8	81.6	129			
1.0		1.000		102	80	120			
SampTy	уре: МЕ	BLK	Tes	tCode: El	PA Method	8021B: Volati	iles		
Batch	ID: 37	823	R	RunNo: 5	0883				
Analysis Da	ate: 4/	27/2018	S	SeqNo: 1	652297	Units: %Rec			
Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1.0		1.000		104	80	120			
SampTy	ype: LC	s	Test	tCode: El	PA Method	8021B: Volati	iles		
Batch	ID: 37	823	.R	RunNo: 5	0883				
Analysis Da	ate: 4/	27/2018	S	SeqNo: 1	652298	Units: %Rec			
Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1.0		1.000		105	80	120			
SampTy	ype: MS	3	Test	tCode: El	PA Method	8021B: Volati	iles		
Batch	ID: <b>B5</b>	0883	R	RunNo: 5	0929				
Analysis Da	ate: 4/	30/2018	S	SeqNo: 1	653382	Units: mg/K	g		
Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
0.70	0.073	0.7326	0	95.1	56.9	130			
0.72	0.018	0.7326	0.006740	97.6	68.5	133			
<i>F</i>	SampTy Batch Analysis Di Result 1.0 SampTy Batch Analysis Di Result 1.0 SampTy Batch Analysis Di Result 0.70	SampType: ME Batch ID: 37/ Analysis Date: 4/ Result PQL 1.0  SampType: LC Batch ID: 37/ Analysis Date: 4/ Result PQL 1.0  SampType: MS Batch ID: B5 Analysis Date: 4/ Result PQL 0.70 0.073	SampType: MBLK           Batch ID: 37823           Analysis Date:         4/27/2018           Result         PQL         SPK value           1.0         1.000           SampType: LCS           Batch ID: 37823           Analysis Date:         4/27/2018           Result         PQL         SPK value           1.0         1.000           SampType: MS           Batch ID:         B50883           Analysis Date:         4/30/2018           Result         PQL         SPK value           0.70         0.073         0.7326	SampType:         MBLK         Tes           Batch ID:         37823         F           Analysis Date:         4/27/2018         S           Result         PQL         SPK value         SPK Ref Val           1.0         1.000         SPK Value         SPK Ref Val           Analysis Date:         4/27/2018         S           Result         PQL         SPK value         SPK Ref Val           1.0         1.000         SPK Ref Val           SampType:         MS         Tes           Batch ID:         B50883         F           Analysis Date:         4/30/2018         S           Result         PQL         SPK value         SPK Ref Val           0.70         0.073         0.7326         0	SampType:         MBLK         TestCode:         El           Batch ID:         37823         RunNo:         56           Analysis Date:         4/27/2018         SeqNo:         1           Result         PQL         SPK value         SPK Ref Val         %REC           1.0         1.000         104           SampType:         LCS         TestCode:         El           Batch ID:         37823         RunNo:         56           Analysis Date:         4/27/2018         SeqNo:         1           Result         PQL         SPK value         SPK Ref Val         %REC           1.0         1.000         105           SampType:         MS         TestCode:         El           Batch ID:         B50883         RunNo:         56           Analysis Date:         4/30/2018         SeqNo:         1           Result         PQL         SPK value         SPK Ref Val         %REC           0.70         0.073         0.7326         0         95.1	SampType: MBLK         TestCode: EPA Method           Batch ID:         37823         RunNo:         50883           Analysis Date:         4/27/2018         SeqNo:         1652297           Result         PQL         SPK value         SPK Ref Val         %REC         LowLimit           1.0         1.000         104         80           SampType: LCS         TestCode: EPA Method           Batch ID:         37823         RunNo:         50883           Analysis Date:         4/27/2018         SeqNo:         1652298           Result         PQL         SPK value         SPK Ref Val         %REC         LowLimit           1.0         1.000         105         80           SampType: MS         TestCode: EPA Method           Batch ID:         B50883         RunNo:         50929           Analysis Date:         4/30/2018         SeqNo:         1653382           Result         PQL         SPK value         SPK Ref Val         %REC         LowLimit           0.70         0.073         0.7326         0         95.1         56.9	SampType:         MBLK         TestCode:         EPA Method         8021B:         Volate           Batch ID:         37823         RunNo:         50883           Analysis Date:         4/27/2018         SeqNo:         1652297         Units:         %Rec           Result         PQL         SPK value         SPK Ref Val         %REC         LowLimit         HighLimit           1.0         1.000         104         80         120           SampType:         LCS         TestCode:         EPA Method         8021B:         Volate           Batch ID:         37823         RunNo:         50883         Units:         %Rec           Result         PQL         SPK value         SPK Ref Val         %REC         LowLimit         HighLimit           1.0         1.000         105         80         120           SampType:         MS         TestCode:         EPA Method         8021B:         Volate           Batch ID:         B50883         RunNo:         50929           Analysis Date:         4/30/2018         SeqNo:         1653382         Units:         mg/K           Result         PQL         SPK value         SPK Ref Val         %REC <td>SampType: MBLK         TestCode: EPA Method 8021B: Volatiles           Batch ID: 37823         RunNo: 50883           Analysis Date:         4/27/2018         SeqNo: 1652297         Units: %Rec           Result         PQL         SPK value         SPK Ref Val         %REC         LowLimit         HighLimit         %RPD           1.0         1.000         104         80         120           SampType: LCS         TestCode: EPA Method 8021B: Volatiles           Batch ID: 37823         RunNo: 50883           Analysis Date:         4/27/2018         SeqNo: 1652298         Units: %Rec           Result PQL SPK value SPK Ref Val Method 8021B: Volatiles           Batch ID: B50883         RunNo: 50929           Analysis Date: 4/30/2018         SeqNo: 1653382         Units: mg/Kg           Result PQL SPK value SPK Ref Val Method SP</td> <td>SampType: MBLK       TestCode: EPA Method 8021B: Volatiles         Batch ID:       37823       RunNo:       50883         Analysis Date:       4/27/2018       SeqNo:       1652297       Units: %Rec         Result       PQL       SPK value       SPK Ref Val       %REC       LowLimit       HighLimit       %RPD       RPDLimit         1.0       1.000       104       80       120         SampType: LCS       TestCode: EPA Method 8021B: Volatiles         Batch ID:       37823       RunNo:       50883         Analysis Date:       4/27/2018       SeqNo:       1652298       Units: %Rec         Result       PQL       SPK value       SPK Ref Val       %REC       LowLimit       HighLimit       %RPD       RPDLimit         1.0       1.000       105       80       120         SampType: MS       TestCode: EPA Method 8021B: Volatiles         Batch ID: B50883       RunNo: 50929         Analysis Date: 4/30/2018       SeqNo: 1653382       Units: mg/Kg         Result       PQL       SPK value       SPK Ref Val       %REC       LowLimit       <t< td=""></t<></td>	SampType: MBLK         TestCode: EPA Method 8021B: Volatiles           Batch ID: 37823         RunNo: 50883           Analysis Date:         4/27/2018         SeqNo: 1652297         Units: %Rec           Result         PQL         SPK value         SPK Ref Val         %REC         LowLimit         HighLimit         %RPD           1.0         1.000         104         80         120           SampType: LCS         TestCode: EPA Method 8021B: Volatiles           Batch ID: 37823         RunNo: 50883           Analysis Date:         4/27/2018         SeqNo: 1652298         Units: %Rec           Result PQL SPK value SPK Ref Val Method 8021B: Volatiles           Batch ID: B50883         RunNo: 50929           Analysis Date: 4/30/2018         SeqNo: 1653382         Units: mg/Kg           Result PQL SPK value SPK Ref Val Method SP	SampType: MBLK       TestCode: EPA Method 8021B: Volatiles         Batch ID:       37823       RunNo:       50883         Analysis Date:       4/27/2018       SeqNo:       1652297       Units: %Rec         Result       PQL       SPK value       SPK Ref Val       %REC       LowLimit       HighLimit       %RPD       RPDLimit         1.0       1.000       104       80       120         SampType: LCS       TestCode: EPA Method 8021B: Volatiles         Batch ID:       37823       RunNo:       50883         Analysis Date:       4/27/2018       SeqNo:       1652298       Units: %Rec         Result       PQL       SPK value       SPK Ref Val       %REC       LowLimit       HighLimit       %RPD       RPDLimit         1.0       1.000       105       80       120         SampType: MS       TestCode: EPA Method 8021B: Volatiles         Batch ID: B50883       RunNo: 50929         Analysis Date: 4/30/2018       SeqNo: 1653382       Units: mg/Kg         Result       PQL       SPK value       SPK Ref Val       %REC       LowLimit <t< td=""></t<>

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Holding times for preparation or analysis exceeded

Not Detected at the Reporting Limit ND

Practical Quanitative Limit **PQL** 

% Recovery outside of range due to dilution or matrix

В Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits Page 7 of 8

P Sample pH Not In Range

Reporting Detection Limit RL

Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D56

01-May-18

Client:

Hilcorp Energy

Project:

Scott 2A

Sample ID 1804D56-002AMS	Samp	Гуре: М	S	Tes	tCode: E	PA Method	8021B: Vola	tiles		
Client ID: SE Wall	Batc	h ID: B5	0883	F	RunNo: 5	0929				
Prep Date:	Analysis [	Date: 4/	30/2018	5	SeqNo: 1	653382	Units: mg/k	⟨g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	0.74	0.037	0.7326	0.006740	99.5	75	130			
Ethylbenzene	0.73	0.037	0.7326	0.007546	98.0	79.4	128			
Xylenes, Total	2.2	0.073	2.198	0.01890	101	77.3	131			
Surr: 4-Bromofluorobenzene	0.77		0.7326		106	80	120			
Sample ID 1804D56-002AMS	SD Samp	Гуре: М	SD	Tes	tCode: El	PA Method	8021B: Vola	tiles		
Client ID: SE Wall	Batcl	h ID: B5	0883	F	RunNo: 5	0929				
Prep Date:	Analysis D	Date: 4/	30/2018	8	SeqNo: 1	653383	Units: mg/h	<b>\</b> g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.68	0.073	0.7326	0	92.4	56.9	130	2.86	20	
Benzene	0.71	0.018	0.7326	0.006740	95.5	68.5	133	2.11	20	
Toluene	0.72	0.037	0.7326	0.006740	96.8	75	130	2.65	20	
Ethylbenzene	0.71	0.037	0.7326	0.007546	96.3	79.4	128	1.82	20	
Xylenes, Total	2.2	0.073	2.198	0.01890	98.6	77.3	131	2.37	20	
Surr: 4-Bromofluorobenzene	0.76		0.7326		104	80	120	0	0	
Sample ID MB-37842	SampT	уре: МЕ	BLK	Tes	tCode: El	PA Method	8021B: Vola	tiles		
Client ID: PBS	Batcl	h ID: 37	842	F	RunNo: 5	0929				
Prep Date: 4/27/2018	Analysis D	Date: 4/	30/2018	S	SeqNo: 1	653392	Units: %Re	С		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			
Sample ID LCS-37842	SampT	ype: LC	s	Tes	tCode: El	PA Method	8021B: Vola	tiles		
Client ID: LCSS	Batch	n ID: <b>37</b>	842	F	RunNo: 5	0929				
Prep Date: 4/27/2018	Analysis D	)ate: 4/	30/2018	S	SeqNo: 1	653393	Units: %Re	С		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		109	80	120			

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 8 of 8

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: HILCORP ENERGY	Work Order Number:	1804D56		RcptNo	: 1
Received By: Anne Thorne	1/27/2018 7:00:00 AM	* *:	anne Ha	<b>-</b>	
Completed By: Anne Thorne	1/27/2018 7:01:34 AM	*	anne An		
Reviewed By:	1/27/19		Uma Jim	,	
labeled by: As 041	27119				
Chain of Custody					
Is Chain of Custody complete?		Yes 🗹	No 🗆	Not Present	
2. How was the sample delivered?		Courier			
		-			
Log In	196				
3. Was an attempt made to cool the samples?		Yes 🗸	No L	NA 🗆	
A Manual construction of the construction			No 🗆		
4. Were all samples received at a temperature of	>0° C to 6.0°C	Yes 🗹	NO L	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 p	reserved?	Yes 🗸	No 🗌		*
8. Was preservative added to bottles?		Yes	No 🗹	NA	
9 V/OA viala hava mara handanaan?		V 🗆	No 🗆	No VOA Vials ✓	
9. VOA vials have zero headspace?		Yes U	No ☑	NO VOA VIAIS	
10. Were any sample containers received broken?		res —	NO 🗷	# of preserved	
11. Does paperwork match bottle labels?		Yes 🗸	No 🗆	bottles checked for pH:	
(Note discrepancies on chain of custody)				(<2 0	>12 unless noted)
12. Are matrices correctly identified on Chain of Cus	stody?	Yes 🗸	No 🗌	Adjusted?	
13. Is it clear what analyses were requested?		Yes 🗹	No 🗔		
14. Were all holding times able to be met?		Yes 🗹	No 🗆	Checked by:	
(If no, notify customer for authorization.)					
Special Handling (if applicable)					
15. Was client notified of all discrepancies with this	order?	Yes	No 🗆	NA 🗸	_
Person Notified:	Date				
By Whom:	Via:	eMail P	hone Fax	. In Person	1
Regarding:					
Client Instructions:			****		
16. Additional remarks:					_
17. Cooler Information					
	Intact   Seal No   Se	al Date	Signed By		
1 1.0 Good Yes	Annahi and		A CONTRACTOR OF THE PARTY OF TH		

C	hain-	of-Cu	stody Record	Turn-Around	Time:							IAI		E	NES/	TE	-	D.E.B.		BIT	<b>TAL</b>	
Client:	Hic	oep	ENERCY	□ Standard Project Name  Sco	Rush	SAM	E Day				A	N		YS	SIS	L	A	30			OR'	
Mailing	Address			Sco	# 2	A			490	01 H								M 87	109			
		,		Project #:							5-34							410				
Phone	#:									3		N)	Α	naly	sis	Req	uest	t	- A			
email o	r Fax#:			Project Mana	ger:			=	nly)	30					04)							li
QA/QC I	Package: dard		□ Level 4 (Full Validation)	JENN	HEER ]	DEAL		TMB's (8021)	(Gas o	30 / MI			SIMS)		PO4,S	PCB's						
Accredi		□ Othe	r	Sampler: 1	WYes:	⊡:⊧No		+ TMB	+ TPH (Gas only)	30 / D	18.1)	04.1)	-		J <sub>3</sub> ,NO <sub>2</sub>	3/8082		(A				or N)
□ EDD	(Type)_			Sample Tem	erature 🤲	1.0		MTBE	MTBE	9	pd 4	90	0.0	stals	N,	ides	A)	0\-				ک
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	1 <u>864</u> 1)	<b>国际国际发生人。"公司在这里国际</b>	BTEX + MT	BTEX + MT	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270	RCRA 8 Metals	Anions (F,CI,NO <sub>3</sub> ,NO <sub>2</sub> ,PO <sub>4</sub> ,SO <sub>4</sub> )	8081 Pesticides / 8082	8260B (VOA)	8270 (Semi-VOA)	e V			Air Bubbles (Y or N)
4.26	9:15	Soil	S. BOTTOM	402 JAR	Du les		701	X		X			·							$\perp$		
4-26	9:18	H	S.E. WALL	11	h		202	X		X												
	9:20	OC.	E. WALL	Ą	11		703	X		X					1,4							
	,						,															
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Date: 4-2L	Time:	Relinquish	it habstu	Received by:	Let	April Date	Time 18 /200	Ren	nark	s:												
Date:	Time:	Relinquish	attailahole.	Received by:	in 2	04/27	Time														2	
	f necessary,	amples sub	mitted to Hall Environmental may be subo	contracted to other a	ccredited laboratori	es. This serves	as notice of this	s possil	bility.	Any su	ıb-con	racted	data	will be	clear	ly nota	ated or	n the a	nalytic	al repo	rt.	



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

April 25, 2018

Jennifer Deal Hilcorp Energy PO Box PO Box 4700 Farmington, NM 84701 TEL: FAX

RE: Scott 2A

OrderNo.: 1804B68

#### Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 6 sample(s) on 4/24/2018 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 <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> 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,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

#### Lab Order 1804B68

Date Reported: 4/25/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

Client Sample ID: S Wall

Scott 2A Project:

Collection Date: 4/23/2018 9:40:00 AM

Lab ID: 1804B68-001

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	3			Analyst: TOM
Diesel Range Organics (DRO)	46	10	mg/Kg	1	4/24/2018 11:48:33 AM
Motor Oil Range Organics (MRO)	70	50	mg/Kg	1	4/24/2018 11:48:33 AM
Surr: DNOP	92.5	70-130	%Rec	1	4/24/2018 11:48:33 AM
EPA METHOD 8260B: VOLATILES SHO	ORT LIST				Analyst: AG
Benzene	ND	0.018	mg/Kg	1	4/24/2018 10:00:49 AM
Toluene	ND	0.037	mg/Kg	1	4/24/2018 10:00:49 AM
Ethylbenzene	ND	0.037	mg/Kg	1	4/24/2018 10:00:49 AM
Xylenes, Total	ND	0.073	mg/Kg	1	4/24/2018 10:00:49 AM
Surr: 4-Bromofluorobenzene	126	70-130	%Rec	1	4/24/2018 10:00:49 AM
Surr: Toluene-d8	91.0	70-130	%Rec	1	4/24/2018 10:00:49 AM
EPA METHOD 8015D MOD: GASOLINE	RANGE				Analyst: AG
Gasoline Range Organics (GRO)	ND	3.7	mg/Kg	1	4/24/2018 10:00:49 AM
Surr: BFB	116	70-130	%Rec	1	4/24/2018 10:00:49 AM

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

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 11 J
- P Sample pH Not In Range
- Reporting Detection Limit RL
- Sample container temperature is out of limit as specified

### Lab Order 1804B68

Date Reported: 4/25/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

Client Sample ID: W Wall

Project: Scott 2A

Collection Date: 4/23/2018 9:45:00 AM

Lab ID: 1804B68-002

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL Qua	l Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS				Analyst: TOM
Diesel Range Organics (DRO)	30	9.6	mg/Kg	1	4/24/2018 12:12:16 PM
Motor Oil Range Organics (MRO)	63	48	mg/Kg	1	4/24/2018 12:12:16 PM
Surr: DNOP	94.5	70-130	%Rec	1	4/24/2018 12:12:16 PM
EPA METHOD 8260B: VOLATILES SHOR	T LIST				Analyst: AG
Benzene	ND	0.021	mg/Kg	1	4/24/2018 10:23:56 AM
Toluene	ND	0.042	mg/Kg	1	4/24/2018 10:23:56 AM
Ethylbenzene	ND	0.042	mg/Kg	1	4/24/2018 10:23:56 AM
Xylenes, Total	ND	0.084	mg/Kg	1	4/24/2018 10:23:56 AM
Surr: 4-Bromofluorobenzene	126	70-130	%Rec	1	4/24/2018 10:23:56 AM
Surr: Toluene-d8	91.8	70-130	%Rec	1	4/24/2018 10:23:56 AM
EPA METHOD 8015D MOD: GASOLINE R	ANGE				Analyst: AG
Gasoline Range Organics (GRO)	ND	4.2	mg/Kg	1	4/24/2018 10:23:56 AM
Surr: BFB	116	70-130	%Rec	1	4/24/2018 10:23:56 AM

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

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 11
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1804B68

Date Reported: 4/25/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

1804B68-003

Client Sample ID: S Bottom

Project: Scott 2A

Lab ID:

2A

**Collection Date:** 4/23/2018 9:48:00 AM **Received Date:** 4/24/2018 6:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RA	NGE ORGANICS				Analyst: TOM
Diesel Range Organics (DRO)	120	9.7	mg/Kg	1	4/24/2018 12:59:47 PM
Motor Oil Range Organics (MRO)	200	48	mg/Kg	1	4/24/2018 12:59:47 PM
Surr: DNOP	95.6	70-130	%Rec	1	4/24/2018 12:59:47 PM
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analyst: AG
Benzene	ND	0.019	mg/Kg	1	4/24/2018 10:47:01 AM
Toluene	ND	0.039	mg/Kg	1	4/24/2018 10:47:01 AM
Ethylbenzene	ND	0.039	mg/Kg	1	4/24/2018 10:47:01 AM
Xylenes, Total	ND	0.077	mg/Kg	1	4/24/2018 10:47:01 AM
Surr: 4-Bromofluorobenzene	128	70-130	%Rec	1	4/24/2018 10:47:01 AM
Surr: Toluene-d8	92.6	70-130	%Rec	1	4/24/2018 10:47:01 AM
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analyst: AG
Gasoline Range Organics (GRO)	ND	3.9	mg/Kg	1	4/24/2018 10:47:01 AM
Surr: BFB	118	70-130	%Rec	1	4/24/2018 10:47:01 AM

Matrix: SOIL

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

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 11
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1804B68

Date Reported: 4/25/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

Client Sample ID: N Bottom

Project: Scott 2A Collection Date: 4/23/2018 9:50:00 AM

Lab ID: 1804B68-004

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGI	ORGANICS	3			Analyst: TOM
Diesel Range Organics (DRO)	ND	9.7	mg/Kg	1	4/24/2018 1:23:42 PM
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	4/24/2018 1:23:42 PM
Surr: DNOP	95.9	70-130	%Rec	1	4/24/2018 1:23:42 PM
EPA METHOD 8260B: VOLATILES SHO	RT LIST				Analyst: AG
Benzene	ND	0.018	mg/Kg	1	4/24/2018 11:10:06 AM
Toluene	ND	0.035	mg/Kg	1	4/24/2018 11:10:06 AM
Ethylbenzene	ND	0.035	mg/Kg	1	4/24/2018 11:10:06 AM
Xylenes, Total	ND	0.071	mg/Kg	1	4/24/2018 11:10:06 AM
Surr: 4-Bromofluorobenzene	128	70-130	%Rec	1	4/24/2018 11:10:06 AM
Surr: Toluene-d8	90.9	70-130	%Rec	1	4/24/2018 11:10:06 AM
EPA METHOD 8015D MOD: GASOLINE	RANGE				Analyst: AG
Gasoline Range Organics (GRO)	ND	3.5	mg/Kg	1	4/24/2018 11:10:06 AM
Surr: BFB	118	70-130	%Rec	1	4/24/2018 11:10:06 AM

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

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 4 of 11
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

#### Lab Order 1804B68

Date Reported: 4/25/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

Client Sample ID: NE Bottom

Project: Scott 2A

ment sample 13. The Botton

Lab ID: 1804B68-005

**Collection Date:** 4/23/2018 9:55:00 AM **Received Date:** 4/24/2018 6:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RA	NGE ORGANICS	;			Analyst: TOM
Diesel Range Organics (DRO)	20	9.7	mg/Kg	1	4/24/2018 1:47:34 PM
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	4/24/2018 1:47:34 PM
Surr: DNOP	96.2	70-130	%Rec	1	4/24/2018 1:47:34 PM
EPA METHOD 300.0: ANIONS					Analyst: MRA
Chloride	ND	30	mg/Kg	20	4/24/2018 12:46:38 PM
EPA METHOD 8260B: VOLATILES S	SHORT LIST				Analyst: AG
Benzene	ND	0.023	mg/Kg	1	4/24/2018 11:33:16 AM
Toluene	ND	0.046	mg/Kg	1	4/24/2018 11:33:16 AM
Ethylbenzene	ND	0.046	mg/Kg	1	4/24/2018 11:33:16 AM
Xylenes, Total	ND	0.093	mg/Kg	1	4/24/2018 11:33:16 AM
Surr: 4-Bromofluorobenzene	124	70-130	%Rec	1	4/24/2018 11:33:16 AM
Surr: Toluene-d8	88.4	70-130	%Rec	1	4/24/2018 11:33:16 AM
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analyst: AG
Gasoline Range Organics (GRO)	ND	4.6	mg/Kg	1	4/24/2018 11:33:16 AM
Surr: BFB	114	70-130	%Rec	1	4/24/2018 11:33:16 AM

Matrix: SOIL

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

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 5 of 11
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1804B68

Date Reported: 4/25/2018

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Hilcorp Energy

Client Sample ID: E Wall

Project: Scott 2A

Collection Date: 4/23/2018 9:58:00 AM

**Lab ID:** 1804B68-006

Matrix: SOIL

Received Date: 4/24/2018 6:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RA	ANGE ORGANICS			ä	Analyst: TOM
Diesel Range Organics (DRO)	230	9.6	mg/Kg	1	4/24/2018 2:11:29 PM
Motor Oil Range Organics (MRO)	350	48	mg/Kg	1	4/24/2018 2:11:29 PM
Surr: DNOP	101	70-130	%Rec	1	4/24/2018 2:11:29 PM
EPA METHOD 8260B: VOLATILES	SHORT LIST				Analyst: AG
Benzene	ND	0.019	mg/Kg	1	4/24/2018 11:56:26 AM
Toluene	ND	0.038	mg/Kg	1	4/24/2018 11:56:26 AM
Ethylbenzene	ND	0.038	mg/Kg	1	4/24/2018 11:56:26 AM
Xylenes, Total	ND	0.076	mg/Kg	1	4/24/2018 11:56:26 AM
Surr: 4-Bromofluorobenzene	125	70-130	%Rec	1	4/24/2018 11:56:26 AM
Surr: Toluene-d8	90.8	70-130	%Rec	1	4/24/2018 11:56:26 AM
EPA METHOD 8015D MOD: GASOL	INE RANGE				Analyst: AG
Gasoline Range Organics (GRO)	ND	3.8	mg/Kg	1	4/24/2018 11:56:26 AM
Surr: BFB	114	70-130	%Rec	1	4/24/2018 11:56:26 AM

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

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 6 of 11
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1804B68

25-Apr-18

Client:

Hilcorp Energy

Project:

Scott 2A

Sample ID MB-37760

SampType: mblk

TestCode: EPA Method 300.0: Anions

Client ID: **PBS** 

Batch ID: 37760

PQL

1.5

RunNo: 50801

Prep Date: 4/24/2018

Sample ID LCS-37760

Analysis Date: 4/24/2018

SeqNo: 1648668

Units: mg/Kg

Qual

Analyte

Result

SPK value SPK Ref Val %REC LowLimit

HighLimit

%RPD

**RPDLimit** 

Qual

Chloride

ND

SampType: LCS

TestCode: EPA Method 300.0: Anions

RunNo: 50801

Client ID: Prep Date:

LCSS

Batch ID: 37760

Units: mg/Kg

4/24/2018

Analysis Date: 4/24/2018

SeqNo: 1648669

**RPDLimit** 

PQL

SPK value SPK Ref Val %REC

HighLimit %RPD

Analyte

15.00

94.7

90

110

Chloride

14

1.5

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Holding times for preparation or analysis exceeded H
- Not Detected at the Reporting Limit
- **PQL** Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL. Reporting Detection Limit
- Sample container temperature is out of limit as specified

Page 7 of 11

## Hall Environmental Analysis Laboratory, Inc.

WO#:

1804B68

25-Apr-18

Client:

Hilcorp Energy

Project:

Scott 2A

Sample ID LCS-37757	SampType: LCS	Tes	tCode: EPA Method	8015M/D: Diesel R	ange Organics
Client ID: LCSS	Batch ID: 37757	F	RunNo: <b>50794</b>		
Prep Date: 4/24/2018	Analysis Date: 4/24/2	018	SeqNo: <b>1647834</b>	Units: mg/Kg	
Analyte	Result PQL SP	K value SPK Ref Val	%REC LowLimit	HighLimit %RI	PD RPDLimit Qual
Diesel Range Organics (DRO)	47 10	50.00 0	93.1 70	130	
Surr: DNOP	3.9	5.000	77.5 70	130	
Sample ID MB-37757	SampType: MBLK	Tes	tCode: EPA Method	8015M/D: Diesel R	ange Organics
Client ID: PBS	Batch ID: 37757	F	RunNo: <b>50794</b>		
Prep Date: 4/24/2018	Analysis Date: 4/24/2	018	SeqNo: <b>1647835</b>	Units: mg/Kg	
Analyte	Result PQL SP	K value SPK Ref Val	%REC LowLimit	HighLimit %RF	PD RPDLimit Qual
Diesel Range Organics (DRO)	ND 10				
Motor Oil Range Organics (MRO)	ND 50				
Surr: DNOP	8.7	10.00	86.9 70	130	
Sample ID LCS-37745	SampType: LCS	Tes	tCode: EPA Method	8015M/D: Diesel R	ange Organics
Client ID: LCSS	Batch ID: 37745	F	RunNo: <b>50794</b>		
Prep Date: 4/23/2018	Analysis Date: 4/24/2	018	SeqNo: <b>1648086</b>	Units: %Rec	
Analyte	Result PQL SPI	K value SPK Ref Val	%REC LowLimit	HighLimit %RF	PD RPDLimit Qual
Surr: DNOP	4.1	5.000	82.3 70	130	
Sample ID MB-37745	SampType: MBLK	Tes	tCode: EPA Method	8015M/D: Diesel R	ange Organics
Client ID: PBS	Batch ID: 37745	F	RunNo: <b>50794</b>		
Prep Date: 4/23/2018	Analysis Date: 4/24/2	018	SeqNo: <b>1648087</b>	Units: %Rec	
Analyte	Result PQL SPI	K value SPK Ref Val	%REC LowLimit	HighLimit %RF	PD RPDLimit Qual
Surr: DNOP	9.0	10.00	89.6 70	130	

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Page 8 of 11

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#: **1804B68** 

25-Apr-18

Client: Hilcorp Energy
Project: Scott 2A

Sample ID 100ng Ics	Samp	SampType: LCS4 TestCode: EPA Method 8260B: Volatiles Short List										
Client ID: BatchQC	Batc	n ID: S5	0798	F								
Prep Date:	Analysis [	Date: 4/	24/2018	8	SeqNo: 1	647889	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Benzene	0.93	0.025	1.000	0	92.9	80	120					
Toluene	1.0	0.050	1.000	0	99.9	80	120					
Ethylbenzene	1.0	0.050	1.000	0	102	80	120					
Xylenes, Total	3.0	0.10	3.000	0	100	80	120					
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.8	70	130					
Surr: Toluene-d8	0.49		0.5000		99.0	70	130					

Sample ID rb	SampT	ype: ME	BLK	Tes	8260B: Volat	iles Short	List						
Client ID: PBS	Batch	h ID: S5	0798	F									
Prep Date:	Analysis D	Date: 4/	24/2018	5	SeqNo: 1	647896	Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Benzene	ND	0.025											
Toluene	ND	0.050											
Ethylbenzene	ND	0.050											
Xylenes, Total	ND	0.10											
Surr: 4-Bromofluorobenzene	0.58		0.5000		115	70	130						
Surr: Toluene-d8	0.50		0.5000		99.5	70	130						

Sample ID 1804b68-002ams	SampT	SampType: MS4 TestCode: EPA Method 8260B: Volatiles Short List											
Client ID: W Wall	Batch	ID: <b>S5</b>	D: <b>\$50798</b> RunNo: <b>50798</b>										
Prep Date:	Analysis D	ate: 4/	24/2018	8	SeqNo: 1	648434	Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Benzene	0.68	0.021	0.8368	0	81.8	80	120						
Toluene	0.76	0.042	0.8368	0	91.2	80	120						
Ethylbenzene	0.83	0.042	0.8368	0	98.9	80	120						
Xylenes, Total	2.5	0.084	2.510	0.01623	97.8	80	120						
Surr: 4-Bromofluorobenzene	0.44		0.4184		105	70	130						
Surr: Toluene-d8	0.38		0.4184		90.2	70	130						

Sample ID 1804b68-002am	sd Samp1	Гуре: М	SD4	TestCode: EPA Method 8260B: Volatiles Short List								
Client ID: W Wall	Batc	h ID: \$5	0798	, F	RunNo: 50798							
Prep Date:	Analysis [	Date: 4/	24/2018	S	SeqNo: 1	648435	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Benzene	0.64	0.021	0.8368	0	76.1	80	120	7.21	0	S		
Toluene	0.73	0.042	0.8368	0	87.8	80	120	3.84	0			
Ethylbenzene	0.80	0.042	0.8368	0	95.6	80	120	3.39	0			
Xylenes, Total	2.4	0.084	2.510	0.01623	95.2	80	120	2.74	0			

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 9 of 11

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1804B68

25-Apr-18

Client:

Hilcorp Energy

**Project:** 

Scott 2A

Sample ID 1804b68-002am	sd SampTy	/pe: M	SD4	TestCode: EPA Method 8260B: Volatiles Short List								
Client ID: W Wall	Batch	ID: <b>S</b> 5	0798	F	RunNo: 50798							
Prep Date:	Analysis Da	ate: 4/	/24/2018	S	SeqNo: 1	648435	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Surr: 4-Bromofluorobenzene	0.44		0.4184		106	70	130	0	0			
Surr: Toluene-d8	0.36		0.4184		87.2	70	130	0	0			

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- **PQL** Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Value above quantitation range
- J Analyte detected below quantitation limits
- Sample pH Not In Range Reporting Detection Limit
- Sample container temperature is out of limit as specified

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### Hall Environmental Analysis Laboratory, Inc.

WO#:

1804B68

25-Apr-18

Client:

Hilcorp Energy

Project:	Scott 2A										
Sample ID 2.	5ug gro lcs	SampT	ype: LC	s	Tes	tCode: E	PA Method	8015D Mod:	Gasoline	Range	
Client ID: LO	css	Batch	ID: G	50798	F	RunNo: 5	0798				
Prep Date:		Analysis D	ate: 4/	24/2018	5	SeqNo: 1	647886	Units: mg/	Kg		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range C	Organics (GRO)	25	5.0	25.00	0	99.1	70	130			
Surr: BFB		450		500.0		90.7	70	130			
Sample ID rb	)	SampT	уре: МЕ	BLK	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range	
Client ID: PI	BS	Batch	ID: G5	50798	F	RunNo: 5	0798				
Prep Date:		Analysis D	ate: 4/	24/2018	5	SeqNo: 1	647887	Units: mg/l	≺g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range C	rganics (GRO)	ND	5.0								
Surr: BFB		530		500.0		106	70	130			
Sample ID 18	304b68-001ams	SampT	уре: М\$	3	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range	
Client ID: S	Wall	Batch	ID: G5	0798	F	RunNo: 5	0798				
Prep Date:		Analysis D	ate: 4/	24/2018	5	SeqNo: 1	648413	Units: mg/l	⟨g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range O	organics (GRO)	17	3.7	18.37	0	92.2	64.7	142			
Surr: BFB		380		367.4		103	70	130			
Sample ID 18	804b68-001amsd	SampT	уре: МS	SD	Tes	tCode: El	PA Method	8015D Mod:	Gasoline	Range	
Client ID: S	Wall	Batch	ID: G5	0798	F	RunNo: 50	0798				
Prep Date:		Analysis D	ate: 4/	24/2018	S	SeqNo: 1	648414	Units: mg/l	<b>(</b> g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range O	rganics (GRO)	17	3.7	18.37	0	95.1	64.7	142	3.12	20	
Surr: BFB		370		367.4		102	70	130	0	0	

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

% Recovery outside of range due to dilution or matrix

В Analyte detected in the associated Method Blank

E Value above quantitation range

Analyte detected below quantitation limits J

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Sample pH Not In Range

RL Reporting Detection Limit

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

CI	ient Name:	HILCORP I	ENERGY	Work	Order Num	nber: 180	4B68			Rcpt	No: 1	
*						*		4 %	٠.			
Re	ceived By:	Anne Tho	rne	4/24/20	18 6:30:00	AM		an	u A.			:
Co	mpleted By:	Anne Tho	rne	4/24/20	18 6:59:27	AM		1	u A.			× :
Re	viewed By:	=~0	,	4/24/	(4			·	u ),			
Ch	ain of Cust	ody										ť . · · .
1.	Is Chain of Cu	stody comp	lete?			Yes	<b>V</b>	N		Not Present		
	How was the s	ample deliv	ered?			Cou	rier		:		. A Y	
-	o <b>g In</b> Was an attemp	ot made to o	ool the samp	les?		Yes	<b>V</b>	No		NA [	]	
			:				_					
4. \	Were all sampl	es received	at a tempera	ture of >0° C	to 6.0°C	Yes	$\checkmark$	, NO		NA C		
5.	Sample(s) in p	roper contai	ner(s)?		."	Yes	✓	No				
6. 3	Sufficient samp	le volume fo	or indicated te	est(s)?		Yes	✓	No			KI.	
7.	Are samples (e.	xcept VOA	and ONG) pro	operly preserve	ed?	Yes	<b>V</b>	No		,		,
8. \	Was preservati	ve added to	bottles?			Yes		No	$\checkmark$	NA 🗆	]	
9. \	/OA vials have	zero heads	pace?			Yes		, No		No VOA Vials	]	
10.	Were any samp	ole containe	rs received b	roken?		Yes		No	✓	# of preserved bottles checked		
	Does paperwork Note discrepar			)		Yes	<b>V</b>	No		for pH:	or >12 unless	noted)
12.4	Are matrices co	rrectly ident	tified on Chai	n of Custody?		Yes	V	No		Adjusted?		
100/	s it clear what a			?		Yes	<b>V</b>	No				
	Vere all holding If no, notify cus					Yes	<b>V</b>	No		Checked by		_ :
						, .			,			
	<u>cial Handlir</u>											
15.	Was client noti	fied of all di	screpancies v	with this order?		Yes		No		NA ₩		
	Person N	. 3			Date	9						
	By Whon				Via:	eMa	ail _	Phone [	Fax	☐ In Person		
	Regardin	g: structions:			******		-		 CALCON MOREN	neeus speananna bhainn ann a		
16		,			-				*	*		
10.	Additional rem	arks:								*		
17.	Cooler Inform	Temp °C	Condition	Seal Intact	Seal No	Seal D	ate	Signed	Ву			
	1	1.0	Good	Yes								

C	hain-	of-Cu	stody Record	Turn-Around	Time:	*							_								
Client:	HILCO	sep F	NERGY	☐ Standard Project Name	X Rush e:	SALLE DAL	HALL ENVIRONMENTAL ANALYSIS LABORATORY www.hallenvironmental.com														
Mailing	Address			500	+ 2A			4901 Hawkins NE - Albuquerque, NM 87109													
				Project #:					el. 50					•			4107				
Phone	#:			1		,		Analysis Request													
email o	r Fax#:			Project Mana	ger:		-	<u>\</u> \ <u>\</u> \ <u>\</u> \ <u>\</u> \ <u>\</u>	30				-	(4)							
QA/QC	Package:		□ Level 4 (Full Validation)	JENN	IFER ]	DEAL	TMB's (8021)	TPH (Gas only)	30 / MF			SIMS)		PO <sub>4</sub> ,S(	PCB's						
Accred		□ Othe	r	Sampler: K	X Yes	III No	+ TMB	+	RO / DF	18.1)	04.1)	8270		O3,NO <sub>2</sub> ,	s / 8082		(A)	h!			or N)
	(Type)_			Sample Temp	MTBE	MTBE	(G)	bo 4	0d 5	0.0	etals	ž	ide	F	9	4			3		
Date	Time	Matrix	Sample Request ID	A 04/4/10 Container Type and # Med-la-b	Preservative Type	HEAL No.	BTEX + MT	+	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310	RCRA 8 Metals	Anions (F,CI,NO <sub>3</sub> ,NO <sub>2</sub> ,PO <sub>4</sub> ,SO <sub>4</sub> )	8081 Pesticides	8260B (VOA)	8270 (Semi-VOA)	CHORIDE			Air Bubbles (Y or N)
4-23	9:40	Soil	S. WALL	402. JAR		3 10 000	X		X											18	
4-23	9:45	N.	W. WALL	13	11	702	. ×		X												
	9:48		5. BOTROM	1(	1)	703			X												
	9:50		N. Berrow	"	11	704			X												
	9:55		N.E. BOTTOM	11	ŋ	705			×									×			
	9:58	Ŋ	E. WALL	1/	11	206			X												
		,																			
Date:  4-23  Date:	Time: 2:30	Relinquish	forbiles	Received by:  Date Time  A3/18 / 43 to  Received by:  Date Time				Remarks: PLEASE SEND ME RESULTS A Khoekstrachileorp. COM								AL					
1/23/18	1810	any	the Walb mitted to Hall Environmental may be sub-	Ulm		HZ4110630								_	,						
	f necessary	sautibles and	milled to Hall Environmental may be sub-	Contracted to other at	oor outloor laboratorie		ano poo	o.omity.	. uly bi	0011	., aviou	States 4		Jiodii	,		. Jio ai	-ary ac	a. ropo		