

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

NMOC

AUG 06 2018

Form C-141  
Revised August 8, 2011

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

## Release Notification and Corrective Action

### OPERATOR

☐ Subsequent Report ☒ Final Report

Name of Company <b>Hilcorp Energy Company</b>	Contact <b>Lindsay Dumas</b>	
Address <b>1111 Travis St. Houston, TX 77002</b>	Telephone No. <b>(281)794-9159</b>	
Facility Name: <b>SJ 27-5 110N</b>	Facility Type: <b>Gas</b>	
Surface Owner <b>State</b>	Mineral Owner <b>State</b>	API No. <b>3003927767</b>

### LOCATION OF RELEASE

Unit Letter <b>A</b>	Section <b>02</b>	Township <b>27N</b>	Range <b>05W</b>	Feet from the <b>920'</b>	North/South Line <b>North</b>	Feet from the <b>855</b>	East/West Line <b>East</b>	County <b>Rio Arriba</b>
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Latitude 36.6067696 Longitude -107.3215485

### NATURE OF RELEASE

Type of Release <b>Oil &amp; Produced Water</b>	Volume of Release <b>33 bbls/ 17 bbls</b>	Volume Recovered <b>0 bbls</b>
Source of Release <b>Production Tank</b>	Date and Hour of Occurrence <b>11/29/17 12:50pm</b>	Date and Hour of Discovery <b>11/29/2017 12:50pm</b>
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? <b>NMOC</b>	
By Whom? <b>Lisa Hunter</b>	Date and Hour <b>11/30/2017 7:40AM</b>	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. <b>N/A</b>	
If a Watercourse was Impacted, Describe Fully.* <b>N/A</b>		

Describe Cause of Problem and Remedial Action Taken.\*

The release as a result of corrosion on the bottom of the production tank. There was no standing product to recover.

Describe Area Affected and Cleanup Action Taken.\*

Approximately 600 c/yds of soil were excavated and biopiled on site for remediation. The remediated soil was backfilled after soil sampling. All analytical results were below the regulatory standards – no further action required. Sampling reports attached.

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

Signature: Lindsay Dumas

Printed Name: **Lindsay Dumas**

Title: **Environmental Specialist**

E-mail Address: **Ldumas@hilcorp.com**

Date: **8/1/2018**

Phone: **(281)794-9159**

Approve

Approva

Conditions of Approval:

**DENIED**

BY: **Cory Smith**

DATE: **8/28/18** (505) 334-6178 Ext. 115

Attached ☒ of

**Oxidizer**

\* Attach Additional Sheets If Necessary

#NCS1733529093

L7 Sent Email

47

## Smith, Cory, EMNRD

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**From:** Smith, Cory, EMNRD  
**Sent:** Tuesday, August 28, 2018 9:43 AM  
**To:** 'Lindsay Dumas'; Fields, Vanessa, EMNRD  
**Cc:** 'Foley, Brandon M.'; Matt Henderson  
**Subject:** RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

OCD has denied the Final C-141 received on Aug, 6, 2018 for the San Juan 27-5 110N.

As per the below email please include documentation/approval for the application of the oxidize, a site sampling map and resubmit the C-141 final no later than September 11, 2018

Thank you,

Cory Smith  
Environmental Specialist  
Oil Conservation Division  
Energy, Minerals, & Natural Resources  
1000 Rio Brazos, Aztec, NM 87410  
(505)334-6178 ext 115  
[cory.smith@state.nm.us](mailto:cory.smith@state.nm.us)

**From:** Smith, Cory, EMNRD  
**Sent:** Monday, August 6, 2018 3:58 PM  
**To:** 'Lindsay Dumas' <ldumas@hilcorp.com>; Fields, Vanessa, EMNRD <Vanessa.Fields@state.nm.us>  
**Cc:** Foley, Brandon M. <bfoley@slo.state.nm.us>  
**Subject:** RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

Reviewing the final C-141, I don't see any pictures or mention of application of potassium permanganate.

Do you have any that I can include in the report, also I was able to piece together a sampling map from my notes with multiple samples named the same thing it might be helpful to include a sampling map.

Cory Smith  
Environmental Specialist  
Oil Conservation Division  
Energy, Minerals, & Natural Resources  
1000 Rio Brazos, Aztec, NM 87410  
(505)334-6178 ext 115

[cory.smith@state.nm.us](mailto:cory.smith@state.nm.us)

**From:** Lindsay Dumas <[ldumas@hilcorp.com](mailto:ldumas@hilcorp.com)>

**Sent:** Thursday, August 2, 2018 7:09 AM

**To:** Smith, Cory, EMNRD <[Cory.Smith@state.nm.us](mailto:Cory.Smith@state.nm.us)>; Fields, Vanessa, EMNRD <[Vanessa.Fields@state.nm.us](mailto:Vanessa.Fields@state.nm.us)>

**Cc:** Foley, Brandon M. <[bfoley@slo.state.nm.us](mailto:bfoley@slo.state.nm.us)>

**Subject:** RE: [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

The hardcopy was placed in the mail yesterday. Thanks!

**From:** Smith, Cory, EMNRD [<mailto:Cory.Smith@state.nm.us>]

**Sent:** Thursday, August 2, 2018 8:08 AM

**To:** Lindsay Dumas <[ldumas@hilcorp.com](mailto:ldumas@hilcorp.com)>; Fields, Vanessa, EMNRD <[Vanessa.Fields@state.nm.us](mailto:Vanessa.Fields@state.nm.us)>

**Cc:** Foley, Brandon M. <[bfoley@slo.state.nm.us](mailto:bfoley@slo.state.nm.us)>

**Subject:** [EXTERNAL] RE: Final C-141: San Juan 27-5 110N

Lindsay,

Thank you, please make sure you send it Hard Copy to the Aztec OCD office for processing

Thanks,

Cory Smith  
Environmental Specialist  
Oil Conservation Division  
Energy, Minerals, & Natural Resources  
1000 Rio Brazos, Aztec, NM 87410  
(505)334-6178 ext 115  
[cory.smith@state.nm.us](mailto:cory.smith@state.nm.us)

**From:** Lindsay Dumas <[ldumas@hilcorp.com](mailto:ldumas@hilcorp.com)>

**Sent:** Wednesday, August 1, 2018 5:13 PM

**To:** Smith, Cory, EMNRD <[Cory.Smith@state.nm.us](mailto:Cory.Smith@state.nm.us)>; Fields, Vanessa, EMNRD <[Vanessa.Fields@state.nm.us](mailto:Vanessa.Fields@state.nm.us)>

**Cc:** Foley, Brandon M. <[bfoley@slo.state.nm.us](mailto:bfoley@slo.state.nm.us)>

**Subject:** Final C-141: San Juan 27-5 110N

Please find attached the final C-141 for the remediation on the San Juan 27-5 110N.

Kind regards,

*Lindsay Dumas*  
Environmental Specialist  
Hilcorp Energy – L48 West  
Office: 832-839-4585  
Mobile: 281-794-9159

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Hilcorp Energy Company's address is 1111 Travis St, Houston, TX 77002





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

February 07, 2018

Lindsay Dumas

Hilcorp Energy

PO Box 61529

Houston, TX 77208-1529

TEL: (337) 276-7676

FAX

RE: San Juan 27 5 110N

OrderNo.: 1801C57

Dear Lindsay Dumas:

Hall Environmental Analysis Laboratory received 5 sample(s) on 1/26/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", with a stylized flourish at the end.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1801C57

Date Reported: 2/7/2018

CLIENT: Hilcorp Energy

Client Sample ID: Base

Project: San Juan 27 5 110N

Collection Date: 1/24/2018 11:00:00 AM

Lab ID: 1801C57-001

Matrix: SOIL

Received Date: 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	ND	30		mg/Kg	20	2/6/2018 3:21:27 AM	36356
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	550	9.7		mg/Kg	1	1/30/2018 4:48:43 PM	36249
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/30/2018 4:48:43 PM	36249
Surr: DNOP	113	70-130		%Rec	1	1/30/2018 4:48:43 PM	36249
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	2400	240		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Surr: BFB	220	15-316		%Rec	50	1/31/2018 3:19:06 PM	36238
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Methyl tert-butyl ether (MTBE)	ND	4.8		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Benzene	2.2	1.2		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Toluene	54	2.4		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Ethylbenzene	11	2.4		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Xylenes, Total	160	4.8		mg/Kg	50	1/31/2018 3:19:06 PM	36238
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	50	1/31/2018 3:19:06 PM	36238

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

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

**Analytical Report**Lab Order **1801C57**Date Reported: **2/7/2018****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Hilcorp Energy**Client Sample ID:** West Wall**Project:** San Juan 27 5 110N**Collection Date:** 1/24/2018 11:00:00 AM**Lab ID:** 1801C57-002**Matrix:** SOIL**Received Date:** 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	65	30		mg/Kg	20	2/6/2018 3:33:52 AM	36356
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	38	9.1		mg/Kg	1	1/30/2018 5:10:40 PM	36249
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/30/2018 5:10:40 PM	36249
Surr: DNOP	109	70-130		%Rec	1	1/30/2018 5:10:40 PM	36249
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	31	4.7		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Surr: BFB	239	15-316		%Rec	1	1/31/2018 3:42:17 PM	36238
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Methyl tert-butyl ether (MTBE)	ND	0.095		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Benzene	0.038	0.024		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Toluene	0.60	0.047		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Ethylbenzene	0.082	0.047		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Xylenes, Total	3.7	0.095		mg/Kg	1	1/31/2018 3:42:17 PM	36238
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	1	1/31/2018 3:42:17 PM	36238

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

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

**Analytical Report**Lab Order **1801C57**Date Reported: **2/7/2018****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Hilcorp Energy**Client Sample ID:** South Wall**Project:** San Juan 27 5 110N**Collection Date:** 1/24/2018 11:00:00 AM**Lab ID:** 1801C57-003**Matrix:** SOIL**Received Date:** 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	76	30		mg/Kg	20	2/6/2018 4:11:06 AM	36356
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	920	10		mg/Kg	1	1/30/2018 5:32:52 PM	36249
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/30/2018 5:32:52 PM	36249
Surr: DNOP	106	70-130		%Rec	1	1/30/2018 5:32:52 PM	36249
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	3200	50		mg/Kg	10	1/31/2018 4:05:33 PM	36238
Surr: BFB	747	15-316	S	%Rec	10	1/31/2018 4:05:33 PM	36238
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Methyl tert-butyl ether (MTBE)	ND	0.99		mg/Kg	10	1/31/2018 4:05:33 PM	36238
Benzene	1.3	0.25		mg/Kg	10	1/31/2018 4:05:33 PM	36238
Toluene	94	5.0		mg/Kg	100	2/1/2018 10:30:05 AM	36238
Ethylbenzene	20	0.50		mg/Kg	10	1/31/2018 4:05:33 PM	36238
Xylenes, Total	290	9.9		mg/Kg	100	2/1/2018 10:30:05 AM	36238
Surr: 4-Bromofluorobenzene	141	80-120	S	%Rec	10	1/31/2018 4:05:33 PM	36238

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

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



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1801C57

Date Reported: 2/7/2018

CLIENT: Hilcorp Energy

Client Sample ID: North Wall

Project: San Juan 27 5 110N

Collection Date: 1/24/2018 11:00:00 AM

Lab ID: 1801C57-004

Matrix: SOIL

Received Date: 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: MRA
Chloride	ND	30		mg/Kg	20	2/6/2018 4:23:31 AM	36356
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/30/2018 5:54:46 PM	36249
Motor Oil Range Organics (MRO)	ND	51		mg/Kg	1	1/30/2018 5:54:46 PM	36249
Surr: DNOP	108	70-130		%Rec	1	1/30/2018 5:54:46 PM	36249
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: RAA
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Surr: BFB	112	15-316		%Rec	1	1/31/2018 4:28:55 PM	36238
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: RAA
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Benzene	ND	0.024		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Toluene	ND	0.049		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Ethylbenzene	ND	0.049		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Xylenes, Total	ND	0.097		mg/Kg	1	1/31/2018 4:28:55 PM	36238
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/31/2018 4:28:55 PM	36238

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

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

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1801C57

Date Reported: 2/7/2018

**CLIENT:** Hilcorp Energy

**Client Sample ID:** East Wall

**Project:** San Juan 27 5 110N

**Collection Date:** 1/24/2018 11:00:00 AM

**Lab ID:** 1801C57-005

**Matrix:** SOIL

**Received Date:** 1/26/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	ND	30		mg/Kg	20	2/6/2018 4:35:56 AM	36356
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	260	9.6		mg/Kg	1	1/30/2018 6:16:45 PM	36249
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/30/2018 6:16:45 PM	36249
Surr: DNOP	112	70-130		%Rec	1	1/30/2018 6:16:45 PM	36249
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	480	97	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Surr: BFB	193	15-316	D	%Rec	20	1/31/2018 4:52:13 PM	36238
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Methyl tert-butyl ether (MTBE)	ND	1.9	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Benzene	ND	0.49	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Toluene	5.0	0.97	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Ethylbenzene	3.0	0.97	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Xylenes, Total	43	1.9	D	mg/Kg	20	1/31/2018 4:52:13 PM	36238
Surr: 4-Bromofluorobenzene	105	80-120	D	%Rec	20	1/31/2018 4:52:13 PM	36238

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

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1801C57

07-Feb-18

Client: Hilcorp Energy  
Project: San Juan 27 5 110N

Sample ID	MB-36356	SampType:	mbk	TestCode:	EPA Method 300.0: Anions						
Client ID:	PBS	Batch ID:	36356	RunNo:	48913						
Prep Date:	2/5/2018	Analysis Date:	2/6/2018	SeqNo:	1573995	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	ND	1.5									

Sample ID	LCS-36356	SampType:	lcs	TestCode:	EPA Method 300.0: Anions						
Client ID:	LCSS	Batch ID:	36356	RunNo:	48913						
Prep Date:	2/5/2018	Analysis Date:	2/6/2018	SeqNo:	1573996	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	14	1.5	15.00	0	93.5	90	110				

## Qualifiers:

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



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1801C57

07-Feb-18

Client: Hilcorp Energy  
Project: San Juan 27 5 110N

Sample ID	LCS-36249	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics						
Client ID:	LCSS	Batch ID:	36249	RunNo:	48775						
Prep Date:	1/29/2018	Analysis Date:	1/30/2018	SeqNo:	1569177	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	46	10	50.00	0	92.9	70	130				
Surr: DNOP	4.5		5.000		90.5	70	130				

Sample ID	MB-36249	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics						
Client ID:	PBS	Batch ID:	36249	RunNo:	48775						
Prep Date:	1/29/2018	Analysis Date:	1/30/2018	SeqNo:	1569178	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	ND	10									
Motor Oil Range Organics (MRO)	ND	50									
Surr: DNOP	9.8		10.00		97.6	70	130				

Sample ID	LCS-36240	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics						
Client ID:	LCSS	Batch ID:	36240	RunNo:	48775						
Prep Date:	1/29/2018	Analysis Date:	1/30/2018	SeqNo:	1570004	Units:	%Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: DNOP	5.1		5.000		101	70	130				

Sample ID	MB-36240	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics						
Client ID:	PBS	Batch ID:	36240	RunNo:	48775						
Prep Date:	1/29/2018	Analysis Date:	1/30/2018	SeqNo:	1570005	Units:	%Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: DNOP	11		10.00		110	70	130				

### Qualifiers:

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1801C57

07-Feb-18

Client: Hilcorp Energy  
Project: San Juan 27 5 110N

Sample ID	LCS-36238		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 36238		RunNo: 48820					
Prep Date:	1/29/2018		Analysis Date: 1/31/2018		SeqNo: 1570842		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	107	75.9	131			
Surr: BFB	1100		1000		115	15	316			

Sample ID	MB-36238	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID: 36238			RunNo: 48820					
Prep Date:	1/29/2018	Analysis Date: 1/31/2018			SeqNo: 1570844		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	1000		1000		101	15	316			

## Qualifiers:

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1801C57

07-Feb-18

Client: Hilcorp Energy  
Project: San Juan 27 5 110N

Sample ID	LCS-36238	SampType: LCS			TestCode: EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID: 36238			RunNo: 48820					
Prep Date:	1/29/2018	Analysis Date: 1/31/2018			SeqNo: 1570883		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.98	0.10	1.000	0	97.7	70.1	121			
Benzene	1.0	0.025	1.000	0	104	77.3	128			
Toluene	1.0	0.050	1.000	0	104	79.2	125			
Ethylbenzene	1.0	0.050	1.000	0	102	80.7	127			
Xylenes, Total	3.1	0.10	3.000	0	105	81.6	129			
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120			

Sample ID	MB-36238	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles						
Client ID:	PBS	Batch ID: 36238		RunNo: 48820						
Prep Date:	1/29/2018	Analysis Date: 1/31/2018		SeqNo: 1570885		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

### Qualifiers:

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





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-343-3975 FAX: 505-343-4107  
Website: www.hallenvironmental.com

## Sample Log-In Check List

Client Name: HILCORP ENERGY

Work Order Number: 1801C57

RptNo: 1

Received By: Erin Melendrez 1/26/2018 8:00:00 AM

Completed By: Dennis Suazo 1/26/2018 8:59:45 AM

Reviewed By: ENM

1/26/18

*[Signature]*

*[Signature]*

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐  
2. How was the sample delivered? Courier

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐  
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6^{\circ}\text{C}$ ? Yes ☒ No ☐ NA ☐  
5. Sample(s) in proper container(s)? Yes ☒ No ☐  
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐  
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐  
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐  
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒  
10. Were any sample containers received broken? Yes ☐ No ☒  
11. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐  
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐  
13. Is it clear what analyses were requested? Yes ☒ No ☐  
14. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐  
# of preserved bottles checked for pH: \_\_\_\_\_  
( $<2$  or  $>12$  unless noted)  
Adjusted? \_\_\_\_\_  
Checked by: \_\_\_\_\_

### Special Handling (if applicable)

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

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
By Whom: \_\_\_\_\_ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person  
Regarding: \_\_\_\_\_  
Client Instructions: \_\_\_\_\_

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.4	Good	Not Present			

# Chain-of-Custody Record

Client: (Lindsay Dumas) Hilcorp

Mailing Address: 1111 Travis St.  
Houston, TX 77002

Phone #: 281-794-9159

email or Fax#: LDumas@Hilcorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation:

☐ NELAP ☐ Other \_\_\_\_\_

☐ EDD (Type) \_\_\_\_\_

☒ Standard ☐ Rush

Project Name:

San Juan 27-S #110N

Project #:

Project Manager:

Lindsay Dumas

Sampler: Travis Munkres

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.1 - 0.7 (C.F.) = 2.4



## HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

### Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Chlorides 300	Air Bubbles (Y or N)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
<del>1/24/18</del>	<del>11:00</del>	<del>Soil</del>				<u>1801C57</u>
1/24/18	11:00	Soil	Base	jar 4oz		001
1/24/18	11:00	Soil	West Wall	jar 4oz		002
1/24/18	11:00	Soil	South Wall	jar 4oz		003
1/24/18	11:00	Soil	North Wall	jar 4oz		004
1/24/18	11:00	Soil	East Wall	jar 4oz		005

Date: 1/25/18 Time: 1558 Relinquished by: Lindsay Dumas

Received by: Christa Webb Date: 1/25/18 Time: 1558

Remarks: Standard turnaround

Date: 1/25/18 Time: 1847 Relinquished by: Christa Webb

Received by: Acourt Date: 2/6/18 Time: 0800

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.





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

March 14, 2018

Lindsay Dumas

Hilcorp Energy

PO Box 61529

Houston, TX 77208-1529

TEL: (337) 276-7676

FAX

RE: SJ 27-5 110N

OrderNo.: 1803595

Dear Lindsay Dumas:

Hall Environmental Analysis Laboratory received 5 sample(s) on 3/10/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", with a stylized flourish at the end.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1803595

Date Reported: 3/14/2018

**CLIENT:** Hilcorp Energy

**Client Sample ID:** North Pile

**Project:** SJ 27-5 110N

**Collection Date:** 3/8/2018 1:00:00 PM

**Lab ID:** 1803595-001

**Matrix:** SOIL

**Received Date:** 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	120	9.2		mg/Kg	1	3/14/2018 5:19:10 AM	36967
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	3/14/2018 5:19:10 AM	36967
Surr: DNOP	117	70-130		%Rec	1	3/14/2018 5:19:10 AM	36967
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	15	4.8		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Surr: BFB	186	15-316		%Rec	1	3/13/2018 7:25:43 PM	36964
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.096		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Benzene	ND	0.024		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Toluene	ND	0.048		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Ethylbenzene	ND	0.048		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Xylenes, Total	0.21	0.096		mg/Kg	1	3/13/2018 7:25:43 PM	36964
Surr: 4-Bromofluorobenzene	96.1	80-120		%Rec	1	3/13/2018 7:25:43 PM	36964

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

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

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1803595

Date Reported: 3/14/2018

**CLIENT:** Hilcorp Energy

**Client Sample ID:** South Pile

**Project:** SJ 27-5 110N

**Collection Date:** 3/8/2018 1:00:00 PM

**Lab ID:** 1803595-002

**Matrix:** SOIL

**Received Date:** 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	130	9.6		mg/Kg	1	3/14/2018 5:44:01 AM	36967
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/14/2018 5:44:01 AM	36967
Surr: DNOP	114	70-130		%Rec	1	3/14/2018 5:44:01 AM	36967
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	13	4.9		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Surr: BFB	164	15-316		%Rec	1	3/13/2018 7:49:12 PM	36964
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.099		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Benzene	ND	0.025		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Toluene	0.060	0.049		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Ethylbenzene	ND	0.049		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Xylenes, Total	0.22	0.099		mg/Kg	1	3/13/2018 7:49:12 PM	36964
Surr: 4-Bromofluorobenzene	97.4	80-120		%Rec	1	3/13/2018 7:49:12 PM	36964

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

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

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1803595

Date Reported: 3/14/2018

**CLIENT:** Hilcorp Energy

**Client Sample ID:** South

**Project:** SJ 27-5 110N

**Collection Date:** 3/8/2018 12:30:00 PM

**Lab ID:** 1803595-003

**Matrix:** SOIL

**Received Date:** 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	71	9.9		mg/Kg	1	3/14/2018 6:08:37 AM	36967
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	3/14/2018 6:08:37 AM	36967
Surr: DNOP	110	70-130		%Rec	1	3/14/2018 6:08:37 AM	36967
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	7.2	4.8		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Surr: BFB	139	15-316		%Rec	1	3/13/2018 8:12:44 PM	36964
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Benzene	ND	0.024		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Toluene	0.089	0.048		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Ethylbenzene	ND	0.048		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Xylenes, Total	0.16	0.097		mg/Kg	1	3/13/2018 8:12:44 PM	36964
Surr: 4-Bromofluorobenzene	94.3	80-120		%Rec	1	3/13/2018 8:12:44 PM	36964

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

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

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1803595

Date Reported: 3/14/2018

CLIENT: Hilcorp Energy

Client Sample ID: East

Project: SJ 27-5 110N

Collection Date: 3/8/2018 12:30:00 PM

Lab ID: 1803595-004

Matrix: SOIL

Received Date: 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	3/14/2018 6:33:25 AM	36967
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	3/14/2018 6:33:25 AM	36967
Surr: DNOP	115	70-130		%Rec	1	3/14/2018 6:33:25 AM	36967
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Surr: BFB	99.7	15-316		%Rec	1	3/13/2018 8:36:15 PM	36964
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Benzene	ND	0.024		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Toluene	0.079	0.049		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Ethylbenzene	ND	0.049		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Xylenes, Total	0.11	0.097		mg/Kg	1	3/13/2018 8:36:15 PM	36964
Surr: 4-Bromofluorobenzene	91.9	80-120		%Rec	1	3/13/2018 8:36:15 PM	36964

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

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



# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1803595

Date Reported: 3/14/2018

CLIENT: Hilcorp Energy

Client Sample ID: Base

Project: SJ 27-5 110N

Collection Date: 3/8/2018 12:30:00 PM

Lab ID: 1803595-005

Matrix: SOIL

Received Date: 3/10/2018 8:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	660	9.4		mg/Kg	1	3/14/2018 6:57:51 AM	36967
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	3/14/2018 6:57:51 AM	36967
Surr: DNOP	114	70-130		%Rec	1	3/14/2018 6:57:51 AM	36967
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	1400	240		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Surr: BFB	181	15-316		%Rec	50	3/13/2018 8:59:45 PM	36964
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	4.9		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Benzene	ND	1.2		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Toluene	22	2.4		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Ethylbenzene	7.8	2.4		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Xylenes, Total	110	4.9		mg/Kg	50	3/13/2018 8:59:45 PM	36964
Surr: 4-Bromofluorobenzene	98.7	80-120		%Rec	50	3/13/2018 8:59:45 PM	36964

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1803595

14-Mar-18

Client: Hilcorp Energy

Project: SJ 27-5 110N

Sample ID	LCS-36967		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 36967		RunNo: 49733					
Prep Date:	3/12/2018		Analysis Date: 3/13/2018		SeqNo: 1610106		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	70	130			
Surr: DNOP	5.1		5.000		102	70	130			

Sample ID	MB-36967		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 36967		RunNo: 49733					
Prep Date:	3/12/2018		Analysis Date: 3/13/2018		SeqNo: 1610107		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	11		10.00		107	70	130			

### Qualifiers:

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1803595

14-Mar-18

Client: Hilcorp Energy

Project: SJ 27-5 110N

Sample ID	MB-36964		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: 36964		RunNo: 49750					
Prep Date:	3/12/2018		Analysis Date: 3/13/2018		SeqNo: 1609795		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	930		1000		92.8	15	316			

Sample ID	LCS-36964		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 36964		RunNo: 49750					
Prep Date:	3/12/2018		Analysis Date: 3/13/2018		SeqNo: 1609796		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	105	75.9	131			
Surr: BFB	1000		1000		104	15	316			

## Qualifiers:

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1803595

14-Mar-18

Client: Hilcorp Energy

Project: SJ 27-5 110N

Sample ID: <b>MB-36964</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>36964</b>	RunNo: <b>49750</b>								
Prep Date: <b>3/12/2018</b>	Analysis Date: <b>3/13/2018</b>	SeqNo: <b>1609836</b>		Units: <b>mg/Kg</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.90		1.000		89.8	80	120			

Sample ID: <b>LCS-36964</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>36964</b>	RunNo: <b>49750</b>								
Prep Date: <b>3/12/2018</b>	Analysis Date: <b>3/13/2018</b>	SeqNo: <b>1609837</b>		Units: <b>mg/Kg</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.0	0.10	1.000	0	103	70.1	121			
Benzene	1.0	0.025	1.000	0	105	77.3	128			
Toluene	1.0	0.050	1.000	0	104	79.2	125			
Ethylbenzene	1.0	0.050	1.000	0	103	80.7	127			
Xylenes, Total	3.1	0.10	3.000	0	105	81.6	129			
Surr: 4-Bromofluorobenzene	0.95		1.000		95.3	80	120			

### Qualifiers:

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





Hall Environmental Analysis Laboratory  
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: 1803595

RcptNo: 1

Received By: Isalah Ortiz 3/10/2018 8:00:00 AM

Completed By: Isalah Ortiz 3/12/2018 9:26:26 AM

Reviewed By: *see 03/12/18*

*IO*  
*IO*  
*labeled by: AG*

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐  
2. How was the sample delivered? Courier

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐  
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? Yes ☒ No ☐ NA ☐  
5. Sample(s) in proper container(s)? Yes ☒ No ☐  
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐  
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐  
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐  
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒  
10. Were any sample containers received broken? Yes ☐ No ☒  
11. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐  
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐  
13. Is it clear what analyses were requested? Yes ☒ No ☐  
14. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐  
# of preserved bottles checked for pH:   
( $<2$  or  $>12$  unless noted)  
Adjusted?   
Checked by:

### Special Handling (if applicable)

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

Person Notified:   
By Whom:   
Date:   
Via ☐ eMail ☐ Phone ☐ Fax ☐ In Person   
Regarding:   
Client Instructions:

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	04	Good	Yes			

Hilcorp☒ Standard      ☐ Rush

ST 27-5 110N

Project #:

Project Manager:

Lindsay Dumas

Sampler: Travis Munkres

On Ice: ☒ Yes ☐ No

Sample Temperature: 39

Mailing Address: 1111 Travis St.

Houston, Tx 77002

Phone #: 832-839-4585

email or Fax#: LDumas@hikorp.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

**Accreditation:**

☐ NELAP      ☐ Other

□ EDD (Type)

Date: 3/9/18	Time: 1320	Relinquished by: Lindsay Dumas	Received by: Christa Walt	Date 3/9/18	Time 1320	Remarks: Standard turnaround time AFE #1850852
Date: 3/9/18	Time: 1804	Relinquished by: Christa Walt	Received by: J. G.	Date 3/10/18	Time 800	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.





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

May 01, 2018

Lindsay Dumas

Hilcorp Energy

PO Box 61529

Houston, TX 77208-1529

TEL: (337) 276-7676

FAX

RE: SJ 27-5 110N Landfarm 2

OrderNo.: 1804D57

Dear Lindsay Dumas:

Hall Environmental Analysis Laboratory received 2 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 [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", with a stylized flourish at the end.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

**Analytical Report**Lab Order **1804D57**

Date Reported: 5/1/2018

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Hilcorp Energy**Client Sample ID:** South 6**Project:** SJ 27-5 110N Landfarm 2**Collection Date:** 4/26/2018 10:00:00 AM**Lab ID:** 1804D57-001**Matrix:** SOIL**Received Date:** 4/27/2018 7:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	78	9.6		mg/Kg	1	4/30/2018 6:14:30 PM	37838
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/30/2018 6:14:30 PM	37838
Surr: DNOP	102	70-130		%Rec	1	4/30/2018 6:14:30 PM	37838
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Surr: BFB	106	15-316		%Rec	1	4/30/2018 11:15:42 AM	37835
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.094		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Benzene	ND	0.023		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Toluene	ND	0.047		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Ethylbenzene	ND	0.047		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Xylenes, Total	ND	0.094		mg/Kg	1	4/30/2018 11:15:42 AM	37835
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	4/30/2018 11:15:42 AM	37835

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

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



# Analytical Report

Lab Order 1804D57

Date Reported: 5/1/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Hilcorp Energy

Client Sample ID: North 6

Project: SJ 27-5 110N Landfarm 2

Collection Date: 4/26/2018 10:00:00 AM

Lab ID: 1804D57-002

Matrix: SOIL

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

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	54	9.2		mg/Kg	1	4/30/2018 6:36:45 PM	37838
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/30/2018 6:36:45 PM	37838
Surr: DNOP	107	70-130		%Rec	1	4/30/2018 6:36:45 PM	37838
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Surr: BFB	99.0	15-316		%Rec	1	4/30/2018 11:39:03 AM	37835
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Methyl tert-butyl ether (MTBE)	ND	0.095		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Benzene	ND	0.024		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Toluene	ND	0.047		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Ethylbenzene	ND	0.047		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Xylenes, Total	ND	0.095		mg/Kg	1	4/30/2018 11:39:03 AM	37835
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	4/30/2018 11:39:03 AM	37835

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

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D57

01-May-18

Client: Hilcorp Energy

Project: SJ 27-5 110N Landfarm 2

Sample ID	LCS-37838		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 37838		RunNo: 50909					
Prep Date:	4/27/2018		Analysis Date: 4/30/2018		SeqNo: 1653303		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.0	70	130			
Surr: DNOP	4.8		5.000		96.3	70	130			

Sample ID	MB-37838	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID:	PBS	Batch ID: 37838		RunNo: 50909						
Prep Date:	4/27/2018	Analysis Date: 4/30/2018		SeqNo: 1653304		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	10		10.00		102	70	130			

## Qualifiers:

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

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

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D57

01-May-18

Client: Hilcorp Energy  
Project: SJ 27-5 110N Landfarm 2

Sample ID	MB-37835	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	37835	RunNo:	50929					
Prep Date:	4/27/2018	Analysis Date:	4/30/2018	SeqNo:	1653363	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	950		1000		94.9	15	316			

Sample ID	LCS-37835	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	37835	RunNo:	50929					
Prep Date:	4/27/2018	Analysis Date:	4/30/2018	SeqNo:	1653364	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	105	75.9	131			
Surr: BFB	1100		1000		107	15	316			

Sample ID	MB-37842	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	37842	RunNo:	50929					
Prep Date:	4/27/2018	Analysis Date:	4/30/2018	SeqNo:	1653372	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	880		1000		87.7	15	316			

Sample ID	LCS-37842	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	37842	RunNo:	50929					
Prep Date:	4/27/2018	Analysis Date:	4/30/2018	SeqNo:	1653373	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		106	15	316			

### Qualifiers:

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

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



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D57

01-May-18

Client: Hilcorp Energy  
Project: SJ 27-5 110N Landfarm 2

Sample ID	MB-37835		SampType:	MBLK		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	PBS		Batch ID:	37835		RunNo:	50929			
Prep Date:	4/27/2018		Analysis Date:	4/30/2018		SeqNo:	1653384		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		110	80	120			

Sample ID	LCS-37835		SampType:	LCS		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	LCSS		Batch ID:	37835		RunNo:	50929			
Prep Date:	4/27/2018		Analysis Date:	4/30/2018		SeqNo:	1653385		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.93	0.10	1.000	0	92.9	70.1	121			
Benzene	0.97	0.025	1.000	0	96.6	77.3	128			
Toluene	0.98	0.050	1.000	0	98.4	79.2	125			
Ethylbenzene	0.97	0.050	1.000	0	96.7	80.7	127			
Xylenes, Total	3.0	0.10	3.000	0	99.7	81.6	129			
Surr: 4-Bromofluorobenzene	1.1		1.000		109	80	120			

Sample ID	1804D57-002AMS		SampType:	MS		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	North 6		Batch ID:	37835		RunNo:	50929			
Prep Date:	4/27/2018		Analysis Date:	4/30/2018		SeqNo:	1653388		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.88	0.094	0.9363	0	94.4	56.9	130			
Benzene	0.90	0.023	0.9363	0	95.6	68.5	133			
Toluene	0.92	0.047	0.9363	0.008357	97.4	75	130			
Ethylbenzene	0.92	0.047	0.9363	0.01235	97.4	79.4	128			
Xylenes, Total	2.8	0.094	2.809	0.01709	101	77.3	131			
Surr: 4-Bromofluorobenzene	0.99		0.9363		106	80	120			

Sample ID	1804D57-002AMSD		SampType:	MSD		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	North 6		Batch ID:	37835		RunNo:	50929			
Prep Date:	4/27/2018		Analysis Date:	4/30/2018		SeqNo:	1653389		Units: mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.85	0.095	0.9533	0	89.5	56.9	130	3.61	20	
Benzene	0.85	0.024	0.9533	0	89.6	68.5	133	4.66	20	
Toluene	0.91	0.048	0.9533	0.008357	95.0	75	130	0.677	20	
Ethylbenzene	0.93	0.048	0.9533	0.01235	96.5	79.4	128	0.808	20	

### Qualifiers:

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

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1804D57

01-May-18

Client: Hilcorp Energy

Project: SJ 27-5 110N Landfarm 2

Sample ID	1804D57-002AMSD	SampType:	MSD	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	North 6	Batch ID:	37835	RunNo:	50929					
Prep Date:	4/27/2018	Analysis Date:	4/30/2018	SeqNo:	1653389	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Xylenes, Total	2.9	0.095	2.860	0.01709	100	77.3	131	1.60	20	
Surr: 4-Bromofluorobenzene	0.97		0.9533		102	80	120	0	0	

Sample ID	MB-37842	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBS	Batch ID:	37842	RunNo:	50929					
Prep Date:	4/27/2018	Analysis Date:	4/30/2018	SeqNo:	1653392	Units:	%Rec			
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	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID:	37842	RunNo:	50929					
Prep Date:	4/27/2018	Analysis Date:	4/30/2018	SeqNo:	1653393	Units:	%Rec			
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 Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

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



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

## Sample Log-In Check List

Client Name: HILCORP ENERGY

Work Order Number: 1804D57

RcptNo: 1

Received By: Anne Thorne

4/27/2018 7:00:00 AM

*Anne Thorne*

Completed By: Anne Thorne

4/27/2018 7:44:01 AM

*Anne Thorne*

Reviewed By: IMO

4/27/18

MW 4/27/18

### Chain of Custody

1. Is Chain of Custody complete?

Yes ☒

No ☐

Not Present ☐

2. How was the sample delivered?

Courier

### Log In

3. Was an attempt made to cool the samples?

Yes ☒

No ☐

NA ☐

4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ?

Yes ☒

No ☐

NA ☐

5. Sample(s) in proper container(s)?

Yes ☒

No ☐

6. Sufficient sample volume for indicated test(s)?

Yes ☒

No ☐

7. Are samples (except VOA and ONG) properly preserved?

Yes ☒

No ☐

8. Was preservative added to bottles?

Yes ☐

No ☒

NA ☐

9. VOA vials have zero headspace?

Yes ☐

No ☐

No VOA Vials ☒

10. Were any sample containers received broken?

Yes ☐

No ☒

11. Does paperwork match bottle labels?

Yes ☒

No ☐

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody?

Yes ☒

No ☐

13. Is it clear what analyses were requested?

Yes ☒

No ☐

14. Were all holding times able to be met?

Yes ☒

No ☐

(If no, notify customer for authorization.)

# of preserved bottles checked for pH: 4/27/18  
(30 ± 2 unless noted)

Adjusted: MW 4/27/18

Checked by: MW 4/27/18

### Special Handling (if applicable)

15. Was client notified of all discrepancies with this order?

Yes ☐

No ☐

NA ☒

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			



Client: Hilcorp Energy Company

Houston TX 77002

email or Fax#: LDumas@hilcorp.com

☐ Standard ☐ Level 4 (Full Validation)

☐ NELAC      ☐ Other☐ EDD (Type)[illegible]

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly noted on the analytical report.



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

[www.hallenvironmental.com](http://www.hallenvironmental.com)

4901 Hawkins NE - Albuquerque, NM 87109

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

## Analysis Request



# ANALYTICAL REPORT

July 09, 2018

## HilCorp-Farmington, NM

Sample Delivery Group: L1005502  
Samples Received: 06/29/2018  
Project Number:  
Description:  
Site: SJ 27-5 UNIT 110N  
Report To: Kurt Hoekstra and Lindsay Dumas  
382 Road 3100  
Aztec, NM 87401

Entire Report Reviewed By:



Daphne Richards  
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

# TABLE OF CONTENTS

ONE LAB. NATIONWIDE.



<b>Cp: Cover Page</b>	<b>1</b>	<sup>1</sup> Cp
<b>Tc: Table of Contents</b>	<b>2</b>	
<b>Ss: Sample Summary</b>	<b>3</b>	<sup>2</sup> Tc
<b>Cn: Case Narrative</b>	<b>4</b>	
<b>Sr: Sample Results</b>	<b>5</b>	<sup>3</sup> Ss
S VADOS L1005502-01	5	
N VADOS L1005502-02	6	<sup>4</sup> Cn
<b>Qc: Quality Control Summary</b>	<b>7</b>	<sup>5</sup> Sr
Volatile Organic Compounds (GC) by Method 8015/8021	7	
Semi-Volatile Organic Compounds (GC) by Method 8015	9	<sup>6</sup> Qc
<b>Gl: Glossary of Terms</b>	<b>10</b>	<sup>7</sup> Gl
<b>Al: Accreditations &amp; Locations</b>	<b>11</b>	
<b>Sc: Sample Chain of Custody</b>	<b>12</b>	<sup>8</sup> Al
		<sup>9</sup> Sc

ACCOUNT:

HilCorp-Farmington, NM

PROJECT:

SDG:

L1005502

DATE/TIME:

07/09/18 09:10

PAGE:

2 of 12

## SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



## S VADOS L1005502-01 Solid

			Collected by	Collected date/time	Received date/time
			Kurt	06/27/18 13:50	06/29/18 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1132779	1	06/29/18 10:30	07/02/18 15:54	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1133536	1	07/05/18 18:32	07/06/18 16:57	MTJ

<sup>1</sup> Cp<sup>2</sup> Tc

## N VADOS L1005502-02 Solid

			Collected by	Collected date/time	Received date/time
			Kurt	06/28/18 13:55	06/29/18 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1132779	1	06/29/18 10:30	07/02/18 15:33	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1133536	1	07/05/18 18:32	07/06/18 16:30	MTJ

<sup>4</sup> Cn<sup>5</sup> Sr<sup>6</sup> Qc<sup>7</sup> Gl<sup>8</sup> Al<sup>9</sup> Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne Richards  
Technical Service Representative

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>5</sup> Sr<sup>6</sup> Qc<sup>7</sup> Gl<sup>8</sup> Al<sup>9</sup> Sc





## Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00105		0.000500	1	07/02/2018 15:54	<a href="#">WG1132779</a>
Toluene	ND		0.00500	1	07/02/2018 15:54	<a href="#">WG1132779</a>
Ethylbenzene	ND		0.000500	1	07/02/2018 15:54	<a href="#">WG1132779</a>
Total Xylene	ND		0.00150	1	07/02/2018 15:54	<a href="#">WG1132779</a>
TPH (GC/FID) Low Fraction	ND		0.100	1	07/02/2018 15:54	<a href="#">WG1132779</a>
(S) <i>o,o</i> , <i>o</i> -Trifluorotoluene(FID)	99.5		77.0-120		07/02/2018 15:54	<a href="#">WG1132779</a>
(S) <i>o,o</i> , <i>o</i> -Trifluorotoluene(PID)	105		75.0-128		07/02/2018 15:54	<a href="#">WG1132779</a>

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	31.9		4.00	1	07/06/2018 16:57	<a href="#">WG1133536</a>
C28-C40 Oil Range	11.4		4.00	1	07/06/2018 16:57	<a href="#">WG1133536</a>
(S) <i>o</i> -Terphenyl	75.1		18.0-148		07/06/2018 16:57	<a href="#">WG1133536</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



## Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00155		0.000500	1	07/02/2018 15:33	<a href="#">WG1132779</a>
Toluene	ND		0.00500	1	07/02/2018 15:33	<a href="#">WG1132779</a>
Ethylbenzene	ND		0.000500	1	07/02/2018 15:33	<a href="#">WG1132779</a>
Total Xylene	ND		0.00150	1	07/02/2018 15:33	<a href="#">WG1132779</a>
TPH (GC/FID) Low Fraction	ND		0.100	1	07/02/2018 15:33	<a href="#">WG1132779</a>
(S) a,a,a-Trifluorotoluene(FID)	99.3		77.0-120		07/02/2018 15:33	<a href="#">WG1132779</a>
(S) a,a,a-Trifluorotoluene(PID)	106		75.0-128		07/02/2018 15:33	<a href="#">WG1132779</a>

<sup>1</sup> Cp<sup>2</sup> Tc<sup>3</sup> Ss<sup>4</sup> Cn

## Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	22.1		4.00	1	07/06/2018 16:30	<a href="#">WG1133536</a>
C28-C40 Oil Range	7.72		4.00	1	07/06/2018 16:30	<a href="#">WG1133536</a>
(S) o-Terphenyl	77.3		18.0-148		07/06/2018 16:30	<a href="#">WG1133536</a>

<sup>6</sup> Qc<sup>7</sup> Gl<sup>8</sup> Al<sup>9</sup> Sc

WG1132779

Volatile Organic Compounds (GC) by Method 8015/8021

## QUALITY CONTROL SUMMARY

L1005502-01.02

ONE LAB. NATIONWIDE.



## Method Blank (MB)

(MB) R3322588-4 07/02/18 11:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	U		0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	101			77.0-120
(S) a,a,a-Trifluorotoluene(PID)	108			75.0-128

Cp

Tc

Ss

Cn

Sr

## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3322588-1 07/02/18 09:22 • (LCSD) R3322588-2 07/02/18 09:43

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0444	0.0449	88.8	89.7	71.0-121			1.06	20
Toluene	0.0500	0.0466	0.0469	93.3	93.8	72.0-120			0.548	20
Ethylbenzene	0.0500	0.0533	0.0535	107	107	76.0-121			0.428	20
Total Xylene	0.150	0.163	0.163	109	109	75.0-124			0.184	20
(S) a,a,a-Trifluorotoluene(FID)				99.9	99.6	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				104	104	75.0-128				

Gl

Al

Sc

## Laboratory Control Sample (LCS)

(LCS) R3322588-3 07/02/18 10:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.26	95.7	70.0-136	
(S) a,a,a-Trifluorotoluene(FID)			85.6	77.0-120	
(S) a,a,a-Trifluorotoluene(PID)			111	75.0-128	

ACCOUNT:  
HilCorp-Farmington, NM

PROJECT:

SDG:  
L1005502DATE/TIME:  
07/09/18 09:10PAGE:  
7 of 12



## L1004629-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1004629-01 07/02/18 16:36 • (MS) R3322588-5 07/02/18 16:57 • (MSD) R3322588-6 07/02/18 17:18

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	13.3	66.4	65.7	106	105	1000	10.0-146			1.10	29
Toluene	0.0500	155	186	212	62.6	115	1000	10.0-143			13.1	30
Ethylbenzene	0.0500	80.0	129	136	98.5	111	1000	10.0-147			4.78	31
Total Xylene	0.150	543	612	640	46.0	64.7	1000	10.0-149	E J6	E J6	4.47	30
(S)					101	96.6		77.0-120				
a,a,a-Trifluorotoluene(FID)												
(S)					107	107		75.0-128				
a,a,a-Trifluorotoluene(PID)												

Cp

Tc

Ss

Cn

Sr

## L1004629-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1004629-01 07/02/18 16:36 • (MS) R3322588-7 07/02/18 17:39 • (MSD) R3322588-8 07/02/18 18:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	6210	10700	10800	82.0	82.7	1000	10.0-147			0.351	30
(S)					92.4	92.4		77.0-120				
a,a,a-Trifluorotoluene(FID)												
(S)					113	114		75.0-128				
a,a,a-Trifluorotoluene(PID)												

Gl

Al

Sc

ACCOUNT:  
HilCorp-Farmington, NM

PROJECT:

SDG:  
L1005502DATE/TIME:  
07/09/18 09:10PAGE:  
8 of 12



WG1133536

Semi-Volatile Organic Compounds (GC) by Method 8015

## QUALITY CONTROL SUMMARY

[L1005502-01.02](#)

ONE LAB. NATIONWIDE.



## Method Blank (MB)

(MB) R3323648-1 07/06/18 13:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	88.6			18.0-148

## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3323648-2 07/06/18 14:13 • (LCSD) R3323648-3 07/06/18 14:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	47.2	50.0	94.3	100	50.0-150			5.92	20
(S) o-Terphenyl				94.0	102	18.0-148				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

7 Gl

8 Al

9 Sc

ACCOUNT:  
HillCorp-Farmington, NM

PROJECT:

SDG:  
L1005502DATE/TIME:  
07/09/18 09:10PAGE:  
9 of 12



## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

8 Al

9 Sc





Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

- 1

Cp
- 2

Tc
- 3

Ss
- 4

Cn
- 5

Sr
- 6

Qc
- 7

Gl
- 8

Al
- 9

Sc

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1 6</sup>	90010	South Carolina	84004
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana <sup>1</sup>	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water   <sup>2</sup> Underground Storage Tanks   <sup>3</sup> Aquatic Toxicity   <sup>4</sup> Chemical/Microbiological   <sup>5</sup> Mold   <sup>6</sup> Wastewater   n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



ACCOUNT:  
HilCorp-Farmington, NM

PROJECT:

SDG:  
1005502

DATE/TIME:  
07/09/18 09:10



10