



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)

June 28, 2016

Amber Griffin

Yates Petroleum Corporation  
105 South Fourth Street  
Artesia, NM 88210  
TEL: (575) 748-4195  
FAX

RE: Satchmo SWD State 1

OrderNo.: 1606A45

Dear Amber Griffin:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/17/2016 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', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1606A45**

Date Reported: **6/28/2016**

**CLIENT:** Yates Petroleum Corporation

**Client Sample ID:** Pad 2-1'

**Project:** Satchmo SWD State 1

**Collection Date:** 6/15/2016 9:18:00 AM

**Lab ID:** 1606A45-001

**Matrix:** SOIL

**Received Date:** 6/17/2016 9:40:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/22/2016 4:35:16 PM	25914
Surr: DNOP	94.8	70-130		%Rec	1	6/22/2016 4:35:16 PM	25914
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/25/2016 12:36:37 AM	25945
Surr: BFB	99.1	80-120		%Rec	1	6/25/2016 12:36:37 AM	25945
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Benzene	ND	0.024		mg/Kg	1	6/25/2016 12:36:37 AM	25945
Toluene	ND	0.049		mg/Kg	1	6/25/2016 12:36:37 AM	25945
Ethylbenzene	ND	0.049		mg/Kg	1	6/25/2016 12:36:37 AM	25945
Xylenes, Total	ND	0.097		mg/Kg	1	6/25/2016 12:36:37 AM	25945
Surr: 4-Bromofluorobenzene	95.9	80-120		%Rec	1	6/25/2016 12:36:37 AM	25945

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
	R	RPD outside accepted recovery limits	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 **1606A45**

Date Reported: **6/28/2016**

**CLIENT:** Yates Petroleum Corporation

**Client Sample ID:** Pad 3-1'

**Project:** Satchmo SWD State 1

**Collection Date:** 6/15/2016 8:54:00 AM

**Lab ID:** 1606A45-002

**Matrix:** SOIL

**Received Date:** 6/17/2016 9:40:00 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	9.9		mg/Kg	1	6/21/2016 3:59:28 PM	25914
Surr: DNOP	81.0	70-130		%Rec	1	6/21/2016 3:59:28 PM	25914
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/25/2016 1:00:09 AM	25945
Surr: BFB	97.4	80-120		%Rec	1	6/25/2016 1:00:09 AM	25945
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>RAA</b>
Benzene	ND	0.024		mg/Kg	1	6/25/2016 1:00:09 AM	25945
Toluene	ND	0.047		mg/Kg	1	6/25/2016 1:00:09 AM	25945
Ethylbenzene	ND	0.047		mg/Kg	1	6/25/2016 1:00:09 AM	25945
Xylenes, Total	ND	0.094		mg/Kg	1	6/25/2016 1:00:09 AM	25945
Surr: 4-Bromofluorobenzene	95.1	80-120		%Rec	1	6/25/2016 1:00:09 AM	25945

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
	R	RPD outside accepted recovery limits	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#: 1606A45

28-Jun-16

Client: Yates Petroleum Corporation

Project: Satchmo SWD State 1

Sample ID	MB-25914		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 25914		RunNo: 35041					
Prep Date:	6/17/2016		Analysis Date: 6/21/2016		SeqNo: 1085626		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	11		10.00		106	70	130			

Sample ID	LCS-25914		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 25914		RunNo: 35041					
Prep Date:	6/17/2016		Analysis Date: 6/21/2016		SeqNo: 1086512		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	106	62.6	124			
Surr: DNOP	4.9		5.000		98.8	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  
R RPD outside accepted recovery limits  
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#: 1606A45

28-Jun-16

**Client:** Yates Petroleum Corporation

**Project:** Satchmo SWD State 1

Sample ID <b>MB-25945</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>25945</b>		RunNo: <b>35048</b>							
Prep Date: <b>6/20/2016</b>	Analysis Date: <b>6/21/2016</b>		SeqNo: <b>1084262</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		105	80	120			

Sample ID <b>LCS-25945 C</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>25945</b>		RunNo: <b>35048</b>							
Prep Date:	Analysis Date: <b>6/21/2016</b>		SeqNo: <b>1084263</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	99.4	80	120			
Surr: BFB	1200		1000		117	80	120			

Sample ID <b>5ML-RB</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>R35158</b>		RunNo: <b>35158</b>							
Prep Date:	Analysis Date: <b>6/24/2016</b>		SeqNo: <b>1087655</b>		Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	970		1000		97.3	80	120			

Sample ID <b>2.5NG GRO LCS</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>R35158</b>		RunNo: <b>35158</b>							
Prep Date:	Analysis Date: <b>6/24/2016</b>		SeqNo: <b>1088007</b>		Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		113	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                                    |
| R RPD outside accepted recovery limits                  | 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#: 1606A45

28-Jun-16

Client: Yates Petroleum Corporation

Project: Satchmo SWD State 1

Sample ID	LCS-25945		SampType: LCS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	LCSS		Batch ID: 25945		RunNo: 35158					
Prep Date:	6/20/2016		Analysis Date: 6/24/2016		SeqNo: 1088034		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	98.7	75.3	123			
Toluene	0.98	0.050	1.000	0	98.1	80	124			
Ethylbenzene	1.0	0.050	1.000	0	100	82.8	121			
Xylenes, Total	3.0	0.10	3.000	0	99.4	83.9	122			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID	MB-25945		SampType: MBLK		TestCode: EPA Method 8021B: Volatiles					
Client ID:	PBS		Batch ID: 25945		RunNo: 35158					
Prep Date:	6/20/2016		Analysis Date: 6/25/2016		SeqNo: 1088035		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	0.95		1.000		95.4	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  
R RPD outside accepted recovery limits  
S % Recovery outside of range due to dilution or matrix

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## Sample Log-In Check List

Client Name: Yates Petroleum Corporat

Work Order Number: 1606A45

RcptNo: 1

Received by/date:

Logged By: Lindsay Mangin

06/17/16  
6/17/2016 9:40:00 AM

Completed By: Lindsay Mangin

6/20/2016 5:44:05 AM

Reviewed By:

### Chain of Custody

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

### Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. 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)

16. 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:

17. Additional remarks:

### 18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			

