

MARTIN YATES, III  
1912-1985

FRANK W. YATES  
1936-1986

S.P. YATES  
1914-2008



JOHN A. YATES SR.  
CHAIRMAN EMERITUS

JOHN A. YATES JR.  
CHAIRMAN OF THE BOARD

DOUGLAS E. BROOKS  
PRESIDENT / CEO

105 SOUTH FOURTH STREET  
ARTESIA, NEW MEXICO 88210-2118  
TELEPHONE (575) 748-1471

October 11, 2016

Ms. Kristen Lynch  
NMOCD District I  
1625 N. French Dr.  
Hobbs, NM 88240

**APPROVED** NMOCD WorkPlan  
*By Kristen Lynch at 9:54 am, Nov 14, 2016*

RE: Willie BNW State #3  
30-025-36684  
Section 6, T12S-R35E  
Lea County, New Mexico


Ms. Lynch,

Yates Petroleum Corporation (Yates) would like to submit the attached plan of work to you regarding the release that occurred at the above mentioned facility on July 3, 2016 (1RP-4342).

With NMOCD and NMSLO approval of this work plan, Yates will hold a bid meeting allowing several contractors the opportunity to submit bids on this remediation project. Bids that are received will be forwarded to Yates Management for review. Once Yates Management reviews the bids and gives approval, the remediation project will be awarded to a contractor for work to commence.

If you have any questions or concerns, I can be reached at (575) 748-4111 or by email at [agriffin@yatespetroleum.com](mailto:agriffin@yatespetroleum.com).

Thank You,

  
Amber Griffin  
Environmental Representative  
Yates Petroleum Corporation



**Yates Petroleum Corporation**

**Willie BNW State Com #3 Work Plan**

**Section 6, T12S-R35E**

**Lea County, New Mexico**

**October 11, 2016**

## **I. Location**

The well is located approximately 8.6 miles west of Tatum, NM and approximately 1.5 miles north of Highway 380.

## **II. Background**

On July 3, 2016, Yates had a release of 15 barrels produced water and 30 barrels of crude oil, with 5 barrels produced water and 15 barrels of crude oil recovered. The area affected from this release was within the bermed area of the battery, and there was slight overspray to the west of the tanks outside the bermed area, but all contamination remained on the production pad. Vegetation and grasses that were affected by overspray from the release were treated with a Micro-Blaze/Water mixture. The area within the berm area was scraped to remove all visible contamination.

An initial Form C-141 was submitted, via e-mail, to the NMOCD District I office on July 8, 2016 for this release.

On July 13, 2016 personnel returned to the release area and collected soil samples from the release area. The release area was split into two sections: Pooling and Overspray. The pooling area was the area affected inside the bermed battery. The overspray area was the area affected to the west of the tanks, outside the bermed battery. The pooling area was sampled at the surface and at depths of 1', 2', 3' and 4' below the surface area with a backhoe, because of hard rock that was encountered the backhoe could not successfully grab samples at deeper depths. The overspray area was sampled at the surface. The soil samples were sent to an approved NMOCD laboratory and tested for BTEX 8021B, TPH 8015M, and Chlorides 300.0. Yates received the analytical results on July 25, 2016 (Report 1607710 attached to this work plan). The analytical results showed the following:

- Chlorides were at or near acceptable levels for all samples that were collected in both the pooling and overspray areas.
- The overspray area sample showed that both TPH and BTEX were at levels below NMOCD RRALs.
- The pooling area showed elevated BTEX levels, which delineated to levels below NMOCD RRALs.
- The pooling area also showed elevated TPH levels, which did not delineate to levels below NMOCD RRALs.

On August 23, 2016 personnel returned to the release area and collected further soil samples from the pooling area at depths of 5', 6' and 7' below the surface level with a trackhoe. An impenetrable rock layer was encountered and the trackhoe, after many attempts, was unable to break through the naturally occurring barrier. The soil samples were sent to an approved NMOCD laboratory and tested for TPH 8015M. Yates received the analytical results on September 1, 2016 (Report 1608F06 attached to this work plan). The analytical results showed that TPH levels were still at levels above NMOCD RRALs.

### **III. Surface and Ground Water**

Area surface geology is Cenozoic. The ChevronTexaco depth to ground water map shows the depth to groundwater to be less than 50 feet, making the site ranking for this site a twenty (20). Watercourses in the area are dry except for infrequent flows in response to major precipitation events.

The ranking for this site is twenty (20) based on the following:

Depth to ground water	<50'
Wellhead Protection Area	> 1000'
Distance to surface water body	> 1000'

### **IV. Soils**

The area consists of soils that are caliche and other hard rock.

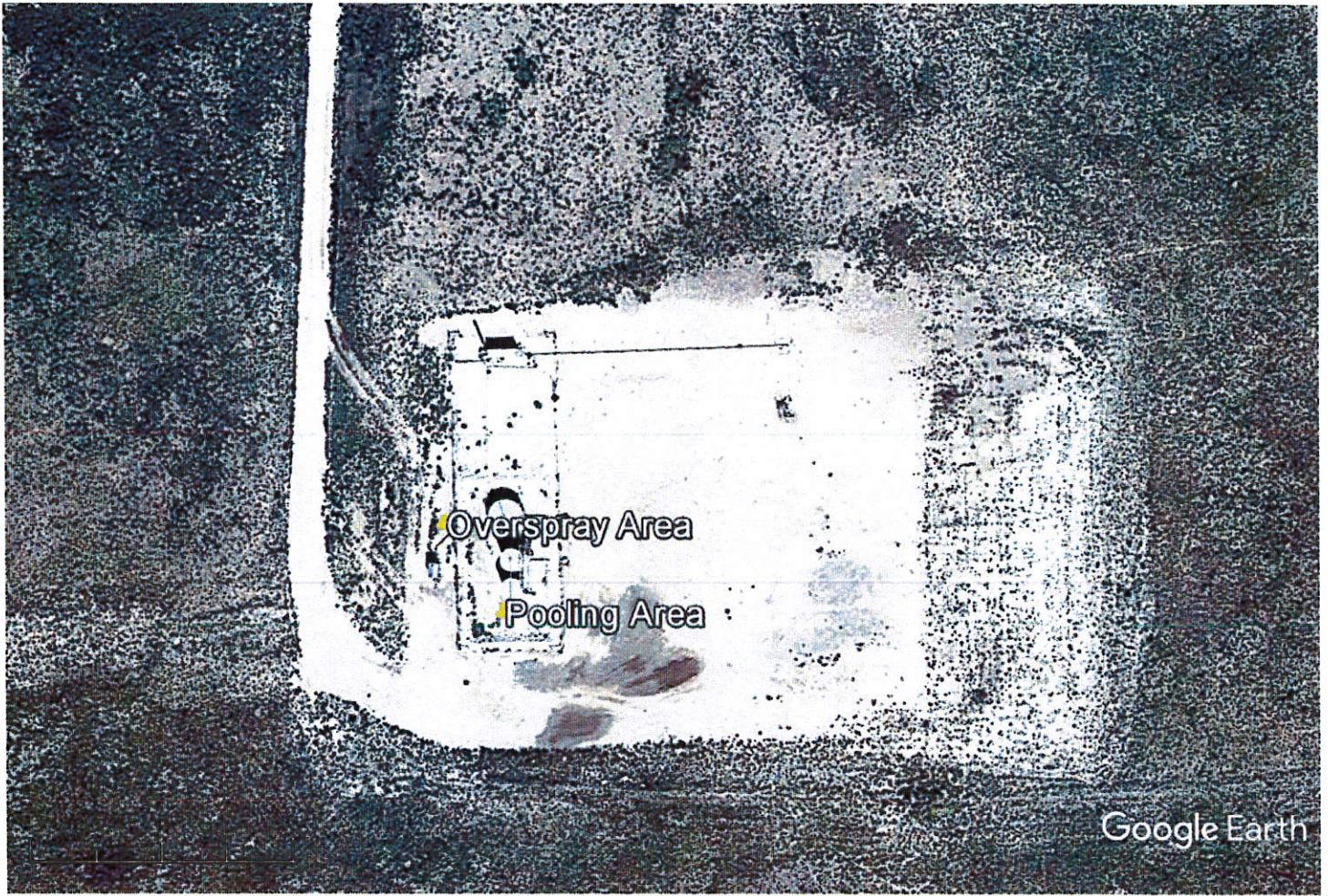
### **V. Scope of Work**

Based on the enclosed analytical reports and an impermeable, impenetrable rock layer that was encountered, Yates proposes the following excavation work:

- Pooling area – Excavate 4' of soils. Lay a 20 mil liner in the bottom of the excavation. The liner will be cushioned on both the top and bottom with sand. Finish the backfill of the excavation with caliche.
- Contaminated soils that are excavated will be hauled to a NMOCD approved disposal facility.

Once all excavation and backfill work is complete, Yates will submit a Final Form C-141 to NMOCD requesting closure of this release.





Google Earth

Google Earth

feet 200  
meters 80





# Willie BNW State #3

	Sample Area	Sample Date	Analytical Report	Sample Type	Depth	BTEX	GRO	DRO	TOTAL	Chlorides
Pooling Surface	Release Area	7/13/2016	1607710	Grab/Backhoe	Surface	21	730	5800	6530	530
Pooling 1'	Release Area	7/13/2016	1607710	Grab/Backhoe	1'	390	4100	2600	6700	160
Pooling 2'	Release Area	7/13/2016	1607710	Grab/Backhoe	2'	247	2900	3200	6100	1,400
Pooling 3'	Release Area	7/13/2016	1607710	Grab/Backhoe	3'	54.2	690	700	1390	380
Pooling 4'	Release Area	7/13/2016	1607710	Grab/Backhoe	4'	28.1	740	94	834	180
Pooling 5'	Release Area	8/23/2016	1608F06	Grab/Trackhoe	5'	-	350	1500	1850	-
Pooling 6'	Release Area	8/23/2016	1608F06	Grab/Trackhoe	6'	-	380	1400	1780	-
Pooling 7'	Release Area	8/23/2016	1608F06	Grab/Trackhoe	7'	-	130	590	720	-
Overspray Surface	Release Area	7/13/2016	1607710	Grab/Backhoe	Surface	ND	ND	97	97	97

**Site Ranking is Twenty (20).** Depth to Ground Water <50' (per ChevronTexaco Trend Map).

All results are ppm.

Released: 30 B/O, 15 B/PW; Recovered: 15 B/O, 5 B/PW. Release Date: 7/3/2016. 1RP-4342



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)

July 25, 2016

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

RE: Willie BNW State #3

OrderNo.: 1607710

Dear Amber Griffin:

Hall Environmental Analysis Laboratory received 6 sample(s) on 7/15/2016 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: 1607710

Date Reported: 7/25/2016

**CLIENT:** Yates Petroleum Corporation  
**Project:** Willie BNW State #3

**Lab Order:** 1607710

**Lab ID:** 1607710-001 **Collection Date:** 7/13/2016 8:24:00 AM  
**Client Sample ID:** Pooling Surface **Matrix:** SOIL  
**Analyses** **Result** **PQL** **Qual** **Units** **DF** **Date Analyzed** **Batch ID**

### EPA METHOD 300.0: ANIONS

Analyst: LGT

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
Chloride	530	30		mg/Kg	20	7/20/2016 2:45:06 AM	26483

**Lab ID:** 1607710-002 **Collection Date:** 7/13/2016 8:26:00 AM  
**Client Sample ID:** Pooling 1' **Matrix:** SOIL  
**Analyses** **Result** **PQL** **Qual** **Units** **DF** **Date Analyzed** **Batch ID**

### EPA METHOD 300.0: ANIONS

Analyst: LGT

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
Chloride	160	30		mg/Kg	20	7/20/2016 3:22:19 AM	26483

**Lab ID:** 1607710-003 **Collection Date:** 7/13/2016 8:29:00 AM  
**Client Sample ID:** Pooling 2' **Matrix:** SOIL  
**Analyses** **Result** **PQL** **Qual** **Units** **DF** **Date Analyzed** **Batch ID**

### EPA METHOD 300.0: ANIONS

Analyst: MRA

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
Chloride	1400	75		mg/Kg	50	7/20/2016 6:40:08 PM	26483

**Lab ID:** 1607710-004 **Collection Date:** 7/13/2016 8:37:00 AM  
**Client Sample ID:** Pooling 3' **Matrix:** SOIL  
**Analyses** **Result** **PQL** **Qual** **Units** **DF** **Date Analyzed** **Batch ID**

### EPA METHOD 300.0: ANIONS

Analyst: LGT

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
Chloride	380	30		mg/Kg	20	7/20/2016 3:47:07 AM	26483

**Lab ID:** 1607710-005 **Collection Date:** 7/13/2016 9:00:00 AM  
**Client Sample ID:** Pooling 4' **Matrix:** SOIL  
**Analyses** **Result** **PQL** **Qual** **Units** **DF** **Date Analyzed** **Batch ID**

### EPA METHOD 300.0: ANIONS

Analyst: LGT

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
Chloride	180	30		mg/Kg	20	7/20/2016 3:59:32 AM	26483

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	Page 1 of 3
	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	

**Analytical Report**

Lab Order: 1607710

Date Reported: 7/25/2016

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Yates Petroleum Corporation  
**Project:** Willie BNW State #3**Lab Order:** 1607710**Lab ID:** 1607710-006**Collection Date:** 7/13/2016 9:04:00 AM**Client Sample ID:** Overspray Surface**Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: LGT
Chloride	85	30		mg/Kg	20	7/20/2016 4:36:46 AM	26483

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#: 1607710

25-Jul-16

Client: Yates Petroleum Corporation

Project: Willie BNW State #3

Sample ID	MB-26483	SampType:	MBLK		TestCode:	EPA Method 300.0: Anions				
Client ID:	PBS	Batch ID:	26483		RunNo:	35825				
Prep Date:	7/19/2016	Analysis Date:	7/19/2016		SeqNo:	1108921	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-26483	SampType:	LCS	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSS	Batch ID:	26483	RunNo:	35825					
Prep Date:	7/19/2016	Analysis Date:	7/19/2016	SeqNo:	1108922	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.7	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                                    |
| 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 |



## Sample Log-In Check List

Client Name Yates Petroleum Corpora

Work Order Number: 1607710

ReptNo: 1

Received by/date:

*SA* *07/15/16*

Logged By: Lindsay Mangin

7/15/2016 9:30:00 AM

*Lindsay Mangin*

Completed By: Lindsay Mangin

7/15/2016 10:33:19 AM

*Lindsay Mangin*

Reviewed By:

*SA* *07/15/16*

### 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  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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 ☐ # of preserved bottles checked for pH: ☐ ( $<2$  or  $>12$  unless noted)
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐ Adjusted? ☐
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 ☐ 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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.8	Good	Yes			

# Chain-of-Custody Record

Client: Yates Petroleum Corporation

Mailing Address:

05 South 4th Street Artesia, NM 88210

Phone #: 575-513-8799 or 575-748-4111

Email or Fax#: agriffin@yatespetroleum.com

A/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation:

☐ NELAP ☐ Other

EDD (Type)

Date	Time	Matrix	Sample Request ID
7/13/2016	8:24	Soil	Pooling Surface
7/13/2016	8:26	Soil	Pooling 1'
7/13/2016	8:29	Soil	Pooling 2'
7/13/2016	8:37	Soil	Pooling 3'
7/13/2016	9:00	Soil	Pooling 4'
7/13/2016	9:04	Soil	Overspray Surface

Date:

Time:

Relinquished by:

Time:

Relinquished by:

Time:

Turn-Around Time:

X Standard Need by Friday 7/22/2016

Project Name:

Willie BNW State #3

Project #:

1RP-4342

Project Manager:

Amber Griffin

PO # 205-2020

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.8

Container Type and #	Preservative Type	HEAL No.
1 - 4oz.	Ice	1107710
1 - 4oz.	Ice	-001
1 - 4oz.	Ice	-002
1 - 4oz.	Ice	-003
1 - 4oz.	Ice	-004
1 - 4oz.	Ice	-005
1 - 4oz.	Ice	-006

## Analysis Request

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 PCBs	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
X	X					X				
X	X					X				
X	X					X				
X	X					X				
X	X					X				
X	X					X				

Remarks: TPH: 8015B, BTEX: 8021B. Please show BTEX results as mg/kg. Anions: Chloride Only. Please put chlorides on a separate report. Results needed by Friday, July 22, 2016. Thank you.





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)

July 25, 2016

Amber Griffin

Yates Petroleum Corporation

105 South Fourth Street

Artesia, NM 88210

TEL: (575) 748-4195

FAX

RE: Willie BNW State #3

OrderNo.: 1607710

Dear Amber Griffin:

Hall Environmental Analysis Laboratory received 6 sample(s) on 7/15/2016 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

## Analytical Report

Lab Order 1607710

Date Reported: 7/25/2016

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Yates Petroleum Corporation

Client Sample ID: Pooling Surface

Project: Willie BNW State #3

Collection Date: 7/13/2016 8:24:00 AM

Lab ID: 1607710-001

Matrix: SOIL

Received Date: 7/15/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	5800	93		mg/Kg	10	7/20/2016 12:28:27 PM	26444
Surr: DNOP	0	70-130	S	%Rec	10	7/20/2016 12:28:27 PM	26444
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	730	49		mg/Kg	10	7/18/2016 12:17:24 PM	26415
Surr: BFB	418	80-120	S	%Rec	10	7/18/2016 12:17:24 PM	26415
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	0.24		mg/Kg	10	7/18/2016 12:17:24 PM	26415
Toluene	1.1	0.49		mg/Kg	10	7/18/2016 12:17:24 PM	26415
Ethylbenzene	1.9	0.49		mg/Kg	10	7/18/2016 12:17:24 PM	26415
Xylenes, Total	18	0.98		mg/Kg	10	7/18/2016 12:17:24 PM	26415
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	10	7/18/2016 12:17:24 PM	26415

21

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	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

## Analytical Report

Lab Order 1607710

Date Reported: 7/25/2016

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Yates Petroleum Corporation

Client Sample ID: Pooling 1'

Project: Willie BNW State #3

Collection Date: 7/13/2016 8:26:00 AM

Lab ID: 1607710-002

Matrix: SOIL

Received Date: 7/15/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	2600	950		mg/Kg	100	7/20/2016 12:56:26 PM	26444
Surr: DNOP	0	70-130	S	%Rec	100	7/20/2016 12:56:26 PM	26444
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	4100	240		mg/Kg	50	7/18/2016 12:41:45 PM	26415
Surr: BFB	279	80-120	S	%Rec	50	7/18/2016 12:41:45 PM	26415
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	1.2		mg/Kg	50	7/18/2016 12:41:45 PM	26415
Toluene	49	2.4		mg/Kg	50	7/18/2016 12:41:45 PM	26415
Ethylbenzene	31	2.4		mg/Kg	50	7/18/2016 12:41:45 PM	26415
Xylenes, Total	310	4.9		mg/Kg	50	7/18/2016 12:41:45 PM	26415
Surr: 4-Bromofluorobenzene	121	80-120	S	%Rec	50	7/18/2016 12:41:45 PM	26415

390

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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## Analytical Report

Lab Order 1607710

Date Reported: 7/25/2016

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Yates Petroleum Corporation

Client Sample ID: Pooling 2'

Project: Willie BNW State #3

Collection Date: 7/13/2016 8:29:00 AM

Lab ID: 1607710-003

Matrix: SOIL

Received Date: 7/15/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	3200	920		mg/Kg	100	7/20/2016 1:24:31 PM	26444
Surr: DNOP	0	70-130	S	%Rec	100	7/20/2016 1:24:31 PM	26444
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	2900	500		mg/Kg	100	7/18/2016 1:06:08 PM	26415
Surr: BFB	159	80-120	S	%Rec	100	7/18/2016 1:06:08 PM	26415
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	2.5		mg/Kg	100	7/18/2016 1:06:08 PM	26415
Toluene	44	5.0		mg/Kg	100	7/18/2016 1:06:08 PM	26415
Ethylbenzene	23	5.0		mg/Kg	100	7/18/2016 1:06:08 PM	26415
Xylenes, Total	180	9.9		mg/Kg	100	7/18/2016 1:06:08 PM	26415
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	100	7/18/2016 1:06:08 PM	26415

247

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	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

## Analytical Report

Lab Order 1607710

Date Reported: 7/25/2016

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Yates Petroleum Corporation

Client Sample ID: Pooling 3'

Project: Willie BNW State #3

Collection Date: 7/13/2016 8:37:00 AM

Lab ID: 1607710-004

Matrix: SOIL

Received Date: 7/15/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	700	95		mg/Kg	10	7/20/2016 1:52:31 PM	26444
Surr: DNOP	0	70-130	S	%Rec	10	7/20/2016 1:52:31 PM	26444
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	690	95		mg/Kg	20	7/18/2016 1:30:27 PM	26415
Surr: BFB	225	80-120	S	%Rec	20	7/18/2016 1:30:27 PM	26415
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	0.47		mg/Kg	20	7/18/2016 1:30:27 PM	26415
Toluene	4.4	0.95		mg/Kg	20	7/18/2016 1:30:27 PM	26415
Ethylbenzene	4.8	0.95		mg/Kg	20	7/18/2016 1:30:27 PM	26415
Xylenes, Total	45	1.9		mg/Kg	20	7/18/2016 1:30:27 PM	26415
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	20	7/18/2016 1:30:27 PM	26415

54.2

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	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

## Analytical Report

Lab Order 1607710

Date Reported: 7/25/2016

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Yates Petroleum Corporation

Client Sample ID: Pooling 4'

Project: Willie BNW State #3

Collection Date: 7/13/2016 9:00:00 AM

Lab ID: 1607710-005

Matrix: SOIL

Received Date: 7/15/2016 9:30:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	94	9.5		mg/Kg	1	7/20/2016 2:20:35 PM	26444
Surr: DNOP	0	70-130	S	%Rec	1	7/20/2016 2:20:35 PM	26444
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	740	97		mg/Kg	20	7/18/2016 1:54:48 PM	26415
Surr: BFB	347	80-120	S	%Rec	20	7/18/2016 1:54:48 PM	26415
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	0.49		mg/Kg	20	7/18/2016 1:54:48 PM	26415
Toluene	ND	0.97		mg/Kg	20	7/18/2016 1:54:48 PM	26415
Ethylbenzene	3.1	0.97		mg/Kg	20	7/18/2016 1:54:48 PM	26415
Xylenes, Total	25	1.9		mg/Kg	20	7/18/2016 1:54:48 PM	26415
Surr: 4-Bromofluorobenzene	111	80-120		%Rec	20	7/18/2016 1:54:48 PM	26415

28.1

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	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

## Analytical Report

Lab Order 1607710

Date Reported: 7/25/2016

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Yates Petroleum Corporation

Client Sample ID: Overspray Surface

Project: Willie BNW State #3

Collection Date: 7/13/2016 9:04:00 AM

Lab ID: 1607710-006

Matrix: SOIL

Received Date: 7/15/2016 9:30:00 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)	97	9.9		mg/Kg	1	7/21/2016 8:31:48 PM	26444
Surr: DNOP	110	70-130		%Rec	1	7/21/2016 8:31:48 PM	26444
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/18/2016 2:19:22 PM	26415
Surr: BFB	94.7	80-120		%Rec	1	7/18/2016 2:19:22 PM	26415
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	7/18/2016 2:19:22 PM	26415
Toluene	ND	0.048		mg/Kg	1	7/18/2016 2:19:22 PM	26415
Ethylbenzene	ND	0.048		mg/Kg	1	7/18/2016 2:19:22 PM	26415
Xylenes, Total	ND	0.096		mg/Kg	1	7/18/2016 2:19:22 PM	26415
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	7/18/2016 2:19:22 PM	26415

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	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#: 1607710

25-Jul-16

Client: Yates Petroleum Corporation

Project: Willie BNW State #3

Sample ID	LCS-26444		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 26444		RunNo: 35794					
Prep Date:	7/18/2016		Analysis Date: 7/19/2016		SeqNo: 1108676		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	96.9	62.6	124			
Surr: DNOP	5.1		5.000		102	70	130			

Sample ID	MB-26444	SampType: MBLK			TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID: 26444			RunNo: 35794					
Prep Date:	7/18/2016	Analysis Date: 7/19/2016			SeqNo: 1108679		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		107	70	130			

Sample ID	MB-26465		SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 26465		RunNo: 35794					
Prep Date:	7/19/2016		Analysis Date: 7/20/2016		SeqNo: 1110143		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	10		10.00		101	70	130			

Sample ID	LCS-26443		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 26443		RunNo: 35827					
Prep Date:	7/18/2016		Analysis Date: 7/20/2016		SeqNo: 1110532		Units: %Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.5		5.000		89.6	70	130			

Sample ID	MB-26443		SampType:	MBLK		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	PBS		Batch ID:	26443		RunNo:	35827				
Prep Date:	7/18/2016		Analysis Date:	7/20/2016		SeqNo:	1110534		Units: %Rec		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: DNOP	8.8		10.00		87.5	70	130				

### Qualifiers:

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| 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#: 1607710

25-Jul-16

Client: Yates Petroleum Corporation

Project: Willie BNW State #3

Sample ID	MB-26415	SampType	MBLK	TestCode	EPA Method 8015D: Gasoline Range					
Client ID	PBS	Batch ID	26415	RunNo	35780					
Prep Date	7/15/2016	Analysis Date	7/18/2016	SeqNo	1107183	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	890		1000		88.6	80	120			

Sample ID	LCS-26415	SampType	LCS	TestCode	EPA Method 8015D: Gasoline Range					
Client ID	LCSS	Batch ID	26415	RunNo	35780					
Prep Date	7/15/2016	Analysis Date	7/18/2016	SeqNo	1107184	Units	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	29	5.0	25.00	0	117	80	120			
Surr: BFB	870		1000		86.6	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#: 1607710

25-Jul-16

Client: Yates Petroleum Corporation

Project: Willie BNW State #3

Sample ID	MB-26415	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBS	Batch ID:	26415	RunNo:	35780					
Prep Date:	7/15/2016	Analysis Date:	7/18/2016	SeqNo:	1107222	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	1.0		1.000		101	80	120			

Sample ID	LCS-26415	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID:	26415	RunNo:	35780					
Prep Date:	7/15/2016	Analysis Date:	7/18/2016	SeqNo:	1107223	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	98.8	75.3	123			
Toluene	0.85	0.050	1.000	0	85.3	80	124			
Ethylbenzene	0.85	0.050	1.000	0	84.5	82.8	121			
Xylenes, Total	2.6	0.10	3.000	0	86.0	83.9	122			
Surr: 4-Bromofluorobenzene	0.89		1.000		89.3	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
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

## Sample Log-In Check List

Client Name: Yates Petroleum Corpora

Work Order Number: 1607710

ReptNo: 1

Received by/date:

Logged By: Lindsay Mangin

7/15/2016 9:30:00 AM

Completed By: Lindsay Mangin

7/15/2016 10:33:19 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  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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 ☐ # of preserved bottles checked for pH: (≤2 or ≥12 unless noted)
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐ Adjusted?
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 ☐ 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	2.8	Good	Yes			



# Chain-of-Custody Record

Client: Yates Petroleum Corporation

Mailing Address:

05 South 4th Street Artesia, NM 88210

Phone #: 575-513-8799 or 575-748-4111

Email or Fax#: agriffin@yatespetroleum.com

A/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation:

☐ NELAP ☐ Other

EDD (Type)

Turn-Around Time:

**X Standard Need by Friday 7/22/2016**

Project Name:

**Willie BNW State #3**

Project #:

**1RP-4342**

Project Manager:

**Amber Griffin**

**PO # 205-2020**

Sampler:

On Ice: ☒ Yes ☐ No

Sample Temperature: **2.8**

Container Type and #

Preservative Type

HEAL No.

Date	Time	Matrix	Sample Request ID
7/13/2016	8:24	Soil	Pooling Surface
7/13/2016	8:26	Soil	Pooling 1'
7/13/2016	8:29	Soil	Pooling 2'
7/13/2016	8:37	Soil	Pooling 3'
7/13/2016	9:00	Soil	Pooling 4'
7/13/2016	9:04	Soil	Overspray Surface

Date: 7/14/16

Time: 2:00

Relinquished by: Amber Griffin

Received by:

Date: 07/15/16

Time: 09:30



4901 Hawkins NE - Albuquerque, NM 87109

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

www.hallenvironmental.com

Analysis Request									
BTEX + MTBE + TPH (Gas only)	BTEX + MTBE + TPH (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 9 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCBs	8260B (VOA)	8270 (Semi-VOA)
X	X	X			X	X			
X	X	X			X	X			
X	X	X			X	X			
X	X	X			X	X			
X	X	X			X	X			
X	X	X			X	X			

Remarks: TPH: 8015B, BTEX: 8021B. Please show BTEX results as mg/kg. Anions: Chloride Only. Please put chlorides on a separate report. Results needed by Friday, July 22, 2016. Thank you.



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)

September 01, 2016

Amber Griffin  
Yates Petroleum Corporation  
105 South Fourth Street  
Artesia, NM 88210  
TEL: (575) 748-4111  
FAX

RE: Willie BNW State 3

OrderNo.: 1608F06

Dear Amber Griffin:

Hall Environmental Analysis Laboratory received 3 sample(s) on 8/25/2016 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".

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Analytical Report**

Lab Order 1608F06

Date Reported: 9/1/2016

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Yates Petroleum Corporation**Client Sample ID:** Pooling 5'**Project:** Willie BNW State 3**Collection Date:** 8/23/2016 8:54:00 AM**Lab ID:** 1608F06-001**Matrix:** SOIL**Received Date:** 8/25/2016 9:20:00 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)	1500	100		mg/Kg	10	8/30/2016 3:36:01 PM	27220
Surr: DNOP	0	70-130	S	%Rec	10	8/30/2016 3:36:01 PM	27220
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	350	98		mg/Kg	20	8/29/2016 6:35:38 PM	27186
Surr: BFB	167	68.3-144	S	%Rec	20	8/29/2016 6:35:38 PM	27186

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



## Analytical Report

Lab Order 1608F06

Date Reported: 9/1/2016

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Yates Petroleum Corporation

Client Sample ID: Pooling 6'

Project: Willie BNW State 3

Collection Date: 8/23/2016 9:03:00 AM

Lab ID: 1608F06-002

Matrix: SOIL

Received Date: 8/25/2016 9:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	1400	97		mg/Kg	10	8/31/2016 12:34:37 PM	27220
Surr: DNOP	0	70-130	S	%Rec	10	8/31/2016 12:34:37 PM	27220
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	380	94		mg/Kg	20	8/29/2016 6:58:59 PM	27186
Surr: BFB	216	68.3-144	S	%Rec	20	8/29/2016 6:58:59 PM	27186

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	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

**Analytical Report**

Lab Order 1608F06

Date Reported: 9/1/2016

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Yates Petroleum Corporation**Client Sample ID:** Pooling 7'**Project:** Willie BNW State 3**Collection Date:** 8/23/2016 9:14:00 AM**Lab ID:** 1608F06-003**Matrix:** SOIL**Received Date:** 8/25/2016 9:20:00 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)	590	100		mg/Kg	10	8/31/2016 12:56:06 PM	27220
Surr: DNOP	0	70-130	S	%Rec	10	8/31/2016 12:56:06 PM	27220
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	130	25		mg/Kg	5	8/29/2016 7:22:26 PM	27186
Surr: BFB	263	68.3-144	S	%Rec	5	8/29/2016 7:22:26 PM	27186

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#: 1608F06

01-Sep-16

Client: Yates Petroleum Corporation

Project: Willie BNW State 3

Sample ID	LCS-27220	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	27220	RunNo:	36852					
Prep Date:	8/29/2016	Analysis Date:	8/30/2016	SeqNo:	1142472	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.4	62.6	124			
Surr: DNOP	4.3		5.000		86.1	70	130			

Sample ID	MB-27220	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	27220	RunNo:	36852					
Prep Date:	8/29/2016	Analysis Date:	8/30/2016	SeqNo:	1142473	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		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                                    |
| 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#: 1608F06

01-Sep-16

Client: Yates Petroleum Corporation

Project: Willie BNW State 3

Sample ID	MB-27186	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID: 27186			RunNo: 36828					
Prep Date:	8/26/2016	Analysis Date: 8/29/2016			SeqNo: 1141862		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	850		1000		84.6	68.3	144			

Sample ID	LCS-27186	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	27186	RunNo:	36828					
Prep Date:	8/26/2016	Analysis Date:	8/29/2016	SeqNo:	1141863	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.4	80	120			
Surr: BFB	910		1000		90.7	68.3	144			

## 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 |



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: Yates Petroleum Corpora

Work Order Number: 1608F06

RcptNo: 1

Received by/date:

Logged By: Ashley Gallegos

8/25/2016 9:20:00 AM

Completed By: Ashley Gallegos

8/25/2016 5:51:15 PM

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  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? 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:   
Adjusted? ( $<2$  or  $>12$  unless noted)
- 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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.2	Good	Yes			

