

# R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

September 11, 2014

Mr. Mike Bratcher  
NMOCD District 2  
811 S. First Street  
Artesia, New Mexico 88210  
*Via Email and Hand Delivery*

RE: Murchison – Hackberry State #1 Release  
Final C-141/Closure Request

Dear Mr. Bratcher:

On behalf of Murchison Oil and Gas, R.T Hicks Consultants submits the attached final C-141 form and requests closure of the regulatory file associated with the above-referenced release. As directed by NMOCD, delineation occurred on July 30, 2014 using a backhoe to collect soil samples from beneath the footprint of the release. As depicted in Figure 1, sample points at areas of fluid accumulation were established for vertical delineation. Sample point #1, approximately 50 feet east of the tank, exhibited the highest field chloride concentrations at the surface and was used to determine the lateral extent of chloride impact from the release. Lateral delineation samples were identified by their distance and direction from sample point #1 (e.g. 10 ft north). All samples were collected on the location pad. Select samples were analyzed at Hall Environmental Analysis Laboratory in Albuquerque for chloride, BTEX, and GRO/DRO/MRO.

Vertical delineation at the leak source (tank, sample point #2) and at sample point #1 show that chloride concentrations virtually dissipate at 5 feet below surface. Elevated chloride concentrations in the subsurface samples at sample point #3 near the separator indicate that this release is *not* the source. Lateral delineation in each direction suggests that the extent of chloride impact was limited to the footprint of the release. As depicted in the enclosed laboratory analyses, hydrocarbons were analyzed in the samples that exhibited the highest field



**Vertical Delineation at Sample Point #1**

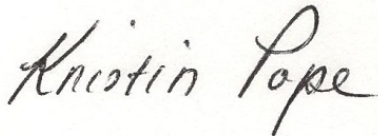
chloride concentrations and BTEX was non-detect and GRO+DRO+MRO was 207 mg/kg at #2 and 125 mg/kg at #1, both at the surface.

As shown on Figures 2 and 3, data from the Office of the State Engineer demonstrate that depth to groundwater exceeds 100 feet and the distance to mapped surface water body is nearly 1 mile. The nearest known water well is more than 1 mile distant. Our understanding of how regulated constituents migrate from the source through the environment allow us to conclude that the residual salt on the location pose no threat to fresh water, public health, or the environment. With consideration to the depth to groundwater, distance to environmental receptors, the limited extent of the release to the facility pad, and the concentrations observed in the soil samples, we recommend no further action for the remediation of this release. At the time the well at this facility is plugged and abandoned, Murchison will reclaim the surface in a manner consistent with NMOCD Rules.

Please contact me with any questions regarding this closure request. Thank you.

Sincerely,

R.T. Hicks Consultants

A handwritten signature in cursive script that reads "Kristin Pope". The signature is written in dark ink on a light-colored, slightly textured background.

Kristin Pope

Copy: Murchison Oil & Gas, State Land Office

Enclosures: Final C-141, Figure 1 (delineation), Figure 2 (groundwater map), Figure 3 (surface water), Lab Report, Email notifications

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

State of New Mexico  
Energy Minerals and Natural Resources

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

Form C-141  
Revised August 8, 2011

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

## Release Notification and Corrective Action

### OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	Murchison Oil & Gas, Inc.	Contact	Greg Boans
Address	1100 Mira Vista Blvd, Plano, TX 75093	Telephone No.	(575) 628-3932
Facility Name	Hackberry State #1	Facility Type	Production Battery
Surface Owner	State of New Mexico	Mineral Owner	API No. 30-015-34803

### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	17	18S	23E	660	South	1980	East	Eddy

Latitude 32° 44' 32.2" N Longitude 104° 42' 39.8" W

### NATURE OF RELEASE

Type of Release	Produced Water	Volume of Release	155 bbls	Volume Recovered	0 bbls
Source of Release	Open-top fiberglass tank	Date and Hour of Occurrence	After 3:00 pm on 5/19/2014	Date and Hour of Discovery	5/20/2014 4:00 pm
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? In person to Mike Bratcher			
By Whom?	Chace Walls	Date and Hour	5/21/2014 4:15 pm		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.\*

n/a

Describe Cause of Problem and Remedial Action Taken.\*

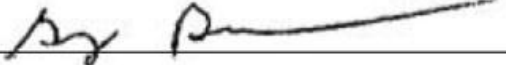
Fluid was lost due to a failure of the nipple on the backside of a 200-bbl open-top fiberglass tank. A vacuum truck was dispatched to the location but no standing fluid remained at the time of its arrival. The nipple on the tank was replaced.

Describe Area Affected and Cleanup Action Taken.\*

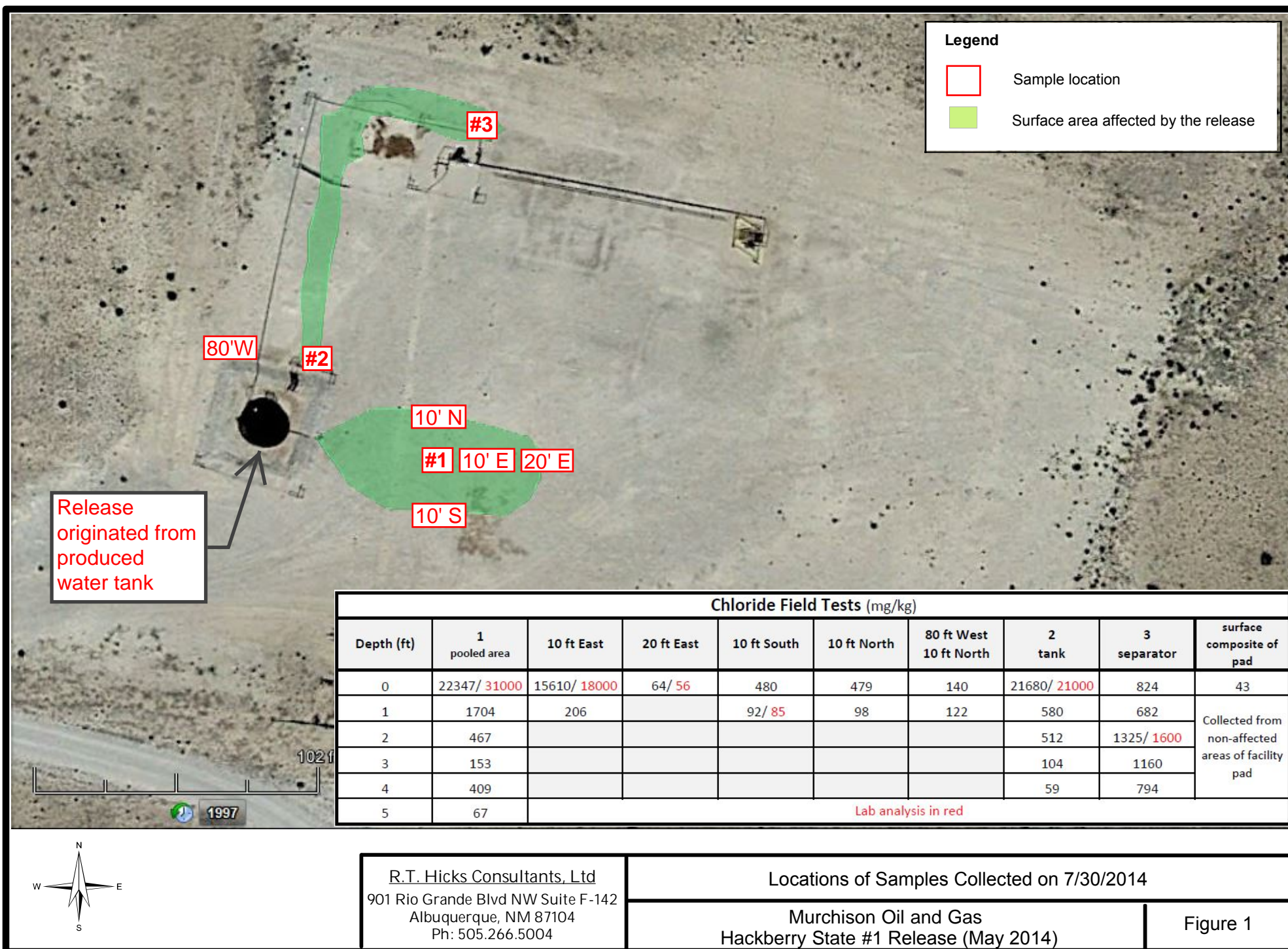
Produced water leaked out of the tank and onto the location, affecting approximately 4,000 square feet, all of which was contained on the location pad. A backhoe was used to blend the impacted caliche and soils with surrounding material from the facility pad. Vertical and lateral delineation of chloride concentrations confirm that this release poses no threat to fresh water, public health, or the environment. Upon abandonment, this facility's surface will be reclaimed in a manner fully consistent with applicable Rules.

Attached: delineation table, lab report, sample map, groundwater map, email notifications

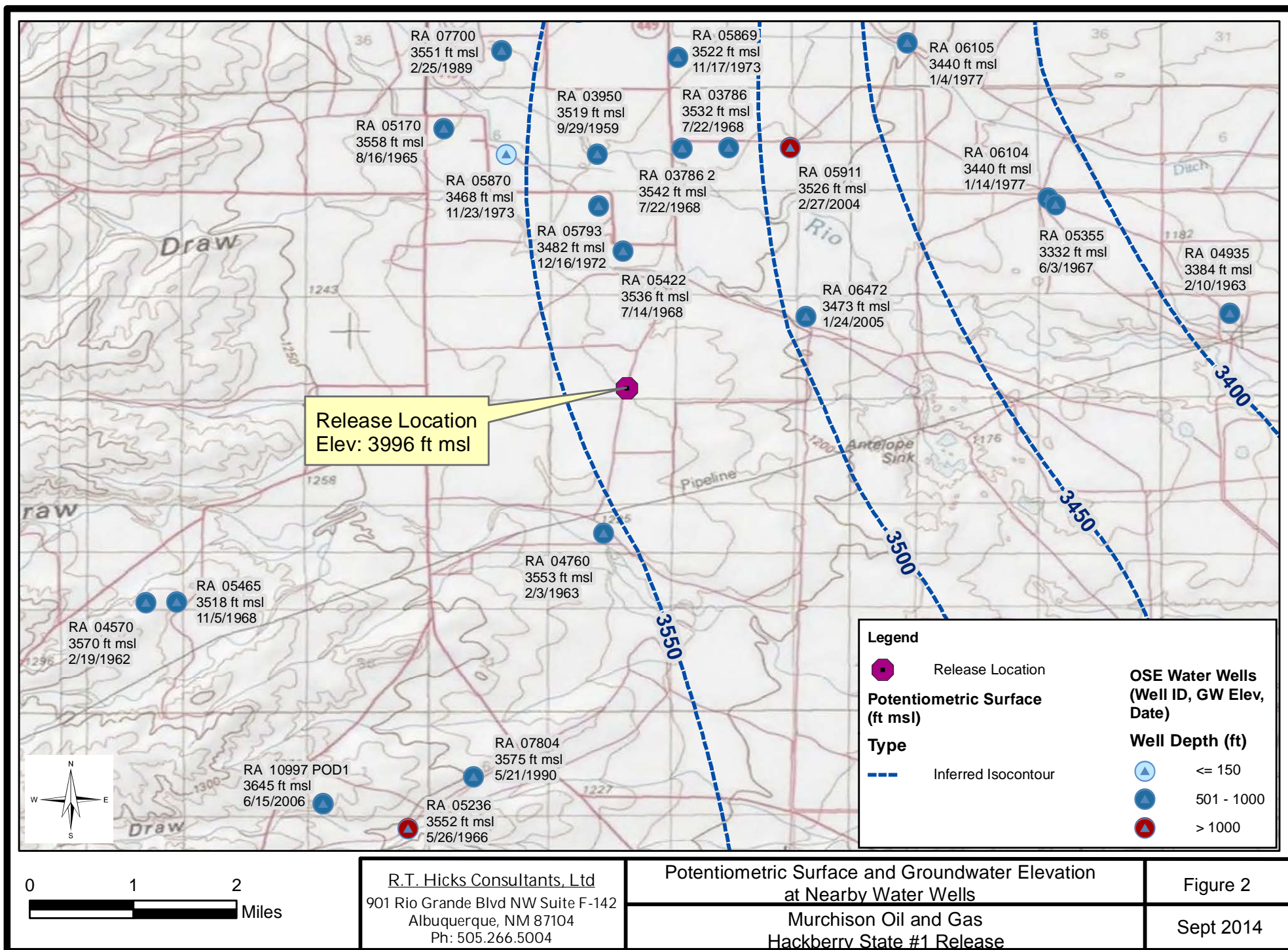
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger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

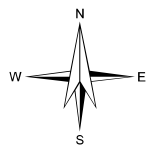
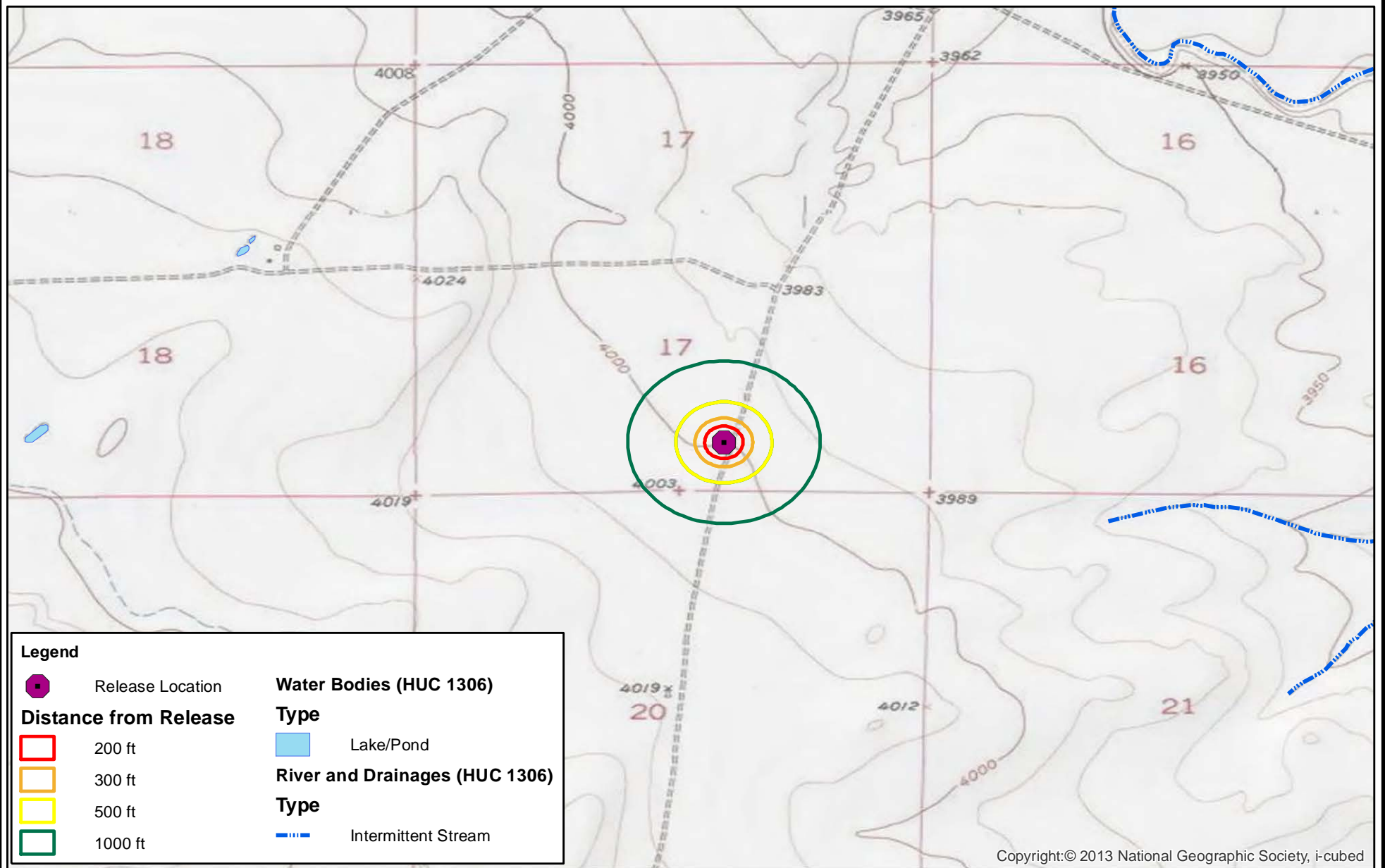
Signature: 		<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Greg Boans		Approved by Environmental Specialist:	
Title: Production Superintendent	Approval Date:	Expiration Date:	
E-mail Address: gboans@jdmii.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 9/11/2014	Phone: (575) 628-3932		

\* Attach Additional Sheets If Necessary









0 1,000 2,000  
Feet

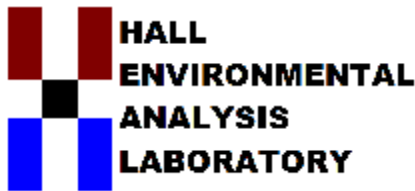
R.T. Hicks Consultants, Ltd  
901 Rio Grande Blvd NW Suite F-142  
Albuquerque, NM 87104  
Ph: 505.266.5004

Surface Water and Topography

Murchison Oil and Gas  
Hackberry State #1 Release

Figure 3

Sept 2014



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)

August 08, 2014

Kristin Pope

R.T. Hicks Consultants, LTD

901 Rio Grande Blvd. NW

Suite F-142

Albuquerque, NM 87104

TEL: (505) 266-5004

FAX (505) 266-0745

RE: Murchison - Hackberry St. #1 Release

OrderNo.: 1408023

Dear Kristin Pope:

Hall Environmental Analysis Laboratory received 6 sample(s) on 8/1/2014 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 1408023

Date Reported: 8/8/2014

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** #1 @surface

**Project:** Murchison - Hackberry St. #1 Release

**Collection Date:** 7/29/2014 8:40:00 AM

**Lab ID:** 1408023-001

**Matrix:** SOIL

**Received Date:** 8/1/2014 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	40	9.8		mg/Kg	1	8/5/2014 8:32:18 AM	14572
Motor Oil Range Organics (MRO)	85	49		mg/Kg	1	8/5/2014 8:32:18 AM	14572
Surr: DNOP	85.4	57.9-140		%REC	1	8/5/2014 8:32:18 AM	14572
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>JRR</b>
Chloride	31000	1500		mg/Kg	1E	8/6/2014 1:08:55 PM	14585
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>KJH</b>
Benzene	ND	0.048		mg/Kg	1	8/5/2014 4:44:27 PM	14583
Toluene	ND	0.048		mg/Kg	1	8/5/2014 4:44:27 PM	14583
Ethylbenzene	ND	0.048		mg/Kg	1	8/5/2014 4:44:27 PM	14583
Xylenes, Total	ND	0.095		mg/Kg	1	8/5/2014 4:44:27 PM	14583
Surr: 1,2-Dichloroethane-d4	89.0	70-130		%REC	1	8/5/2014 4:44:27 PM	14583
Surr: 4-Bromofluorobenzene	80.8	70-130		%REC	1	8/5/2014 4:44:27 PM	14583
Surr: Dibromofluoromethane	91.6	70-130		%REC	1	8/5/2014 4:44:27 PM	14583
Surr: Toluene-d8	96.8	70-130		%REC	1	8/5/2014 4:44:27 PM	14583
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>KJH</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/5/2014 4:44:27 PM	14583
Surr: BFB	113	61.2-137		%REC	1	8/5/2014 4:44:27 PM	14583

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
	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
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1408023**Date Reported: **8/8/2014****CLIENT:** R.T. Hicks Consultants, LTD**Client Sample ID:** #2@surface**Project:** Murchison - Hackberry St. #1 Release**Collection Date:** 7/29/2014 9:00:00 AM**Lab ID:** 1408023-002**Matrix:** SOIL**Received Date:** 8/1/2014 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	67	10		mg/Kg	1	8/5/2014 9:37:11 AM	14572
Motor Oil Range Organics (MRO)	140	50		mg/Kg	1	8/5/2014 9:37:11 AM	14572
Surr: DNOP	102	57.9-140		%REC	1	8/5/2014 9:37:11 AM	14572
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>JRR</b>
Chloride	21000	3000		mg/Kg	2E	8/6/2014 1:21:19 PM	14585
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>KJH</b>
Benzene	ND	0.049		mg/Kg	1	8/5/2014 6:08:50 PM	14583
Toluene	ND	0.049		mg/Kg	1	8/5/2014 6:08:50 PM	14583
Ethylbenzene	ND	0.049		mg/Kg	1	8/5/2014 6:08:50 PM	14583
Xylenes, Total	ND	0.098		mg/Kg	1	8/5/2014 6:08:50 PM	14583
Surr: 1,2-Dichloroethane-d4	87.0	70-130		%REC	1	8/5/2014 6:08:50 PM	14583
Surr: 4-Bromofluorobenzene	82.1	70-130		%REC	1	8/5/2014 6:08:50 PM	14583
Surr: Dibromofluoromethane	89.1	70-130		%REC	1	8/5/2014 6:08:50 PM	14583
Surr: Toluene-d8	89.4	70-130		%REC	1	8/5/2014 6:08:50 PM	14583
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>KJH</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/5/2014 6:08:50 PM	14583
Surr: BFB	107	61.2-137		%REC	1	8/5/2014 6:08:50 PM	14583

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
	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
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1408023**Date Reported: **8/8/2014****CLIENT:** R.T. Hicks Consultants, LTD**Client Sample ID:** #3@2'**Project:** Murchison - Hackberry St. #1 Release**Collection Date:** 7/29/2014 11:11:00 AM**Lab ID:** 1408023-003**Matrix:** SOIL**Received Date:** 8/1/2014 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BCN</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/5/2014 9:58:34 AM	14572
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/5/2014 9:58:34 AM	14572
Surr: DNOP	112	57.9-140		%REC	1	8/5/2014 9:58:34 AM	14572
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>JRR</b>
Chloride	1600	150		mg/Kg	100	8/6/2014 1:33:44 PM	14585
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>KJH</b>
Benzene	ND	0.047		mg/Kg	1	8/5/2014 6:36:52 PM	14583
Toluene	ND	0.047		mg/Kg	1	8/5/2014 6:36:52 PM	14583
Ethylbenzene	ND	0.047		mg/Kg	1	8/5/2014 6:36:52 PM	14583
Xylenes, Total	ND	0.094		mg/Kg	1	8/5/2014 6:36:52 PM	14583
Surr: 1,2-Dichloroethane-d4	87.7	70-130		%REC	1	8/5/2014 6:36:52 PM	14583
Surr: 4-Bromofluorobenzene	85.8	70-130		%REC	1	8/5/2014 6:36:52 PM	14583
Surr: Dibromofluoromethane	89.7	70-130		%REC	1	8/5/2014 6:36:52 PM	14583
Surr: Toluene-d8	93.6	70-130		%REC	1	8/5/2014 6:36:52 PM	14583
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>KJH</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/5/2014 6:36:52 PM	14583
Surr: BFB	113	61.2-137		%REC	1	8/5/2014 6:36:52 PM	14583

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 3 of 10
	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	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1408023**

Date Reported: **8/8/2014**

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** 10'E@surface

**Project:** Murchison - Hackberry St. #1 Release

**Collection Date:** 7/29/2014 9:15:00 AM

**Lab ID:** 1408023-004

**Matrix:** SOIL

**Received Date:** 8/1/2014 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>JRR</b>
Chloride	18000	3000		mg/Kg	2E	8/6/2014 1:46:09 PM	14585

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 4 of 10
	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	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1408023**

Date Reported: **8/8/2014**

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** 20'E@surface

**Project:** Murchison - Hackberry St. #1 Release

**Collection Date:** 7/29/2014 10:30:00 AM

**Lab ID:** 1408023-005

**Matrix:** SOIL

**Received Date:** 8/1/2014 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	56	30		mg/Kg	20	8/4/2014 5:22:14 PM	14585

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 5 of 10
	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	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			



# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1408023**

Date Reported: **8/8/2014**

**CLIENT:** R.T. Hicks Consultants, LTD

**Client Sample ID:** 10'S@1'

**Project:** Murchison - Hackberry St. #1 Release

**Collection Date:** 7/29/2014 9:22:00 AM

**Lab ID:** 1408023-006

**Matrix:** SOIL

**Received Date:** 8/1/2014 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>LGP</b>
Chloride	85	30		mg/Kg	20	8/4/2014 5:34:39 PM	14585

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 6 of 10
	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	
	O	RSD is greater than RSDlimit	P	Sample pH greater than 2.	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1408023

08-Aug-14

Client: R.T. Hicks Consultants, LTD

Project: Murchison - Hackberry St. #1 Release

Sample ID	MB-14585	SampType:	MBLK	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBS	Batch ID:	14585	RunNo:	20370					
Prep Date:	8/4/2014	Analysis Date:	8/4/2014	SeqNo:	592455	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-14585	SampType:	LCS	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSS	Batch ID:	14585	RunNo:	20370					
Prep Date:	8/4/2014	Analysis Date:	8/4/2014	SeqNo:	592456	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.9	90	110			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1408023

08-Aug-14

Client: R.T. Hicks Consultants, LTD

Project: Murchison - Hackberry St. #1 Release

Sample ID	MB-14572	SampType: MBLK		TestCode: EPA Method 8015D: Diesel Range Organics						
Client ID:	PBS	Batch ID: 14572		RunNo: 20327						
Prep Date:	8/4/2014	Analysis Date: 8/4/2014		SeqNo: 591198		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	57.9	140			

Sample ID	LCS-14572		SampType: LCS		TestCode: EPA Method 8015D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 14572		RunNo: 20327					
Prep Date:	8/4/2014		Analysis Date: 8/4/2014		SeqNo: 591199		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	10	50.00	0	108	68.6	130			
Surr: DNOP	5.4		5.000		109	57.9	140			

Sample ID	1408023-001AMS		SampType: MS		TestCode: EPA Method 8015D: Diesel Range Organics					
Client ID:	#1@surface		Batch ID: 14572		RunNo: 20364					
Prep Date:	8/4/2014		Analysis Date: 8/5/2014		SeqNo: 592232		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	100	10	49.90	39.81	120	40.1	152			
Surr: DNOP	4.9		4.990		98.9	57.9	140			

Sample ID	1408023-001AMSD		SampType:	MSD		TestCode:	EPA Method 8015D: Diesel Range Organics				
Client ID:	#1@surface		Batch ID:	14572		RunNo:	20364				
Prep Date:	8/4/2014		Analysis Date:	8/5/2014		SeqNo:	592233		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	85	10	49.90	39.81	91.3	40.1	152	15.4	32.1		
Surr: DNOP	4.9		4.990		99.2	57.9	140	0	0		

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2.  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1408023

08-Aug-14

Client: R.T. Hicks Consultants, LTD

Project: Murchison - Hackberry St. #1 Release

Sample ID	mb-14583		SampType: MBLK		TestCode: EPA Method 8260B: Volatiles Short List					
Client ID:	PBS		Batch ID: 14583		RunNo: 20375					
Prep Date:	8/4/2014		Analysis Date: 8/5/2014		SeqNo: 592931		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		89.6	70	130			
Surr: 4-Bromofluorobenzene	0.43		0.5000		85.4	70	130			
Surr: Dibromofluoromethane	0.44		0.5000		87.9	70	130			
Surr: Toluene-d8	0.47		0.5000		94.8	70	130			

Sample ID	lcs-14583		SampType: LCS		TestCode: EPA Method 8260B: Volatiles Short List					
Client ID:	LCSS		Batch ID: 14583		RunNo: 20375					
Prep Date:	8/4/2014		Analysis Date: 8/5/2014		SeqNo: 592936		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.050	1.000	0	99.0	70	130			
Toluene	0.99	0.050	1.000	0	99.4	60.1	120			
Surr: 1,2-Dichloroethane-d4	0.43		0.5000		86.6	70	130			
Surr: 4-Bromofluorobenzene	0.41		0.5000		82.7	70	130			
Surr: Dibromofluoromethane	0.43		0.5000		86.9	70	130			
Surr: Toluene-d8	0.46		0.5000		92.6	70	130			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2.  
RL Reporting Detection Limit



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1408023

08-Aug-14

Client: R.T. Hicks Consultants, LTD

Project: Murchison - Hackberry St. #1 Release

Sample ID	mb-14583		SampType: MBLK		TestCode: EPA Method 8015D Mod: Gasoline Range					
Client ID:	PBS		Batch ID: 14583		RunNo: 20375					
Prep Date:	8/4/2014		Analysis Date: 8/5/2014		SeqNo: 592993		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	530		500.0		106	61.2	137			

Sample ID	lcs-14583		SampType: LCS		TestCode: EPA Method 8015D Mod: Gasoline Range					
Client ID:	LCSS		Batch ID: 14583		RunNo: 20375					
Prep Date:	8/4/2014		Analysis Date: 8/5/2014		SeqNo: 592994		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	550		500.0		110	61.2	137			

Sample ID	1408023-001ams		SampType: MS		TestCode: EPA Method 8015D Mod: Gasoline Range					
Client ID:	#1@surface		Batch ID: 14583		RunNo: 20375					
Prep Date:	8/4/2014		Analysis Date: 8/5/2014		SeqNo: 592997		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	36	4.7	23.74	0.8302	146	58	134			S
Surr: BFB	530		474.8		112	61.2	137			

Sample ID	1408023-001amsd		SampType: MSD		TestCode: EPA Method 8015D Mod: Gasoline Range					
Client ID:	#1@surface		Batch ID: 14583		RunNo: 20375					
Prep Date:	8/4/2014		Analysis Date: 8/5/2014		SeqNo: 592998		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	35	4.7	23.72	0.8302	143	58	134	2.39	20	S
Surr: BFB	530		474.4		113	61.2	137	0	0	

Sample ID	MB-14583MK		SampType: MBLK		TestCode: EPA Method 8015D Mod: Gasoline Range					
Client ID:	PBS		Batch ID: R20375		RunNo: 20375					
Prep Date:	8/4/2014		Analysis Date: 8/5/2014		SeqNo: 593004		Units: %REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	530		500.0		106	61.2	137			

Sample ID	LCS-14583MK		SampType: LCS		TestCode: EPA Method 8015D Mod: Gasoline Range					
Client ID:	LCSS		Batch ID: R20375		RunNo: 20375					
Prep Date:	8/4/2014		Analysis Date: 8/5/2014		SeqNo: 593008		Units: %REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	550		500.0		110	61.2	137			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH greater than 2.  
RL Reporting Detection Limit

# Sample Log-In Check List

Client Name: RT HICKS

Work Order Number: 1408023

RcptNo: 1

Received by/date:

MG 08/01/14

Logged By:

Celina Sessa

8/1/2014 8:45:00 AM

*Celina Sessa*

Completed By:

Celina Sessa

8/1/2014 3:49:21 PM

*Celina Sessa*

Reviewed By:



08/04/14

## 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? FedEx

## 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:

(&lt;2 or &gt;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	2.4	Good	Yes			



**From:** [Kristin Pope](#)  
**To:** ["Bratcher, Mike, EMNRD"](#)  
**Cc:** ["Patterson, Heather, EMNRD"](#); ["Greg Boans"](#); ["Chace Walls"](#); ["Randy Hicks"](#); ["Griswold, Jim, EMNRD"](#)  
**Subject:** RE: Hackberry State 1 Release  
**Date:** Friday, August 22, 2014 3:22:00 PM  
**Attachments:** [Hackberry\\_Fig.pdf](#)  
[LAB Delineation\\_07.29.14.pdf](#)

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Mr. Bratcher:

On behalf of Murchison, please find the attached figure showing the chloride delineation results of the Hackberry #1 release and the laboratory report. We used the largest pooling area, sample point #1, as our baseline and all lateral measurements are from #1.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

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**From:** Kristin Pope [mailto:kristin@rthicksconsult.com]  
**Sent:** Monday, July 28, 2014 7:34 AM  
**To:** 'Bratcher, Mike, EMNRD'  
**Cc:** 'Patterson, Heather, EMNRD'; 'Greg Boans'; 'Chace Walls'; 'Randy Hicks'; 'Griswold, Jim, EMNRD'  
**Subject:** RE: Hackberry State 1 Release

Mr. Bratcher,

Delineation of this release will be conducted on Wednesday, July 30, 2014 beginning around 8am. A backhoe will be used to collect samples under the direction of R.T. Hicks Consultants. Please contact me with any questions about this event. Thanks.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

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**From:** Bratcher, Mike, EMNRD [mailto:mike.bratcher@state.nm.us]  
**Sent:** Wednesday, July 16, 2014 9:09 AM  
**To:** Kristin Pope  
**Cc:** Patterson, Heather, EMNRD; Greg Boans; Chace Walls; Randy Hicks; Griswold, Jim, EMNRD  
**Subject:** RE: Hackberry State 1 Release

Ms. Pope,

OCD will require a complete vertical and horizontal delineation of the site utilizing conventional methods, ie, obtaining representative samples from all impacted areas and having those samples



analyzed at an OCD approved lab. The delineation process is to commence not later than July 31, 2014 and continue until the delineation is complete. OCD is to be notified 48 hours prior to commencement of the delineation process. The results of the lab analyses are to be provided to OCD upon completion by the lab. This should be accomplished, and OCD should have the analytical data, not later than August 22, 2014. Murchison may then have until September 15, 2014 to submit a proposal for remediation of the site. This provides for the 60 day extension as requested, and provides OCD with the required data. OCD will not consider any type of risk-based closure for the site without the delineation data.

If you have any questions or concerns, and for notification, please contact me.

**Mike Bratcher**  
**NMOCD District 2**  
**811 S. First Street**  
**Artesia, NM 88210**  
**O: 575-748-1283 X108**  
**C: 575-626-0857**  
**F: 575-748-9720**

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**From:** Kristin Pope [<mailto:kristin@rthicksconsult.com>]  
**Sent:** Tuesday, July 15, 2014 12:55 PM  
**To:** Bratcher, Mike, EMNRD  
**Cc:** Patterson, Heather, EMNRD; Greg Boans; Chace Walls; Randy Hicks  
**Subject:** RE: Hackberry State 1 Release

Mr. Bratcher,

On behalf of Murchison, we respectfully request a 60-day extension to submit a proposed plan. We are in the process of working with BLM to develop a protocol for a similar situation. We hope to apply this protocol to all facilities to satisfy NMOCD, SLO, and BLM and 60 more days should give us enough time to finalize this plan.

Depth to groundwater is approximately 450 ft with the nearest well a bit more than a mile away from the Hackberry State #1. The release was confined to the location. We believe an extension of 60 days will not endanger freshwater, public health, or the environment. We appreciate your consideration of this request. Thank you.

**Kristin Pope**  
**R.T. Hicks Consultants**  
**Carlsbad Field Office**  
**575.302.6755**

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**From:** Bratcher, Mike, EMNRD [<mailto:mike.bratcher@state.nm.us>]  
**Sent:** Tuesday, June 17, 2014 9:10 AM  
**To:** Greg Boans; 'Kristin Pope' ([kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com))  
**Cc:** Patterson, Heather, EMNRD

**Subject:** Hackberry State 1 Release

RE: Murchison O&G \* Hackberry St. 001 \* 30-015-34803 \* O-17-18s-23e \* Eddy County, New Mexico

155 bbl net produced water release on 5/19/2014

Mr. Boans,

NMOCD is in receipt of an Initial Report form C-141 for the above referenced produced fluid release. The C-141 will not be approved as submitted. It will be accepted for record and entered into OCD database, showing as an open non-compliance issue. OCD will require Murchison to perform a vertical and horizontal delineation of the site, and submit a remediation proposal based on the delineation results and site ranking. The form C-141 will be processed today, June 17, 2014. Murchison will have 30 days to complete the delineation and submit a proposal.

If you have any questions or concerns, please contact me.

**Mike Bratcher**  
**NMOCD District 2**  
**811 S. First Street**  
**Artesia, NM 88210**  
**O: 575-748-1283 X108**  
**C: 575-626-0857**  
**F: 575-748-9720**