



**Beaver Durham 12-32 Wellhead Assessment and Closure**  
**API# 05-081-06240**  
**COGCC Remediation Number – 8659**  
**Form 4 (Notification of Completion)**

GRMR Oil & Gas LLC, (GRMR) is submitting this Form 4 (Sundry Notice) to report soil assessment, excavation, and remediation activities associated with the closure of the Beaver Durham 12-32 wellhead (Remediation Number 8659) in the Williams Fork area of operations in Moffat County, Colorado. A topographical Site Location Map is attached as Figure 1. On site activities were conducted in accordance to the approved Form 27 (document #2141768) received September 23, 2014.

**REPORT OF WORK COMPLETED**

On June 2, 2014, a hydrocarbon release was identified during plugging and abandonment (P&A) activities. Upon discovering hydrocarbon impacted soil surrounding the wellhead, SWEPI LP (previous operator) submitted a Form 19 (document #400623398) dated June 9, 2014. At the time of discovery, approximately 35 cubic yards of soil surrounding the wellhead was excavated and stockpiled onsite. Laboratory analytical results of a composite soil sample collected from the excavated soil stock pile indicated concentrations of TPH and benzene exceeding the Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 allowable concentrations. The stockpiled soil was removed from the site and taken to an offsite disposal facility. The wellhead excavation was subsequently backfilled with clean fill material. There is no record of a soil confirmation sample being collected during this event.

On September 26, 2015, three potholes were excavated immediately adjacent to the previous wellhead excavation in an attempt to vertically define the previously observed hydrocarbon impacted soil and collect soil confirmation samples. The potholes were excavated with a track-hoe to depths ranging from 12 feet (ft) below ground surface (bgs) to 18 ft bgs. The soil within each pothole was characterized continuously by visually inspecting soil and screening using a photo-ionization detector (PID) to monitor the soil headspace for the presence of volatile organic vapors. Pothole locations were selected based on health and safety concerns associated with excavation in close proximity to the wellhead and associated underground piping. Pothole locations are depicted on the attached Figure 2. Groundwater was not encountered in any of the pothole excavations during these activities and is estimated be approximately 85 ft bgs.

One soil sample was collected from the bottom of each pothole and submitted to ESC Lab Sciences of Mt. Juliet, Tennessee, for laboratory analysis of constituents identified in COGCC Table 910-1. Soil samples (20150926 - PH02 (Well) @ 18', 20150926 - PH03 (Well) @ 12', and 20150926 - PH04 (Well) @ 17') were collected from potholes PH02 at 18 ft bgs, PH03 at 12 ft bgs, and PH04 at 17 ft bgs.

Laboratory analytical results indicate concentrations of analytes in all soil samples were either within COGCC Table 910-1 allowable concentration levels or within background concentrations observed in the area. Laboratory analytical results are summarized in the attached Table 1. Laboratory analytical reports are included as an attachment. The excavated area was backfilled with clean fill material to match existing grade. Approximately 35 cubic yards of excavated soil was treated onsite by soil shredding.

**NOTIFICATION OF COMPLETION**

This Sundry Notice is being submitted as the Notification of Completion for COGCC Remediation #8659. If the information provided is satisfactory, please provide regulatory documentation of project completion.





## **ATTACHMENTS**

Figure 1 - Site Location Map  
Figure 2 - Site Map  
Table 1 – Wellhead Soil Confirmation Samples  
Laboratory Analytical Reports



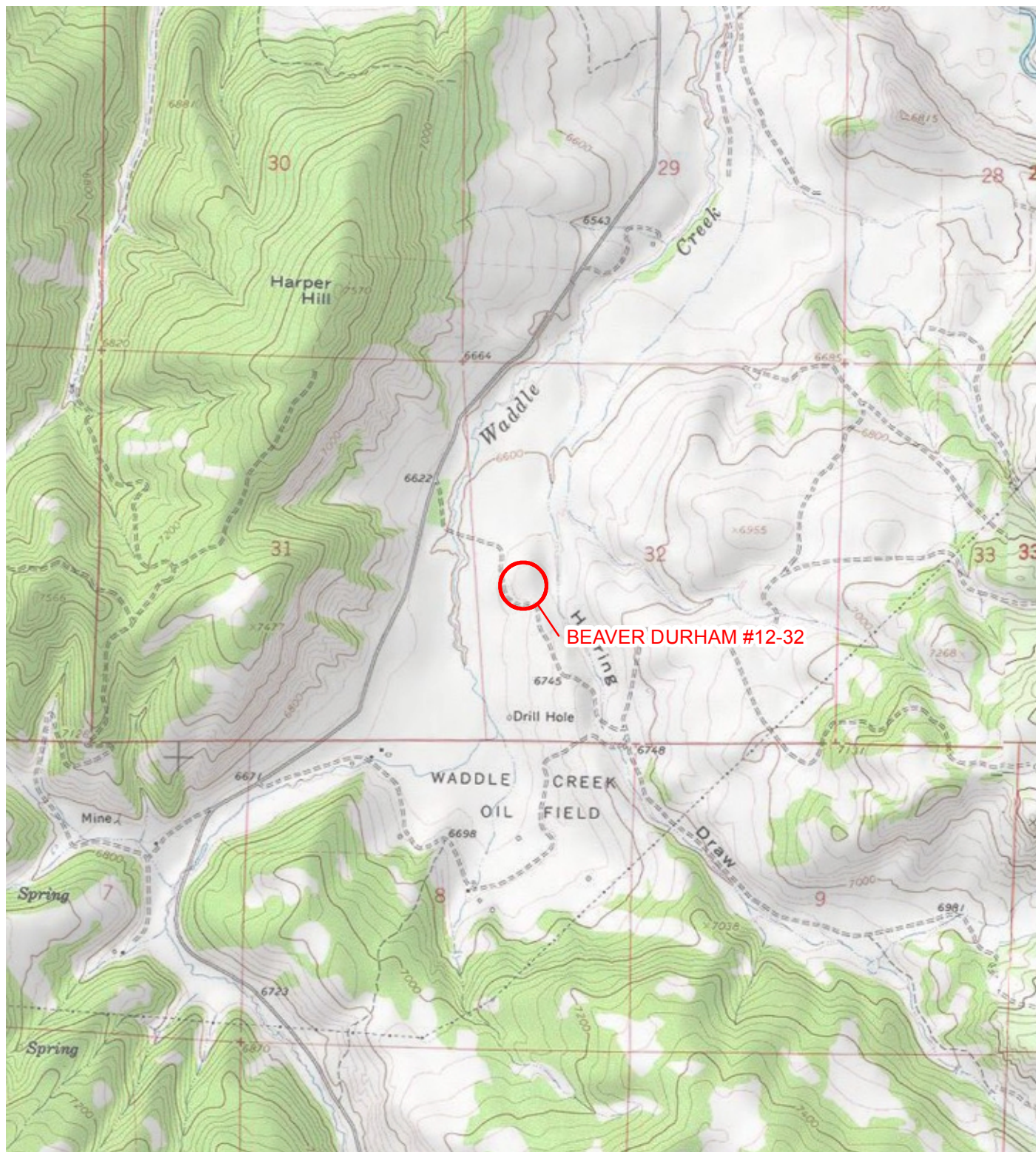


IMAGE COURTESY OF ESRI/USGS

# LEGEND

○ SITE LOCATION

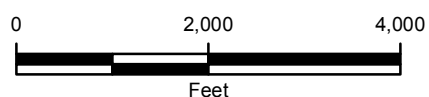


FIGURE 1  
 SITE LOCATION MAP  
 BEAVER DURHAM #12-32  
 NWSW SEC 32-T5N-R90W  
 MOFFAT COUNTY, COLORADO  
 SHELL EXPLORATION AND PRODUCTION COMPANY







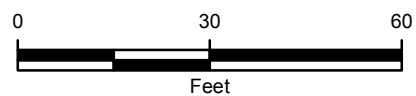




IMAGE COURTESY OF ESRI

## LEGEND

-  BEAVER DURHAM #12-32 WELLHEAD
-  POTHOLE SAMPLE
-  POTHOLE LOCATION
-  ESTIMATED 2014 EXCAVATION EXTENT



SITE DIAGRAM  
BEAVER DURHAM 12-32  
NWSW SEC 32-T5N-R90W  
MOFFAT COUNTY, COLORADO

GRMR OIL & GAS, LLC.





**TABLE 1**  
**WELLHEAD SOIL CONFIRMATION SAMPLES**  
**GRMR PRODUCTION PAD BEAVER DURHAM 12-32**  
**HAMILTON, COLORADO**

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	20150926 - PH02 (Well) @ 18'	20150926 - PH03 (Well) @ 12'	20150926 - PH04 (Well) @ 17'
Sample Date			9/26/2015	9/26/2015	9/26/2015
Sample Type			Confirmation	Confirmation	Confirmation
Arsenic	0.39	mg/kg	<b>2.84</b>	<b>3.05</b>	<b>2.75</b>
Barium	15,000	mg/kg	77.1	105	73.8
Cadmium	70	mg/kg	<0.50	<0.50	<0.50
Chromium (III)	120,000	mg/kg	4.43	3.27	4.70
Chromium (VI)	23	mg/kg	<15	<15	<15
Copper	3,100	mg/kg	8.95	5.53	8.85
Lead	400	mg/kg	7.39	5.88	8.42
Mercury	23	mg/kg	<5.0	<5.0	<5.0
Nickel	1,600	mg/kg	9.93	8.70	10.5
Selenium	390	mg/kg	<5.0	<5.0	<5.0
Silver	390	mg/kg	<0.50	<0.50	<0.50
Zinc	23,000	mg/kg	24.9	19.2	30.7
EC	4.0	mmhos/cm	0.656	0.620	0.584
pH	6 - 9	SU	6.9	6.9	6.9
SAR	12	unitless	1.30	0.21	0.36
TPH-GRO		mg/kg	<50	<50	<50
TPH-DRO		mg/kg	<50	<50	<50
TPH	500	mg/kg	<50	<50	<50
Benzene	0.17	mg/kg	<0.01	<0.01	0.010
Toluene	85	mg/kg	<0.01	<0.01	<0.01
Ethylbenzene	100	mg/kg	<0.01	<0.01	0.143
Total Xylenes	175	mg/kg	0.016	<0.01	0.171
Acenaphthene	1000	mg/kg	<1.0	<1.0	<1.0
Anthracene	1000	mg/kg	<1.0	<1.0	<1.0
Benzo(A)anthracene	0.22	mg/kg	<0.15	<0.15	<0.15
Benzo(B)fluoranthene	0.22	mg/kg	<0.15	<0.15	<0.15
Benzo(K)fluoranthene	2.2	mg/kg	<1.5	<1.5	<1.5
Benzo(A)pyrene	0.022	mg/kg	<0.015	<0.015	<0.015
Chrysene	22	mg/kg	<0.15	<0.15	<0.15
Dibenzo(A,H)anthracene	0.022	mg/kg	<0.015	<0.015	<0.015
Fluoranthene	1000	mg/kg	<1.0	<1.0	<1.0
Fluorene	1000	mg/kg	<1.0	<1.0	<1.0
Indeno(1,2,3,C,D)pyrene	0.22	mg/kg	<0.15	<0.15	<0.15
Naphthalene	23	mg/kg	<1.0	<1.0	<1.0
Pyrene	1000	mg/kg	<1.0	<1.0	<1.0

**NOTES:**

< - less than the stated reporting limit

**BOLD** - indicates result exceeds the COGCC concentration level

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR- Sodium Adsorption Ratio

SU - standard unit

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO and TPH-DRO





# Test Report



October 8, 2015

Client: LT Environmental

Project: BD 12-32 Potholes

Lab ID: 3972

Date Samples Received: 9/29/2015

Number of Samples: 4

Sample Condition: Samples arrived intact and in appropriate sample containers

Sample Temperature: Within acceptable range of 2-6° C, or as specified in EPA Method

The quality control procedures associated with the requested analyses were satisfactorily passed before the samples were run.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Dieken".

Christopher Dieken  
Quality Assurance Manager

A handwritten signature in black ink, appearing to read "Todd Rhea".

Todd Rhea  
Laboratory Manager

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538



## Chain of Custody

**eANALYTICS**  
LABORATORY

Chain of Custody Form

[illegible]

WO # 3972

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Page 1 of 1

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The results contained within this report relate only to the items analyzed



# eANALYTICS

## LABORATORY

Client: LT Environmental

Lab ID: 3972

Project: BD 12-32 Potholes

Analysis: Volatile Organics  
TPHMethod: EPA8260  
EPA8260/8015

Sample Name							Date Sampled	Date Analyzed	Lab ID	
					TPH GRO	TPH DRO				
	Benzene	Toluene	Ethyl- benzene	Total Xylenes	C6-C10	C10-C28				
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
20150926-PH01(Pit) @ 15'	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	09/26/15	10/01/15	3972	1
20150926-PH02(Well) @ 18'	< 0.01	< 0.01	< 0.01	0.016	< 50	< 50	09/26/15	10/01/15	3972	2
20150926-PH03(Well) @ 12'	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	09/26/15	10/01/15	3972	3
20150926-PH04(Well) @ 17'	0.010	< 0.01	0.143	0.171	< 50	< 50	09/26/15	10/01/15	3972	4

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**e**ANALYTICS  
LABORATORY

Client: LT Environmental

Lab ID: 3972

Project: BD 12-32 Potholes

Analysis: pH  
EC  
SARMethod: EPA9045D  
USDA 60 (3)  
USDA 60 (20B)

Sample Name	pH	EC	SAR	Date Sampled	Date Analyzed	Lab ID	
	su	mmhos/cm	ratio				
20150926-PH01(Pit) @ 15'	7.0	1.01	11.0	09/26/15	10/01/15	3972	1
20150926-PH02(Well) @ 18'	6.9	0.656	1.30	09/26/15	10/01/15	3972	2
20150926-PH03(Well) @ 12'	6.9	0.620	0.21	09/26/15	10/01/15	3972	3
20150926-PH04(Well) @ 17'	6.9	0.584	0.36	09/26/15	10/01/15	3972	4

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**e**ANALYTICS  
LABORATORY

Client: LT Environmental

Lab ID: 3972

Project: BD 12-32 Potholes

Analysis: Table 910 metals

Method: EPA6010/7196/7471

Sample Name	As	Ba	B	Cd	Cr (III)	Cr (VI)	Cu	Pb	Date Sampled	Date Analyzed	Lab ID	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
20150926-PH01(Pit) @ 15'	3.13	92.3	< 1.2	< 0.50	3.32	< 15	5.81	5.88	09/26/15	10/02/15	3972	1
20150926-PH02(Well) @ 18'	2.84	77.1	< 1.2	< 0.50	4.43	< 15	8.95	7.39	09/26/15	10/02/15	3972	2
20150926-PH03(Well) @ 12'	3.05	105	< 1.2	< 0.50	3.27	< 15	5.53	5.88	09/26/15	10/02/15	3972	3
20150926-PH04(Well) @ 17'	2.75	73.8	< 1.2	< 0.50	4.70	< 15	8.85	8.42	09/26/15	10/02/15	3972	4

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**e**ANALYTICS  
LABORATORY

Client: LT Environmental

Lab ID: 3972

Project: BD 12-32 Potholes

Analysis: Table 910 metals

Method: EPA6010/7196/7471

Sample Name	Hg	Ni	Se	Ag	Zn	Date Sampled	Date Analyzed	Lab ID	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
20150926-PH01(Pit) @ 15'	< 5.0	6.27	< 5.0	< 0.50	20.9	09/26/15	10/02/15	3972	1
20150926-PH02(Well) @ 18'	< 5.0	9.93	< 5.0	< 0.50	24.9	09/26/15	10/02/15	3972	2
20150926-PH03(Well) @ 12'	< 5.0	8.70	< 5.0	< 0.50	19.2	09/26/15	10/02/15	3972	3
20150926-PH04(Well) @ 17'	< 5.0	10.5	< 5.0	< 0.50	30.7	09/26/15	10/02/15	3972	4

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# eANALYTICS

## L A B O R A T O R Y

Client: LT Environmental

Sample Name: 20150926-PH01(Pit) @ 15'

Project: BD 12-32 Potholes

Lab ID: 3972 1

Date Sampled: 9/26/2015

Analysis: PAH

Date Analyzed: 10/3/2015

Method: EPA8270 SIM

**Surrogate Recoveries**

Surrogate	% Recovery	Surrogate	% Recovery
2,4,6-Tribromophenol (70%-130%)	72	Nitrobenzene-d5 (70%-130%)	100
2-Fluorobiphenyl (70%-130%)	113	2-Fluorophenol (70%-130%)	102

Compound	CAS #	Result (mg/kg)	Compound	CAS #	Result (mg/kg)
Acenaphthene	83-32-9	< 1.0	Chrysene	218-01-9	< 0.15
Acenaphthylene	208-96-8	< 1.0	Dibenzo(a,h)-anthracene	53-70-3	< 0.015
Anthracene	120-12-7	< 1.0	Fluoranthene	206-44-0	< 1.0
Benzo(a)-anthracene	56-55-3	< 0.15	Fluorene	86-73-7	< 1.0
Benzo(a)-pyrene	50-32-8	< 0.015	Indeno(1,2,3-C,D)-pyrene	193-39-5	< 0.15
Benzo(b)fluoranthene	205-99-2	< 0.15	Naphthalene	91-20-3	< 1.0
Benzo(g,h,i)-perylene	191-24-2	< 1.0	Phenanthrene	85-01-8	< 1.0
Benzo(k)-fluoranthene	207-08-9	< 1.5	Pyrene	129-00-0	< 1.0

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# eANALYTICS

## LABORATORY

Client: LT Environmental

Sample Name: 20150926-PH02(Well) @ 18'

Project: BD 12-32 Potholes

Lab ID: 3972 2

Date Sampled: 9/26/2015

Analysis: PAH

Date Analyzed: 10/3/2015

Method: EPA8270 SIM

**Surrogate Recoveries**

Surrogate	% Recovery	Surrogate	% Recovery
2,4,6-Tribromophenol (70%-130%)	79	Nitrobenzene-d5 (70%-130%)	101
2-Fluorobiphenyl (70%-130%)	111	2-Fluorophenol (70%-130%)	115

Compound	CAS #	Result (mg/kg)	Compound	CAS #	Result (mg/kg)
Acenaphthene	83-32-9	< 1.0	Chrysene	218-01-9	< 0.15
Acenaphthylene	208-96-8	< 1.0	Dibenzo(a,h)-anthracene	53-70-3	< 0.015
Anthracene	120-12-7	< 1.0	Fluoranthene	206-44-0	< 1.0
Benzo(a)-anthracene	56-55-3	< 0.15	Fluorene	86-73-7	< 1.0
Benzo(a)-pyrene	50-32-8	< 0.015	Indeno(1,2,3-C,D)-pyrene	193-39-5	< 0.15
Benzo(b)fluoranthene	205-99-2	< 0.15	Naphthalene	91-20-3	< 1.0
Benzo(g,h,i)-perylene	191-24-2	< 1.0	Phenanthrene	85-01-8	< 1.0
Benzo(k)-fluoranthene	207-08-9	< 1.5	Pyrene	129-00-0	< 1.0

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# eANALYTICS

## LABORATORY

Client: LT Environmental

Sample Name: 20150926-PH03(Well) @ 12'

Project: BD 12-32 Potholes

Lab ID: 3972 3

Date Sampled: 9/26/2015

Analysis: PAH

Date Analyzed: 10/3/2015

Method: EPA8270 SIM

**Surrogate Recoveries**

Surrogate	% Recovery	Surrogate	% Recovery
2,4,6-Tribromophenol (70%-130%)	73	Nitrobenzene-d5 (70%-130%)	89
2-Fluorobiphenyl (70%-130%)	105	2-Fluorophenol (70%-130%)	106

Compound	CAS #	Result (mg/kg)	Compound	CAS #	Result (mg/kg)
Acenaphthene	83-32-9	< 1.0	Chrysene	218-01-9	< 0.15
Acenaphthylene	208-96-8	< 1.0	Dibenzo(a,h)-anthracene	53-70-3	< 0.015
Anthracene	120-12-7	< 1.0	Fluoranthene	206-44-0	< 1.0
Benzo(a)-anthracene	56-55-3	< 0.15	Fluorene	86-73-7	< 1.0
Benzo(a)-pyrene	50-32-8	< 0.015	Indeno(1,2,3-C,D)-pyrene	193-39-5	< 0.15
Benzo(b)fluoranthene	205-99-2	< 0.15	Naphthalene	91-20-3	< 1.0
Benzo(g,h,i)-perylene	191-24-2	< 1.0	Phenanthrene	85-01-8	< 1.0
Benzo(k)-fluoranthene	207-08-9	< 1.5	Pyrene	129-00-0	< 1.0

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# eANALYTICS

## L A B O R A T O R Y

Client: LT Environmental

Sample Name: 20150926-PH04(Well) @ 17'

Project: BD 12-32 Potholes

Lab ID: 3972 4

Date Sampled: 9/26/2015

Analysis: PAH

Date Analyzed: 10/3/2015

Method: EPA8270 SIM

**Surrogate Recoveries**

Surrogate	% Recovery	Surrogate	% Recovery
2,4,6-Tribromophenol (70%-130%)	80	Nitrobenzene-d5 (70%-130%)	109
2-Fluorobiphenyl (70%-130%)	107	2-Fluorophenol (70%-130%)	104

Compound	CAS #	Result (mg/kg)	Compound	CAS #	Result (mg/kg)
Acenaphthene	83-32-9	< 1.0	Chrysene	218-01-9	< 0.15
Acenaphthylene	208-96-8	< 1.0	Dibenzo(a,h)-anthracene	53-70-3	< 0.015
Anthracene	120-12-7	< 1.0	Fluoranthene	206-44-0	< 1.0
Benzo(a)-anthracene	56-55-3	< 0.15	Fluorene	86-73-7	< 1.0
Benzo(a)-pyrene	50-32-8	< 0.015	Indeno(1,2,3-C,D)-pyrene	193-39-5	< 0.15
Benzo(b)fluoranthene	205-99-2	< 0.15	Naphthalene	91-20-3	< 1.0
Benzo(g,h,i)-perylene	191-24-2	< 1.0	Phenanthrene	85-01-8	< 1.0
Benzo(k)-fluoranthene	207-08-9	< 1.5	Pyrene	129-00-0	< 1.0

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**e**ANALYTICS  
LABORATORY

Client: LT Environmental

Lab ID: 3972

Project: BD 12-32 Potholes

Method: EPA8260

Sample Name	Dibromo- fluoromethane % Recovery	1,2 Dichloro- ethane-D4 % Recovery	Toluene-D8 % Recovery	Bromo- fluorobenzene % Recovery	Date Sampled	Date Analyzed	Lab ID
20150926-PH01(Pit) @ 15'	103	91	98	100	09/26/15	10/01/15	3972 1
20150926-PH02(Well) @ 18'	93	102	101	94	09/26/15	10/01/15	3972 2
20150926-PH03(Well) @ 12'	104	103	96	96	09/26/15	10/01/15	3972 3
20150926-PH04(Well) @ 17'	94	92	98	104	09/26/15	10/01/15	3972 4

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# eANALYTICS

## L A B O R A T O R Y

Client: LT Environmental

Lab ID: 3972

Project: BD 12-32 Potholes

Analysis: Volatile Organics  
TPHMethod: EPA8260  
EPA8260/8015

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPH GRO C6-C10	TPH DRO C10-C28	Date Analyzed	Lab ID		
	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec				
Laboratory Control Sample	95	104	94	97	100	104	10/01/15	LCS	3972	1
(70-130%)										
Method Blank	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	10/01/15	MB	3972	1
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				

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