

GROUNDWATER MONITORING REPORT JANUARY 2010

UPRC 9, 9K, 10K

On November 19, 2009, LT Environmental, Inc. (LTE) conducted groundwater sampling on behalf of Noble Energy, Inc., at the UPRC 9, 9K, 10K Tank Battery (Site). This sampling event constitutes the third post remediation monitoring event at this Site. Site history, remediation activities, well installation, and performance monitoring have been described in the preceding reports.

Groundwater level measurements were collected from the monitoring wells and are summarized in Table 1. The monitoring wells (MW01, MW02, and MW03) were installed on April 14, 2009. A Site Map is presented on Figure 1.

Depth to groundwater ranged from 7.50 feet below top of casing (btoc) in MW01 to 8.03 feet btoc in MW03 and was used to calculate well-specific purge volumes. Following purging, groundwater samples were collected and preserved on ice. Samples were submitted under strict chain of custody protocol to Origins Laboratory, Inc. of Denver, Colorado for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency Method 8260B.

Analytical results from the monitoring wells, presented in Table 1, indicated BTEX concentrations for MW01 and MW03 are in compliance with Colorado Department of Public Health and Environment-Water Quality Control Commission Regulation 41 (WQCC Reg 41). MW02 exhibited a benzene concentration of 29.1 micrograms per liter ($\mu\text{g/L}$), which is above the WQCC Reg 41 standard of 5.0 $\mu\text{g/L}$. The laboratory analytical report is included in the Appendix.

LTE will continue to conduct quarterly groundwater monitoring events with the goal of observing four consecutive quarters with analytical results in compliance with WQCC Reg 41. The next quarterly groundwater sampling event is scheduled for February 2010.

TABLE

TABLE 1

**GROUNDWATER ANALYTICAL DATA
UPRC 9, 9k, 10k TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

MONITORING		DEPTH TO	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL
WELL	DATE	WATER (feet btoc)	(ug/L)	(ug/L)	(ug/L)	XYLENES (ug/L)
MW01	4/28/2009	6.12	<1.0	<1.0	<1.0	<3.0
	8/25/2009	2.21	<1.0	<1.0	<1.0	<3.0
	11/19/2009	7.50	<1.0	<1.0	<1.0	<3.0
MW02	4/28/2009	6.52	<1.0	<1.0	<1.0	<3.0
	8/25/2009	2.16	<1.0	<1.0	<1.0	<3.0
	11/19/2009	7.74	29.1	<1.0	<1.0	<3.0
MW03	4/28/2009	6.69	2.70	<1.0	108	519.19
	8/25/2009	2.01	<1.0	<1.0	<1.0	<3.0
	11/19/2009	8.03	1.12	<1.0	24.3	23.5
CDPHE WQCC Reg 41			5.0	560	700	1,400

NOTES:

btoc - below top of casing

ug/L - micrograms per liter

< - indicates result is less than the stated laboratory method detection limit

BOLD - indicates result exceeds the regulatory standard.

Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B

CDPHE WQCC Reg 41 - Colorado Department of Public Health and Environment - Water Quality Control
Commission Regulation 41 covering Basic Standards for Groundwater

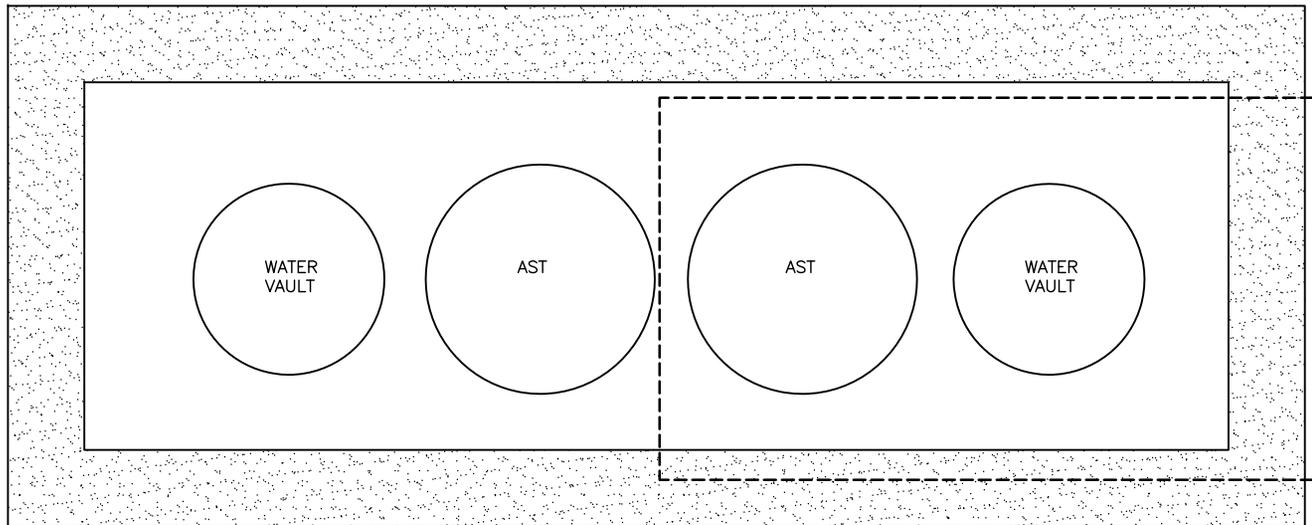


FIGURE

IRRIGATION DITCH

MW03

MW02



LEGEND

MW01 ⊗ MONITORING WELL LOCATION

BERM

EXTENT OF EXCAVATION

ESTIMATED GROUNDWATER FLOW DIRECTION

AST ABOVEGROUND STORAGE TANK

LEASE ROAD

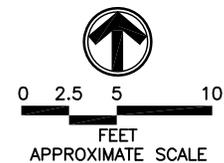


FIGURE 1
MONITORING WELL LOCATIONS MAP
 UPRC 9-9K, 10K
 WELD COUNTY, CO
 NOBLE ENERGY, INC.



APPENDIX
ANALYTICAL REPORT



4640 Pecos Street | Unit C | Denver, Colorado 80211
303.433.1322 Phone 303.265.9645 Fax

November 29, 2009

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Dodek
Project Number: NEP0904
Project: Noble - UPRC 9, 9k- 10k

Attached are the analytical results for Noble - UPRC 9, 9k- 10k received by Origins Laboratory, Inc. 11/23/2009 11:45:00AM. Please let us know if you have any questions, or if we can help with anything at all.

A handwritten signature in black ink, appearing to read "Noelle E Doyle".

Noelle E Doyle
Laboratory Manager

The analytical results in the following report were analyzed under the guidelines of EPA Methods specified in SW-846. The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. This laboratory report is intended solely for the above addressee and it is only to be used and or reproduced in its entirety.

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Brian Dodek
Project Number: NEP0904
Project: Noble - UPRC 9, 9k- 10k

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
MW01	X911091-01	Water	11/19/2009 3:35:00PM	11/23/2009 11:45
MW02	X911091-02	Water	11/19/2009 4:00:00PM	11/23/2009 11:45
MW03	X911091-03	Water	11/19/2009 4:15:00PM	11/23/2009 11:45

Origins Laboratory, Inc.

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Noelle E Doyle, Laboratory Manager



LT Environmental, Inc.
 4600 West 60th Avenue
 Arvada CO 80003

Brian Dodek
 Project Number: NEP0904
 Project: Noble - UPRC 9, 9k- 10k

page 1 of 1



originslaboratory.com

Client- LT Environmental
 Address- 4600 W. 60th Ave.
Arvada, CO 80003
 Telephone Number- 303-433-9785
 E-Mail Address- bdodek@ltenv.com

Project Manager- Brian Dodek
 Project Name- UPRC 9-9k, 10k GW Sampling
 Project Number- NEP0904
 Samples Collected by- Devlin Givlin

Sample ID - Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other -	Soil	Groundwater	Air - Summa Canister #		
MW01	11/19/09	1535	3	X	X			X				1
MW02	↓	1600	↓	X	X			X				2
MW03	↓	1615	↓	X	X			X				3
												4
												5
												6
												7
												8
												9
												10
Relinquished by: <u>Brian Dodek</u>	Date: <u>11/23/09</u>	Time: <u>11:45</u>	Received by:	Date:	Time:	Temperature Upon Receipt:						
Relinquished by:	Date:	Time:	Received by: <u>[Signature]</u>	Date: <u>11/23/09</u>	Time: <u>11:45</u>	Turn Around Time: <input checked="" type="checkbox"/> 24-hr <input type="checkbox"/> 48-hr <input type="checkbox"/> 72-hr						

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Brian Dodek
 Project Number: NEP0904
 Project: Noble – UPRC 9, 9k- 10k

MW01
X911091-01 (Water)

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.

BTEX by EPA 8260B

Benzene	ND	0.00100	mg/L	1	9K23004	11/23/2009	11/24/2009	
Toluene	ND	0.00100	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	
o-Xylene	ND	0.00100	"	"	"	"	"	
m,p-Xylene	ND	0.00200	"	"	"	"	"	

<i>Surrogate: 1,2-Dichloroethane-d4</i>	115 %	85.7-134			"	"	"	
<i>Surrogate: Toluene-d8</i>	86.7 %	81.4-121			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	116 %	74.7-127			"	"	"	

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Noelle E Doyle, Laboratory Manager

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MW02
X911091-02 (Water)

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.

BTEX by EPA 8260B

Benzene	0.0291	0.00100	mg/L	1	9K23004	11/23/2009	11/24/2009	
Toluene	ND	0.00100	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	
o-Xylene	ND	0.00100	"	"	"	"	"	
m,p-Xylene	ND	0.00200	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	118 %	85.7-134			"	"	"	
Surrogate: Toluene-d8	84.0 %	81.4-121			"	"	"	
Surrogate: 4-Bromofluorobenzene	119 %	74.7-127			"	"	"	

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MW03
X911091-03 (Water)

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.

BTEX by EPA 8260B

Benzene	0.00112	0.00100	mg/L	1	9K23004	11/23/2009	11/24/2009
Toluene	ND	0.00100	"	"	"	"	"
Ethylbenzene	0.0243	0.00100	"	"	"	"	"
o-Xylene	0.00110	0.00100	"	"	"	"	"
m,p-Xylene	0.0224	0.00200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	119 %	85.7-134			"	"	"
Surrogate: Toluene-d8	83.5 %	81.4-121			"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	74.7-127			"	"	"

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Volatile Organic Compounds by EPA Method 8260B – Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 9K23004 – EPA 5030B

Blank (9K23004–BLK1)

Prepared: 11/23/2009 Analyzed: 11/23/2009

Benzene	ND	0.001	mg/L							
Toluene	ND	0.001	"							
Ethylbenzene	ND	0.001	"							
o-Xylene	ND	0.001	"							
m,p-Xylene	ND	0.002	"							

Surrogate: 1,2-Dichloroethane-d4	70.9		ug/L	62.5		113	85.7-134			
Surrogate: Toluene-d8	56.0		"	62.5		89.6	81.4-121			
Surrogate: 4-Bromofluorobenzene	69.6		"	62.5		111	74.7-127			

LCS (9K23004–BS1)

Prepared: 11/23/2009 Analyzed: 11/23/2009

Benzene	0.04	0.001	mg/L	0.0500		79.7	74.9-126			
Toluene	0.04	0.001	"	0.0500		81.5	73.3-128			
Surrogate: 1,2-Dichloroethane-d4	70.3		ug/L	62.5		113	85.7-134			
Surrogate: Toluene-d8	54.7		"	62.5		87.5	81.4-121			
Surrogate: 4-Bromofluorobenzene	69.5		"	62.5		111	74.7-127			

Matrix Spike (9K23004–MS1)

Source: X911088-01

Prepared: 11/23/2009 Analyzed: 11/23/2009

Benzene	0.04	0.001	mg/L	0.0500	ND	78.8	78.1-132			
Toluene	0.04	0.001	"	0.0500	ND	79.8	71.7-124			
Surrogate: 1,2-Dichloroethane-d4	74.0		ug/L	62.5		118	85.7-134			
Surrogate: Toluene-d8	54.1		"	62.5		86.6	81.4-121			
Surrogate: 4-Bromofluorobenzene	70.4		"	62.5		113	74.7-127			

Matrix Spike Dup (9K23004–MSD1)

Source: X911088-01

Prepared: 11/23/2009 Analyzed: 11/23/2009

Benzene	0.04	0.001	mg/L	0.0500	ND	77.9	78.1-132	1.10	24.8	QM-07
Toluene	0.04	0.001	"	0.0500	ND	77.0	71.7-124	3.55	25	
Surrogate: 1,2-Dichloroethane-d4	72.5		ug/L	62.5		116	85.7-134			
Surrogate: Toluene-d8	53.1		"	62.5		85.0	81.4-121			
Surrogate: 4-Bromofluorobenzene	69.6		"	62.5		111	74.7-127			

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Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference

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