



## **GROUNDWATER MONITORING REPORT/ NO FURTHER ACTION REQUEST MAY 2009**

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### **ANGELINA ROMERO #1 WELL SITE**

On May 19, 2009, LT Environmental, Inc. (LTE) conducted groundwater sampling on behalf of Noble Energy, Inc. (Noble), at the Angelina Romero #1 Tank Battery (Site). This sampling event constitutes the fourth post-remediation monitoring event at this Site. A Site Map is presented on Figure 1. Site history, remediation activities, and performance groundwater sampling results have been described in preceding reports.

Groundwater level measurements were collected from the monitoring wells (MW01, MW02, and MW03) and are summarized in Table 1. Depth to groundwater, which ranged from 3.25 feet below top of casing (btoc) in monitoring wells MW02 to 3.38 feet btoc in monitoring well MW03, was used to calculate well-specific purge volumes. Following purging, groundwater samples were collected and preserved on ice. Samples were then 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, indicate BTEX concentrations are in compliance with Colorado Department of Public Health and Environment – Water Quality Control Commission Regulation 41 (WQCC Reg 41). The laboratory analytical report is included in the Appendix.

As seen in the previously submitted *Remediation Summary Report* (August 2008), soil impacts have been removed to below the regulatory standard. This groundwater sampling event constitutes the fourth consecutive quarterly groundwater sampling event which has reported groundwater analytical results in compliance with WQCC Reg 41. As soil and groundwater have been remediated to achieve cleanup goals, LTE on behalf of Noble, requests that the Colorado Oil and Gas Conservation Commission grant a No Further Action condition for the Angelina Romero #1 Well Site.

**TABLE**



**TABLE 1**

**GROUNDWATER ANALYTICAL DATA  
ANGELINA ROMERO #1  
WELD COUNTY, COLORADO  
NOBLE ENERGY, INC.**

MONITORING		DEPTH TO	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL
WELL	DATE	WATER	(ug/L)	(ug/L)	(ug/L)	XYLENES
		(feet btoc)				(ug/L)
MW01	8/20/2008	0.50	<1.0	<1.0	<1.0	<3.0
	11/10/2008	2.55	<1.0	<1.0	<1.0	<3.0
	2/10/2009	3.44	<1.0	<1.0	<1.0	<3.0
	5/19/2009	3.34	<1.0	<1.0	<1.0	<3.0
MW02	8/20/2008	0.40	<1.0	<1.0	<1.0	<3.0
	11/10/2008	2.42	<1.0	<1.0	<1.0	<3.0
	2/10/2009	3.32	<1.0	<1.0	<1.0	<3.0
	5/19/2009	3.25	<1.0	1.10	<1.0	<3.0
MW03	8/20/2008	0.40	<1.0	<1.0	<1.0	<3.0
	11/10/2008	2.55	<1.0	<1.0	<1.0	<3.0
	2/10/2009	3.42	<1.0	<1.0	<1.0	<3.0
	5/19/2009	3.38	<1.0	<1.0	<1.0	<3.0
<b>CDPHE WQCC Reg 41</b>			<b>5.0</b>	<b>560</b>	<b>700</b>	<b>1,400</b>

**NOTES:**

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

btoc - below top of casing

ug/L - micrograms per liter

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

CDPHE WQCC Reg 41 - Colorado Department of Public Health and Environment - Water Quality Control

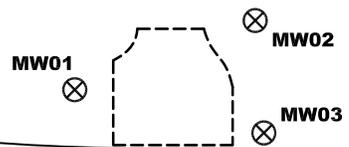
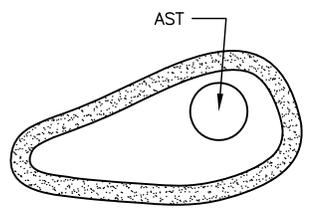
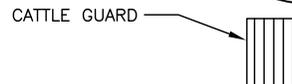
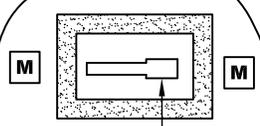
Commission Regulation 41 covering Basic Standards for Groundwater



**FIGURE**



COUNTY ROAD 43

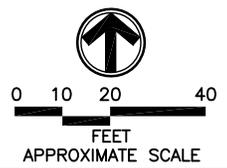


ACCESS ROAD



**LEGEND**

- MW01 ⊗ MONITORING WELL LOCATION
- M METER HOUSE
- ▨ BERM
- AST ABOVEGROUND STORAGE TANK
- - - - - EXTENT OF EXCAVATION
- ➡ ESTIMATED GROUNDWATER FLOW DIRECTION



**FIGURE 1**  
**SITE MAP**  
**ANGELINA ROMERO #1**  
**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

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May 21, 2009

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

Brian Dodek  
Project Number: NEP0825.02  
Project: Noble – Angelina Romero #1

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Attached are the analytical results for Noble – Angelina Romero #1 received by Origins Laboratory, Inc. 5/19/2009 3:20:00PM. Please let us know if you have any questions, or if we can help with anything at all.

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.

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



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

Brian Dodek  
Project Number: NEP0825.02  
Project: Noble - Angelina Romero #1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
MW01	X905080-01	Water	5/19/2009 10:20:00AM	05/19/2009 15:20
MW02	X905080-02	Water	5/19/2009 10:15:00AM	05/19/2009 15:20
MW03	X905080-03	Water	5/19/2009 10:10:00AM	05/19/2009 15:20

Origins Laboratory, Inc.

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Noelle E Doyle, Laboratory Manager



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**MW01**  
**X905080-01 (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	9E20001	05/20/2009	05/20/2009
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>	102 %	70.3-128			"	"	"
<i>Surrogate: Toluene-d8</i>	98.0 %	78.8-125			"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %	75.5-131			"	"	"

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**MW02**  
**X905080-02 (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	9E20001	05/20/2009	05/20/2009
Toluene	<b>0.00110</b>	0.00100	"	"	"	"	"
Ethylbenzene	ND	0.00100	"	"	"	"	"
o-Xylene	ND	0.00100	"	"	"	"	"
m,p-Xylene	ND	0.00200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	99.7 %	70.3-128			"	"	"
Surrogate: Toluene-d8	100 %	78.8-125			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	75.5-131			"	"	"

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**MW03**  
**X905080-03 (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	9E20001	05/20/2009	05/20/2009	
Toluene	ND	0.00100	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	
o-Xylene	ND	0.00100	"	"	"	"	"	
m,p-Xylene	ND	0.00200	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	98.3 %	70.3-128			"	"	"
Surrogate: Toluene-d8	99.2 %	78.8-125			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	75.5-131			"	"	"

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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 9E20001 – EPA 5030B**

**Blank (9E20001–BLK1)**

Prepared: 05/20/2009 Analyzed: 05/20/2009

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	62.5		ug/L	62.5		100	70.3-128			
Surrogate: Toluene-d8	66.6		"	62.5		107	78.8-125			
Surrogate: 4-Bromofluorobenzene	61.9		"	62.5		99.1	75.5-131			

**LCS (9E20001–BS1)**

Prepared: 05/20/2009 Analyzed: 05/20/2009

Benzene	0.06	0.001	mg/L	0.0500		113	74.9-126			
Toluene	0.06	0.001	"	0.0500		115	73.3-128			
Surrogate: 1,2-Dichloroethane-d4	64.3		ug/L	62.5		103	70.3-128			
Surrogate: Toluene-d8	65.3		"	62.5		105	78.8-125			
Surrogate: 4-Bromofluorobenzene	59.9		"	62.5		95.9	75.5-131			

**Matrix Spike (9E20001–MS1)**

Source: X905078-01

Prepared: 05/20/2009 Analyzed: 05/20/2009

Benzene	0.06	0.001	mg/L	0.0500	ND	124	78.1-132			
Toluene	0.06	0.001	"	0.0500	0.0006	117	71.7-124			
Surrogate: 1,2-Dichloroethane-d4	62.7		ug/L	62.5		100	70.3-128			
Surrogate: Toluene-d8	62.4		"	62.5		99.8	78.8-125			
Surrogate: 4-Bromofluorobenzene	60.6		"	62.5		97.0	75.5-131			

**Matrix Spike Dup (9E20001–MSD1)**

Source: X905078-01

Prepared: 05/20/2009 Analyzed: 05/20/2009

Benzene	0.06	0.001	mg/L	0.0500	ND	124	78.1-132	0.291	24.8	
Toluene	0.06	0.001	"	0.0500	0.0006	113	71.7-124	2.74	25	
Surrogate: 1,2-Dichloroethane-d4	63.4		ug/L	62.5		101	70.3-128			
Surrogate: Toluene-d8	61.6		"	62.5		98.5	78.8-125			
Surrogate: 4-Bromofluorobenzene	55.4		"	62.5		88.6	75.5-131			

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### Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

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