

GROUNDWATER MONITORING REPORT

FEBRUARY 2009

ANGELINA ROMERO #1 WELL SITE

On February 10, 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 third post-remediation monitoring event at this Site. A site map is presented on Figure 1. Site history and remediation activities were described in the preceding *Remediation Summary* and *Well Installation and Sampling Report* dated August 2008 and September 2008, respectively.

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 3.32 feet below top of casing (btoc) in monitoring wells MW02 to 3.44 feet btoc in monitoring well MW01, 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 below Colorado Groundwater Quality Standards CGWQS and laboratory method detection limits for all samples. 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 of analytical results in compliance with the CGWQS. The next quarterly groundwater sampling event is scheduled for May 2009.



TABLE



TABLE 1

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

MONITORING WELL	DATE	DEPTH TO WATER (feet btoc)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYLBENZENE (ug/L)	XYLENES (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
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
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
CGWQS			5.0	1,000	700	1,400

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

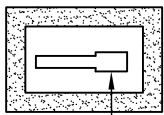
CGWQS - Colorado Groundwater Quality Standards

FIGURE



COUNTY ROAD 43

M



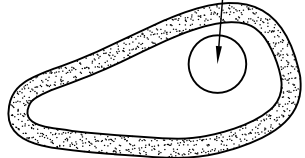
SEPARATOR

M

CATTLE GUARD



AST



MW01



MW02



MW03



ACCESS ROAD



LEGEND

MW01



MONITORING WELL LOCATION



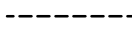
METER HOUSE



BERM

AST

ABOVEGROUND STORAGE TANK



EXTENT OF EXCAVATION



ESTIMATED GROUNDWATER FLOW DIRECTION



0 10 20 40

FEET
APPROXIMATE SCALE

FIGURE 1
SITE MAP
ANGELINA ROMERO #1
WELD COUNTY, CO
NOBLE ENERGY, INC.



NEP082501 7/08

APPENDIX
ANALYTICAL REPORT





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

February 13, 2009

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

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

Attached are the analytical results for Noble – Angelina Romero #1 received by Origins Laboratory, Inc. 2/10/2009 3:01:00PM. Please let us know if you have any questions, or if we can help with anything at all.

Laboratory Manager
Noelle E Doyle

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: NEP0825.02
Project: Noble – Angelina Romero #1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
MW01	X902029-01	Water	2/10/2009 1:55:00PM	02/10/2009 15:01
MW02	X902029-02	Water	2/10/2009 2:00:00PM	02/10/2009 15:01
MW03	X902029-03	Water	2/10/2009 2:05:00PM	02/10/2009 15:01

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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LT Environmental, Inc.
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Arvada CO 80003

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

page 1 of 1



originslaboratory.com

Client: LT Project Manager: BDD
Address: 4600 W 60th Project Name: Romero Angelina #1
Telephone Number: Arvada 80003 Project Number: NEP0825
E-Mail Address: ON FILE Samples Collected by: TED

Sample ID - Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other: <u>ACE</u>	Soil	Air - Summa Canister #	Other: <u>826</u>		
MW01	2/10/09	1355	3									1
MW02	2/10/09	1400	1									2
MW03	2/10/09	1405	1									3
												4
												5
												6
												7
												8
												9
												10
Relinquished by: <u>S-E</u>	Date: <u>2/10/09</u>	Time: <u>1300</u>	Time: <u>1300</u>	Received by: <u>[Signature]</u>	Date: <u>2/10/09</u>	Time: <u>1300</u>	Date: <u>2/10/09</u>	Time: <u>1300</u>	Temperature Upon Receipt: <u>3.2</u>	Turn Around Time: <u>24 hr</u>	Standard: <u>72 hr</u>	
Relinquished by: <u>[Signature]</u>	Date: <u>2/10/09</u>	Time: <u>1300</u>	Time: <u>1300</u>	Received by: <u>[Signature]</u>	Date: <u>2/10/09</u>	Time: <u>1300</u>	Date: <u>2/10/09</u>	Time: <u>1300</u>	Temperature Upon Receipt: <u>3.2</u>	Turn Around Time: <u>24 hr</u>	Standard: <u>72 hr</u>	

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Origins Laboratory, Inc.

Noelle E Doyle

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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

MW01

X902029-01 (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	9B11003	02/11/2009	02/11/2009
Toluene	ND	0.00100	"	"	"	"	"
Ethylbenzene	ND	0.00100	"	"	"	"	"
o-Xylene	ND	0.00100	"	"	"	"	"
m,p-Xylene	ND	0.00200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	110 %	70.3-123	"	"	"
Surrogate: Toluene-d8	82.5 %	75.9-123	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	83-123	"	"	"

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MW02

X902029-02 (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	9B11003	02/11/2009	02/11/2009
Toluene	ND	0.00100	"	"	"	"	"
Ethylbenzene	ND	0.00100	"	"	"	"	"
o-Xylene	ND	0.00100	"	"	"	"	"
m,p-Xylene	ND	0.00200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	111 %	70.3-123	"	"	"
Surrogate: Toluene-d8	82.9 %	75.9-123	"	"	"
Surrogate: 4-Bromofluorobenzene	104 %	83-123	"	"	"

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Project: Noble – Angelina Romero #1

MW03

X902029-03 (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	9B11003	02/11/2009	02/11/2009
Toluene	ND	0.00100	"	"	"	"	"
Ethylbenzene	ND	0.00100	"	"	"	"	"
o-Xylene	ND	0.00100	"	"	"	"	"
m,p-Xylene	ND	0.00200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	110 %	70.3-123	"	"	"
Surrogate: Toluene-d8	83.6 %	75.9-123	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	83-123	"	"	"

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 Project: Noble – Angelina Romero #1

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 9B11003 – EPA 5030B

Blank (9B11003-BLK1)

Prepared: 02/11/2009 Analyzed: 02/11/2009

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	65.3		ug/L	62.5		104	70.3-123			
Surrogate: Toluene-d8	53.4		"	62.5		85.5	75.9-123			
Surrogate: 4-Bromofluorobenzene	66.0		"	62.5		106	83-123			

Blank (9B11003-BLK2)

Prepared: 02/11/2009 Analyzed: 02/11/2009

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	66.1		ug/L	62.5		106	70.3-123			
Surrogate: Toluene-d8	53.3		"	62.5		85.2	75.9-123			
Surrogate: 4-Bromofluorobenzene	66.8		"	62.5		107	83-123			

LCS (9B11003-BS1)

Prepared: 02/11/2009 Analyzed: 02/11/2009

Benzene	0.06	0.001	mg/L	0.0500		114	64.2-124			
Toluene	0.05	0.001	"	0.0500		94.0	63.9-119			
Surrogate: 1,2-Dichloroethane-d4	66.7		ug/L	62.5		107	70.3-123			
Surrogate: Toluene-d8	53.0		"	62.5		84.8	75.9-123			
Surrogate: 4-Bromofluorobenzene	64.4		"	62.5		103	83-123			

LCS (9B11003-BS2)

Prepared: 02/11/2009 Analyzed: 02/11/2009

Benzene	0.06	0.001	mg/L	0.0500		116	64.2-124			
Toluene	0.05	0.001	"	0.0500		96.4	63.9-119			

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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 9B11003 – EPA 5030B

LCS (9B11003–BS2)

Prepared: 02/11/2009 Analyzed: 02/11/2009

Surrogate: 1,2-Dichloroethane-d4	66.1		ug/L	62.5		106	70.3–123			
Surrogate: Toluene-d8	52.8		"	62.5		84.4	75.9–123			
Surrogate: 4-Bromofluorobenzene	65.5		"	62.5		105	83–123			

Matrix Spike (9B11003–MS1)

Source: X902029–01

Prepared: 02/11/2009 Analyzed: 02/11/2009

Benzene	0.06	0.001	mg/L	0.0500	ND	114	64.2–124			
Toluene	0.05	0.001	"	0.0500	ND	94.8	63.9–119			
Surrogate: 1,2-Dichloroethane-d4	67.8		ug/L	62.5		109	70.3–123			
Surrogate: Toluene-d8	51.7		"	62.5		82.8	75.9–123			
Surrogate: 4-Bromofluorobenzene	65.6		"	62.5		105	83–123			

Matrix Spike (9B11003–MS2)

Source: X902031–01

Prepared: 02/11/2009 Analyzed: 02/11/2009

Benzene	0.06	0.001	mg/L	0.0500	ND	117	64.2–124			
Toluene	0.05	0.001	"	0.0500	ND	97.1	63.9–119			
Surrogate: 1,2-Dichloroethane-d4	67.7		ug/L	62.5		108	70.3–123			
Surrogate: Toluene-d8	52.6		"	62.5		84.2	75.9–123			
Surrogate: 4-Bromofluorobenzene	67.8		"	62.5		108	83–123			

Matrix Spike Dup (9B11003–MSD1)

Source: X902029–01

Prepared: 02/11/2009 Analyzed: 02/11/2009

Benzene	0.06	0.001	mg/L	0.0500	ND	116	64.2–124	1.64	25	
Toluene	0.05	0.001	"	0.0500	ND	93.2	63.9–119	1.72	25	
Surrogate: 1,2-Dichloroethane-d4	68.9		ug/L	62.5		110	70.3–123			
Surrogate: Toluene-d8	52.3		"	62.5		83.7	75.9–123			
Surrogate: 4-Bromofluorobenzene	67.0		"	62.5		107	83–123			

Matrix Spike Dup (9B11003–MSD2)

Source: X902031–01

Prepared: 02/11/2009 Analyzed: 02/11/2009

Benzene	0.06	0.001	mg/L	0.0500	ND	118	64.2–124	0.733	25	
Toluene	0.05	0.001	"	0.0500	ND	95.7	63.9–119	1.41	25	
Surrogate: 1,2-Dichloroethane-d4	69.5		ug/L	62.5		111	70.3–123			

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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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 Limits	RPD	RPD Limit	Notes
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Batch 9B11003 – EPA 5030B

Matrix Spike Dup (9B11003-MSD2)

Source: X902031-01

Prepared: 02/11/2009 Analyzed: 02/11/2009

Surrogate: Toluene-d8	51.6	ug/L	62.5	82.5	75.9-123
Surrogate: 4-Bromofluorobenzene	65.0	"	62.5	104	83-123

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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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